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Pattern of Cutaneous Manifestations in Systemic Lupus Erythematosus: A Cross-Sectional Hospital-Based Study

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ABSTRACT ***Background:*** Systemic lupus erythematosus (SLE) is a chronic multisystem autoimmune disease with diverse cutaneous manifestations that significantly impact morbidity and quality of life. Understanding the pattern of skin involvement is essential for early diagnosis and optimal management, particularly in resource-limited settings. ***Methods:*** This cross-sectional hospital-based study was conducted in the Dermatology and Rheumatology Departments of a tertiary care institution in Dhaka. A total of 116 adult patients fulfilling the 2019 EULAR/ACR classification criteria for SLE were included. Sociodemographic characteristics and clinical patterns of cutaneous manifestations were documented using a structured case record form. Lupus-specific lesions were categorized into acute (ACLE), subacute (SCLE), and chronic (CCLE) subtypes, while nonspecific lesions were also recorded. Descriptive statistical analysis was performed to summarize the findings. ***Results:*** The mean age of participants was 27.63 ± 8.28 years (range: 18–57), with a marked female predominance (96.6%). Most patients resided in urban (37.9%) or suburban (36.2%) areas, and the majority were housewives (56%). ACLE was the most frequent lupus-specific manifestation (64.65%), with malar rash being the predominant subtype (57.75%). SCLE was observed in 8.61% of cases, predominantly annular type (6.03%). CCLE accounted for 10.3% of cases, where localized discoid lupus erythematosus was most common (7.8%). Nonspecific cutaneous manifestations were also common, with alopecia (42.2%), mucosal ulcers (30.2%), and Raynaud's phenomenon (25.9%) being the most prevalent. Less frequent findings included purpura (3.4%), nonspecific BLE (2.6%), and urticaria (0.9%). Distribution of constitutional symptoms among participants. Fever was the most prevalent systemic symptom (26.7%), followed by fatigue (18.1%). Weight loss was reported by 5.2% of patients. ***Conclusion:*** Cutaneous involvement remains a prominent clinical feature among SLE patients, with ACLE—particularly malar rash—being the most prevalent presentation. Nonspecific lesions such as alopecia and mucosal ulcers are also frequently encountered, often coexisting with lupus-specific lesions. These findings highlight the importance of thorough dermatologic evaluation in all SLE patients to ensure timely diagnosis and tailored management in the Bangladeshi population.

Keywords: Systemic Lupus Erythematosus, Cutaneous Lupus, ACLE, SCLE, CCLE, Malar Rash, Nonspecific Skin Lesions, Bangladesh.

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INTRODUCTION

Systemic lupus erythematosus (SLE) is a chronic, multisystem autoimmune disease characterized by the production of diverse autoantibodies and a correspondingly heterogeneous clinical presentation. Virtually any organ system may be affected, including the skin, musculoskeletal system, kidneys, hematologic compartment, and central nervous system. Among these, cutaneous involvement is one of the most prevalent and clinically significant manifestations. It is estimated that 70–85% of patients with SLE develop cutaneous lesions during the course of their illness, highlighting their pivotal role in early identification, disease classification, and longitudinal assessment of disease activity [1-2].

Cutaneous lupus erythematosus (CLE) comprises a broad spectrum of lupus-specific and lupus-nonspecific lesions. Lupus-specific subsets—acute cutaneous lupus erythematosus (ACLE), subacute cutaneous lupus erythematosus (SCLE), and chronic cutaneous lupus erythematosus (CCLE)—demonstrate distinct morphologic features, prognostic implications, and associations with systemic disease activity [3-4]. Hallmark lesions such as the malar rash, photosensitivity, and discoid plaques have been incorporated into the 2019 EULAR/ACR classification criteria for SLE, underscoring their diagnostic importance [5]. Additionally, nonspecific cutaneous findings, including non-scarring alopecia, mucosal ulcers, Raynaud's phenomenon, purpura, and urticaria, frequently occur and may indicate underlying systemic inflammation, disease flares, or comorbid immunologic disturbances [6]. Patterns of cutaneous involvement vary considerably across geographic and ethnic groups. Studies from Asia, the Middle East, and Latin America report a higher prevalence of ACLE and mucocutaneous manifestations compared with Western populations, suggesting contributions from genetic predisposition, environmental exposures, and regional climatic factors [7]. Bangladesh, characterized by its tropical climate, distinct genetic makeup, and sociocultural determinants, represents a unique epidemiological context. Despite growing recognition of SLE within the country, detailed data on the prevalence and clinical spectrum of cutaneous manifestations remain limited. This knowledge gap is clinically relevant, as mucocutaneous lesions frequently appear early in the disease course and can serve as critical markers for timely diagnosis, risk stratification, and individualized therapeutic planning. Against this backdrop, the present study aims to characterize the pattern and frequency of lupus-specific and lupus-nonspecific cutaneous manifestations among patients with SLE receiving care at a tertiary hospital in Dhaka. By generating updated and population-specific evidence, this study seeks to enhance understanding of the dermatologic burden of SLE in Bangladesh. The findings may contribute to improved early detection, inform multidisciplinary clinical management, and stimulate future research on ethnogeography variations in cutaneous lupus.

