Understanding Racial Differences in Emergency Room Visits for Patients With Lupus

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OBJECTIVE

Systemic Lupus Erythematosus (SLE) is a chronic rheumatic disease affecting multiple organ systems. This study explores the **association between Emergency Room (ER) visit rates and racial groups using the patient-reported data from the FORWARD Lupus Registry (FLR), which is an open enrollment registry with biannual follow-up surveys.**

METHODOLOGY

A retrospective analysis was conducted on participants with physician-confirmed SLE (n=632) who completed at least two surveys between 2014 and 2019 (BILD score, Pre-COVID), with no more than two years between surveys (n=305). The second survey was used to assess ER visits (within the past 6 months) and the first survey was used as the baseline for covariates. ER visits were modeled using logistic regression with adjustments for demographics, comorbidities, Systemic Lupus Activity Questionnaire (SLAQ) scores, and major organ involvement. This approach was employed to evaluate the association between disease activity and healthcare utilization while accounting for key clinical and demographic factors. Given the disproportionate impact of lupus on women and racial disparities in healthcare, social demographic factors were included: education, insurance type and income, to account for systemic disadvantages. To test the robustness of the racial effect, a sensitivity analysis excluding income and insurance variables was conducted, allowing for assessment as to whether race remained as a significant predictor of ER visits with socioeconomic factors removed.

RESULTS

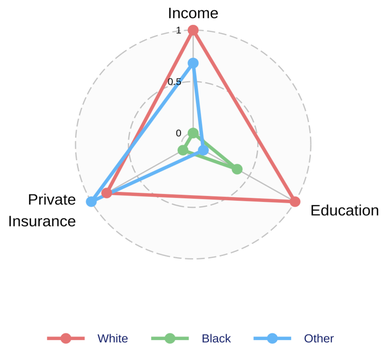
Table 1. Descriptive Statistics by Racial Group

	Race			
Characteristic	**Overall** N = 305[1]	**White** N = 240[1]	**Black** N = 37[1]	**Other** N = 28[1]
Went to ER	70 (23%)	48 (20%)	12 (32%)	10 (36%)
Age of Patient (Years)	58 (13)	59 (12)	56 (11)	50 (14)
Sex				
Female	291 (95%)	227 (95%)	36 (97%)	28 (100%)
Male	14 (4.6%)	13 (5.4%)	1 (2.7%)	0 (0%)
Education Level (Years)	15 (2)	15 (2)	14 (3)	14 (4)
Total Income (Years)	67,033 (41,622)	70,271 (40,841)	48,784 (35,870)	63,393 (49,611)
Lung Disease (Past 6 Months)	35 (11%)	24 (10%)	6 (16%)	5 (18%)
Kidney Disease (Past 6 Months)	42 (14%)	29 (12%)	3 (8.1%)	10 (36%)
Heart Disease (Past 6 Months)	26 (8.5%)	22 (9.2%)	3 (8.1%)	1 (3.6%)
Comorbidity Index	2.66 (1.96)	2.66 (1.98)	2.78 (2.04)	2.43 (1.75)
SLAQ score	11 (8)	10 (7)	12 (8)	14 (11)
Rheumatology Visits	1.74 (1.82)	1.70 (1.74)	1.38 (1.09)	2.57 (2.85)
Insurance Type				
Medicare	137 (45%)	110 (46%)	17 (46%)	10 (36%)
Medicaid	27 (8.9%)	16 (6.7%)	7 (19%)	4 (14%)
Other	141 (46%)	114 (48%)	13 (35%)	14 (50%)

[1] n (%); Mean (SD)

Among 305 included patients, 78.6% were white, 12.1% black, 9.1% other (Asian, Pacific Islander, Hispanic, American Indian, Alaskan Native) and predominantly female (95%). The average age across the full sample was 58 years, with slightly younger averages in the Black (56) and Other (50) groups. The patients had on average 15 years of education and an average total income of ~$67,000, though income was notably lower for Black patients ($48,784). Around 23% of all patients visited the ER with Comorbidity index comparable across groups (2.66). Patients reported various recent health issues: Lung disease (11%), Kidney disease (14%), and Heart disease (8.5%). SLAQ score (0~38) averaged 11 (higher in non-white groups) with patients reporting 1.74 rheumatology visits on average in the past 6 months. Medicare was the most common insurance type among all groups (45%) with Medicaid coverage being higher for Black (19%) compared to White (6.7%).

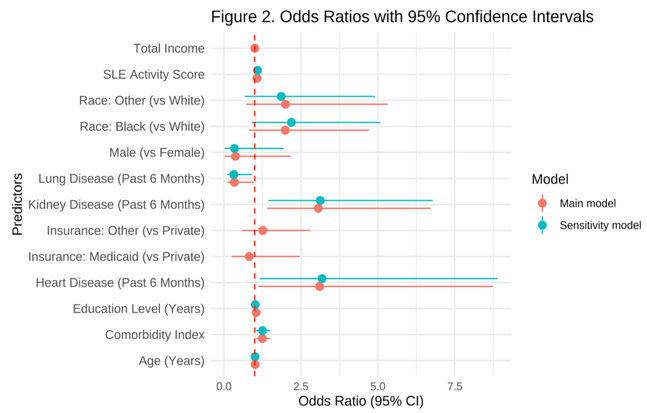
Figure 1. Racial Disparities Across Key Socioeconomic Variables



This radar plot (Figure 1) visually compares racial disparities across three key socioeconomic variables. White individuals showed the highest levels across the three variables indicating greater socioeconomic advantage. The black individuals had the lowest levels across the board indicating persistent disparities in income, private insurance, and education.

In the main logistic regression model, using the data from the first observation, black individuals only had marginally significant higher rates of ER visits as compared to white (2,19, p = .071). Additionally, the SLE activity score (SLAQ score) emerged as a strong predictor of an ER visit (OR=1.0745, p < 0.001).

Figure 2. Odds Ratios with 95% Confidence Intervals



As shown in Figure 2, the sensitivity model excludes income and insurance type. The odds ratio plot comparing the main and sensitivity models illustrates that the estimates and corresponding confidence intervals for variables remain largely consistent between the two models.

Excluding socioeconomic variables from the sensitivity model does not substantially alter the relationships between predictors and ER visits, confirming the robustness of the primary findings. Additionally, although excluding income and insurance type slightly improved model fit (AIC decreased from 300.32 to 297.6), it does not substantially affect model performance.

When comparing the Odds Ratio of the two models, sensitivity model indicates that both black and other racial groups were 1.99 times more likely to visit the ER compared to the white patients, indicating a smaller specific differentiation on racial disparities. The decrease in odds ratio suggests that social demographic disparities partially explain the observed racial differences, which indicates the importance of adjusting socioeconomic variables in the evaluation.

CONCLUSION

After adjusting for established socioeconomic and clinical confounders documented in health disparities literature, we observed statistically significant variations in ER visitation patterns among racial groups in our patient cohort. The sensitivity model analysis indicates that findings remained stable, supporting the robustness of the primary results and detailed differences among race.

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