The Impact of Social Demographics, Disease Activity, and Organ Damage on Time to Diagnosis in Pediatric Systemic Lupus Erythematosus

Michaela Harter[1], Rebecca Hetrick[2], Kiana Johnson[3], Martha Rodriguez[2]
[1]Indiana University School of Medicine; [2]Indiana University School of Medicine, Department of Pediatric Rheumatology; [3]University of Tennessee

Background/Objective:
Pediatric Systemic Lupus Erythematosus (pSLE) is a systemic autoimmune disease with variable clinical presentation. Untreated SLE can cause significant impairment, making early recognition and diagnosis critical in preventing irreversible organ damage. This study aims to understand the relationship between sociodemographic factors, disease activity at diagnosis, and time to diagnosis.

Methods:
A retrospective chart review of 156 pSLE patients evaluated by the Department of Pediatric Rheumatology at Riley Hospital for Children between 2017 and 2023 examined various sociodemographic and disease-related variables: race, ethnicity, preferred language, sex, insurance type, Area of Deprivation Index, disease activity (SLEDAI-2K score), and cumulative organ damage (SLICC/ACR Damage Index). SLEDAI-2K scores were calculated for 132 (84.6%) of the patient cohort. Time to diagnosis was calculated in weeks from symptom onset to diagnosis. Multiple regressions analysis was conducted using time to diagnosis as the dependent variable and social demographic variables as predictors. Data was collected with REDCap and analyzed with IBM SPSS Statistics (Version 28).

Results:
No significant correlation was found between time to diagnosis and: age at diagnosis, type of insurance, ethnicity, preferred language, state ADI decile, sex, or SLICC/ACR Damage Index. There was a significant correlation between time to diagnosis and SLEDAI-2K disease activity score calculated at time of diagnosis (Pearson Correlation= -0.*245, p*<0.005).

Conclusion:
The study showed no significant correlation between time to diagnosis and several sociodemographic variables. These findings suggest that pSLE patients from racial and ethnic minority groups and those with public insurance may have equitable access to care compared to non-minoritized groups and those with private insurance in Indiana. Additionally, the study did show a significant negative correlation between time to diagnosis and disease activity. Future work can include strategies to find and diagnose low-disease activity patients earlier.

Variable	**Cohort N=156 (%)**
Age of diagnosis (median)	13.5 (2-17)
Insurance Type	Medicaid or CHIP: 67 (43%) Private: 84 (53.85%) Tricare or other Uniformed Health Service Program: 2 (1.28%) Uninsured: 3 (1.92%) Not reported: 0 (0%)

Race	American Indian/Alaskan Native: 2 (1.28 %) Asian: 12 (7.69%) Native Hawaiian or Other Pacific Islander: 1 (0.64%) Black or African American: 48 (30.77%) White: 84 (53.85%) More than One Race: 3 (1.92%) Unknown/Not Reported: 6 (3.85%)
Ethnicity	Hispanic: 31 (19.87%) Non-Hispanic: 124 (79.49%)
Preferred Language	English: 138 (88.46%) Spanish: 10 (6.41%) Burmese or Chin Family: 5 (3.21%) Other: 2 (1.28%) Not Reported: 1 (0.64%)

Sex	Female: 133 (85.26%) Male: 23 (14.74%)
State ADI (median)	4 (0-10)