MATERIALS AND METHODS

This cross-sectional observational study was conducted in the Outpatient department of Rheumatology, Bangladesh Medical University, Shahbagh, Dhaka from March, 2017 to June,2019. Data were collected during the designated study period from adult patients attending both outpatient and inpatient services. The study aimed to evaluate the pattern of both lupus-specific and nonspecific cutaneous manifestations in patients with systemic lupus erythematosus (SLE).

Study Population

A total of 116 patients diagnosed with systemic lupus erythematosus were included. All participants fulfilled the 2019 EULAR/ACR classification criteria for SLE and were evaluated. Subjects who were presented with skin manifestations and clinically diagnosed as SLE in both outpatient department of Rheumatology BSMMU were taken as study population

Inclusion Criteria

Adults aged 18 years or above

Confirmed diagnosis of SLE by a certified clinician

Presence or absence of cutaneous manifestations at the time of assessment

Ability and willingness to give informed written consent

Exclusion Criteria

Overlap connective tissue diseases (e.g., systemic sclerosis, mixed connective tissue disease)

Use of medications that may alter skin or nailfold capillaroscopic findings (e.g., cytotoxic therapy for non-SLE causes)

Patients too ill to undergo dermatological evaluation

Sampling Technique and Sample Size

A total of 116 consecutive eligible patients were recruited using purposive sampling based on patient availability during the study period.

Data Collection and Study Procedure

After obtaining informed written consent, each eligible participant was enrolled consecutively and underwent a structured face-to-face interview followed by detailed clinical evaluation. During the interview, sociodemographic information was collected using a pretested questionnaire, including age, sex, religion, place of residence (urban, suburban or rural), educational qualification, occupation and monthly household income. Subsequently, a comprehensive clinical assessment was performed with particular emphasis on cutaneous manifestations. A detailed dermatological examination was carried out to identify lupus-specific skin lesions according to standard diagnostic criteria for cutaneous erythematosus (CLE). Patients were systematically evaluated for acute cutaneous lupus erythematosus (ACLE), including malar rash, generalized ACLE and photosensitive rash; subacute cutaneous lupus erythematosus (SCLE), including annular and papulosquamous forms; and chronic cutaneous lupus erythematosus (CCLE), including classic localized discoid lupus erythematosus (DLE), generalized DLE and lupus profundus.In addition to lupus-specific lesions, patients were examined for nonspecific cutaneous manifestations commonly associated with SLE, such as alopecia, mucosal ulcers, Raynaud's phenomenon, purpura, urticaria and non-specific BLE. Each of these features was systematically recorded during the clinical examination. Finally, constitutional features were assessed as part of the overall systemic evaluation. Symptoms such as fever, fatigue and weight loss were recorded during clinical review and documented in the study proforma.

Statistical Analysis

Data were entered, cleaned, and analyzed using Statistical Package for the Social Sciences (SPSS), version 26.0. Descriptive statistics were used to summarize the study population's demographic and clinical characteristics. Continuous variables (e.g., age) were expressed as means ± standard deviation (SD) and ranges. Categorical variables (e.g., sex, residence, cutaneous manifestations) were presented as frequencies and percentages. Associations between types of cutaneous manifestations and sociodemographic variables were assessed using the Chi-square test or Fisher's exact test, as appropriate. A p-value < 0.05 was considered statistically significant.

Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (Bangladesh Medical University) Written informed consent was obtained from all participants. Confidentiality and anonymity were strictly preserved throughout data collection, analysis, and reporting.

Operational Definitions

Systemic Lupus Erythematosus (SLE)

SLE was defined as a multisystem autoimmune disease diagnosed according to the 2019 EULAR/ACR classification criteria, as confirmed by a rheumatologist or qualified clinician.

Lupus-Specific Skin Lesions

Lupus-specific cutaneous lesions were defined according to standard criteria for cutaneous erythematosus (CLE) and grouped as:

Acute Cutaneous Lupus Erythematosus (ACLE)

Erythematous, often photosensitive lesions including:

Malar rash: fixed erythema over the malar eminences, usually sparing the nasolabial folds.

Generalized ACLE: widespread macular or maculopapular eruption in a photosensitive distribution.

Photosensitive rash: exacerbation of erythematous lesions after sun exposure, based on history and/or clinical observation.

Subacute Cutaneous Lupus Erythematosus (SCLE)

Non-scaring, photosensitive lessons presenting as

Annular SCLE: annular or polycyclic plaques with raised erythematous borders and central clearing.

Papulosquamous SCLE: psoriasiform or eczematous papulosquamous plaques in sun-exposed areas.

Chronic Cutaneous Lupus Erythematosus (CCLE)

Persistent, often scary lessons include:

Classic localized discoid lupus erythematosus (DLE): well-demarcated erythematous plaques with adherent scale and follicular plugging, confined to the head and neck region.

Generalized DLE: discoid lesions involving both head/neck and trunk or limbs.
Lupus profundus: deep, firm subcutaneous nodules or plaques consistent with lupus panniculitis.

Nonspecific Skin Lesions
Nonspecific cutaneous manifestations were defined as skin lesions commonly associated with SLE but not pathognomonic for CLE. In this study, the following were included:

Alopecia
Non-scarring diffuse hair loss or "lupus hair," temporally associated with SLE activity, as assessed clinically.

Mucosal ulcers
Painless or painful erosions or ulcers of the oral or nasal mucosa, observed on examination.

Raynaud's phenomenon
Episodic, reversible color changes (pallor, cyanosis, erythema) of the digits precipitated by cold or emotional stress, based on history with or without clinical demonstration.

Purpura
Non-blanching, reddish-purple macules or patches due to dermal hemorrhage, not attributable to trauma.

Urticaria
Transient, pruritic, erythematous wheals lasting less than 24 hours at a given site.

Non-specific BLE
Non-specific bullous lesions of LE (BLE), defined as blistering eruptions not fulfilling criteria for bullous LE or other specific blistering disorders but occurring in the context of SLE.

RESULTS

The study included 116 patients diagnosed with systemic lupus erythematosus (SLE), with a mean age of *27.63 ± 8.28 years* (range: 18–57 years), indicating a predominantly young adult population. As summarized in Table 1, the vast majority were female (96.6%), aligning with the known female predominance in SLE. Most participants were Muslim (90.5%), reflecting the regional demographic profile.

With regard to residence, urban (37.9%) and suburban (36.2%) areas contributed almost equally, while 25.9% of patients resided in rural areas. Educational attainment showed that 33.6% had completed secondary education (SSC) and 26.7% had completed higher secondary education (HSC). A majority of participants were housewives (56%), followed by students (34.5%). In terms of socioeconomic status, 50.9% of households reported a monthly income between *15,000–29,000 BDT*, while 32.8% earned less than *15,000 BDT*.

The frequency and distribution of lupus-specific cutaneous manifestations are detailed in Table 2. Acute Cutaneous Lupus Erythematosus (ACLE) was the most prevalent subtype, observed in 75 patients (64.65%). Among these, malar rash was the predominant lesion, affecting 67 patients (57.75%), followed by generalized ACLE (22 patients; 15.51%) and photosensitive rash (5 patients; 4.31%).

Subacute Cutaneous Lupus Erythematosus (SCLE) was identified in 10 patients (8.61%), with the annular variant (6.03%) being more frequent than the papulo-squamous type (2.58%).Chronic Cutaneous Lupus Erythematosus (CCLE) was found in 12 patients (10.3%), predominantly presenting as localized discoid lupus erythematosus (DLE) (7.8%), while generalized DLE and lupus profundus were reported in 1.7% and 0.9% of patients, respectively.

As illustrated in Figure 1, nonspecific cutaneous lesions were also commonly observed. Alopecia was the most frequently reported manifestation (42.2%), followed by mucosal ulcers (30.2%) and Raynaud's phenomenon (25.9%). Less frequent findings included purpura (3.4%), non-specific bullous lesions (2.6%), and urticaria (0.9%). These findings highlight that nonspecific skin involvement often coexists with lupus-specific lesions.

Figure 2 presents the distribution of constitutional symptoms among participants. Fever was the most prevalent systemic symptom (26.7%), followed by fatigue (18.1%). Weight loss was reported by 5.2% of patients, marking it as the least common constitutional symptom in

this cohort. These findings are consistent with the systemic inflammatory burden typically observed in SLE.

Table 1: Sociodemographic Characteristics of the Study Population (N = 116)

Characteristics	Frequency
Age	
Mean ± SD	27.63 ± 8.28
Range	18–57
Sex	
Male	4 (3.4)
Female	112 (96.6)
Religion	
Islam	105 (90.5)
Hindu	11 (9.5)
Residence	
Urban	44 (37.9)
Suburbs	42 (36.2)
Rural	30 (25.9)
Educational Qualification	
Illiterate	2 (1.7)
Primary	25 (21.6)
SSC	39 (33.6)
HSC	31 (26.7)
Graduate	17 (14.7)
Post-graduate	2 (1.7)
Occupation	
Student	40 (34.5)
Housewife	65 (56.0)
Service holder	9 (7.8)
Teacher	1 (0.9)
Doctor	1 (0.9)
Monthly Income	
<15,000	38 (32.8)
15,000–29,000	59 (50.9)

Table 2 presents the frequency and pattern of lupus-specific cutaneous manifestations among the study participants Acute Cutaneous Lupus Erythematosus (ACLE) was the most frequently observed category, affecting 75 patients (64.65%). Among them, the malar rash represented the predominant subtype, occurring in 67 patients (57.75%). Generalized ACLE was noted in 22 patients (15.51%), while photosensitive lupus rash was identified in 5 patients (4.31%). Subacute Cutaneous Lupus Erythematosus (SCLE) was documented in 10 patients (8.61%). The annular SCLE subtype accounted for the majority (7 patients; 6.03%), whereas the papulo-squamous variant was seen in 3 patients (2.58%). Chronic Cutaneous Lupus Erythematosus (CCLE) was identified in 12 patients (10.3%). Among these, classic localized discoid lupus erythematosus (DLE) occurred in 9 patients (7.8%), while classic generalized DLE was observed in 2 patients (1.7%). Lupus profundus was noted in 1 patient (1.7%).

Table 2: Distribution of Lupus-Specific Skin Lesions

Lupus Specific Skin Lesions	Sub Types	Responses n=116	
		Frequency	Percent of cases
ACLE	Malar rash	67	57.75
	Generalized ACLE	22	15.51
	Photosensitive lupus rash	5	4.31
	Total	75	64.65
SCLE	Annular SCLE	7	6.03
	Papulo-squamous SCLE	3	2.58
	Total	10	8.61
CCLE	**DLE**		
	Classic localized DLE	9	7.8
	Classic generalized DLE	2	1.7
	Lupus profundus	1	1.7
	Total	12	10.3

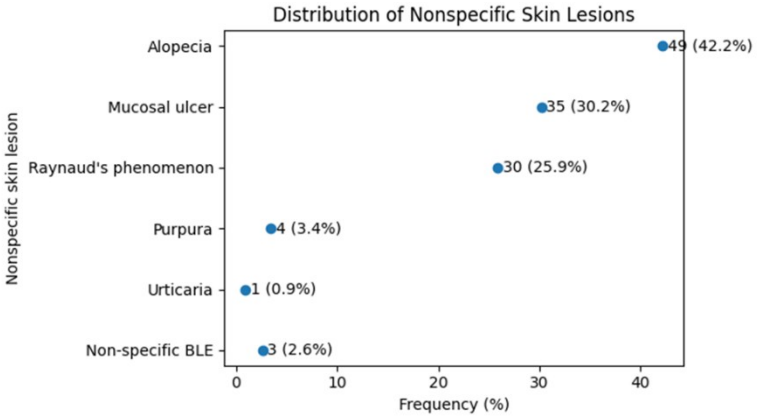

Figure 1: Distribution of Nonspecific Skin Lesions

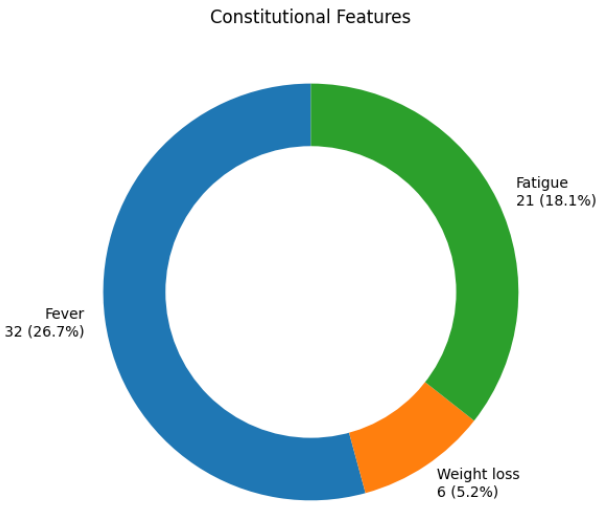

Figure 2: Distribution of Constitutional Features Among SLE Patients

DISCUSSION

This study provides an updated characterization of cutaneous involvement among Bangladeshi patients with systemic lupus erythematosus (SLE), demonstrating that skin manifestations remain a major clinical component of the disease. The predominance of young female patients aligns with global epidemiological trends, where SLE disproportionately affects women in their reproductive years due to complex hormonal and immunogenetic factors [8-9]. Acute cutaneous lupus erythematosus (ACLE) was the most frequent lupus-specific presentation, with malar rash being the dominant subtype. These finding parallels recent international cohorts where malar rash continues to serve as an early and highly recognizable clinical hallmark of SLE [10]. High ultraviolet (UV) exposure in Bangladesh likely contributes to the high rates of photosensitive lesions, consistent with studies showing UV radiation as a major environmental trigger for lupus flares [11].

Subacute cutaneous lupus erythematosus (SCLE) accounted for a smaller proportion of cases, with the annular variant predominating. This pattern echoes established associations between SCLE, anti-Ro/SSA antibodies, and pronounced photosensitivity [12]. Chronic cutaneous lupus erythematosus (CCLE), particularly localized discoid lupus erythematosus (DLE), was also detected, consistent with regional Asian cohorts that report similar frequencies [13]. Although CCLE is less strongly correlated with systemic involvement, its propensity for scarring, dyspigmentation, and psychosocial burden underscores the importance of early detection and treatment [14]. Nonspecific cutaneous features such as alopecia, mucosal ulcers, and Raynaud's phenomenon were highly prevalent. Lupus-related alopecia affected over 40% of participants and may reflect both active inflammatory disease and systemic stress-related telogen effluvium.[15] Mucosal ulcers and Raynaud's phenomenon similarly serve as markers of systemic inflammation and disease activity, reinforcing evidence that nonspecific lesions frequently coexist with lupus-specific rashes and can aid in flare monitoring [16]. Constitutional symptoms—most notably fever and fatigue—were common and reflect the systemic inflammatory burden typical of active SLE. Fatigue, in particular, is increasingly recognized as a major determinant of quality of life and disease perception among patients, even when objective markers of inflammation are controlled [17]. Overall, the cutaneous patterns observed in this Bangladeshi cohort are consistent with global SLE manifestations yet shaped by regional environmental and socioeconomic factors such as high UV exposure, delayed healthcare access, and limited availability of photoprotective resources. Strengthening dermatology–rheumatology collaboration, enhancing patient education on sun protection, and ensuring early treatment initiation are essential steps to reduce long-term morbidity in resource-limited settings [18-19]. Future studies incorporating serological profiling and disease activity indices may provide deeper insight into correlations between cutaneous and systemic disease.

Strengths and Limitations

This study contributes region-specific evidence on cutaneous patterns in SLE, an area with limited published data, and benefits from standardized case selection using the 2019 EULAR/ACR criteria. Inclusion of patients from both dermatology and rheumatology services strengthened the accuracy of clinical characterization. Nevertheless, the cross-sectional design restricts assessment of temporal or causal relationships, and the single-center setting may not fully reflect the broader population. Limited laboratory correlations and potential reporting bias regarding photosensitivity and symptom duration also constrain the depth of interpretation.

CONCLUSIONS

This study demonstrates that cutaneous manifestations are highly prevalent among Bangladeshi patients with systemic lupus erythematosus, with ACLE especially malar rash being the most common presentation. SCLE, DLE, and nonspecific lesions such as alopecia, mucosal ulcers, and Raynaud's phenomenon also occurred frequently, reflecting the broad spectrum of skin involvement. The predominance of young women and the high rate of photosensitive lesions highlight the influence of environmental UV exposure. Early recognition of cutaneous signs, combined with improved dermatology–rheumatology collaboration and patient education on photoprotection, is essential to reduce morbidity and enhance quality of life in resource-limited settings.

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Conflicts of Interest: The authors declare no conflicts of interest related to this study.

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