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Effect of Socioeconomic Status on the Direct Costs of Lupus Nephritis in Colombian Patients

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Patients affiliated to the subsidised healthcare system had an adjusted mean annual direct cost 54% higher than those in the contributory system after controlling for sex, age, hypertension, de novo disease, alcohol consumption, smoking and baseline glomerular filtration rate category

Digital poster

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Aims

To describe the direct cost of lupus nephritis (LN) among patients treated at secondary and tertiary centres in Colombia, and explore its association with socioeconomic status

Methods

- **Design:** Multicentre, retrospective, descriptive cohort study
- **Population:** Patients 12+ years old with systemic lupus erythematosus (SLE) diagnosis (2012 Systemic Lupus International Collaborating Clinics criteria), and new or existing diagnosis of LN (laboratory or histopathologic confirmation)

Frequency of healthcare resource use during diagnosis, treatment and follow-up of patients with SLE and LN was extracted from the clinical and administrative records of 7 secondary and tertiary centres in Colombia between January 2015 and December 2020

Prices of healthcare services were obtained from official lists from the Institute of Social Security and the Compulsory Insurance for Car Accidents[1,2]

Direct costs were calculated by multiplying observed resource use with unit prices. Mean total direct costs were calculated using the total sample as denominator

Costs are expressed in 2024 United States dollar (USD), converted from 2021 Colombian peso (COP) using the CCEMG – EPPI Centre Cost Converter based on Purchasing Power Parities for GDP (1 million COP 2021 = 922.85 USD 2024)[3]

A post hoc generalised linear model with gamma distribution and log link function was fitted to compare the direct costs of disease between contributory and subsidised healthcare subsystems. Affiliation to the latter was used a proxy of low socioeconomic status

Results

280 patients

88.6% female

- **Mean age:** 56.7 years (SD: 13.5; range: 18 to 62)
- **Median observation time:** 1.13 years
- **Healthcare subsystem affiliation:** 155 contributory, 88 subsidised, 23 others, 14 no data
- **Study limitations:** Affiliation to the subsidised healthcare subsystem is not a perfect proxy of low socioeconomic status. There is a potential risk of residual confounding

Figure 1: **Mean annual direct cost of LN by baseline kidney function grade**

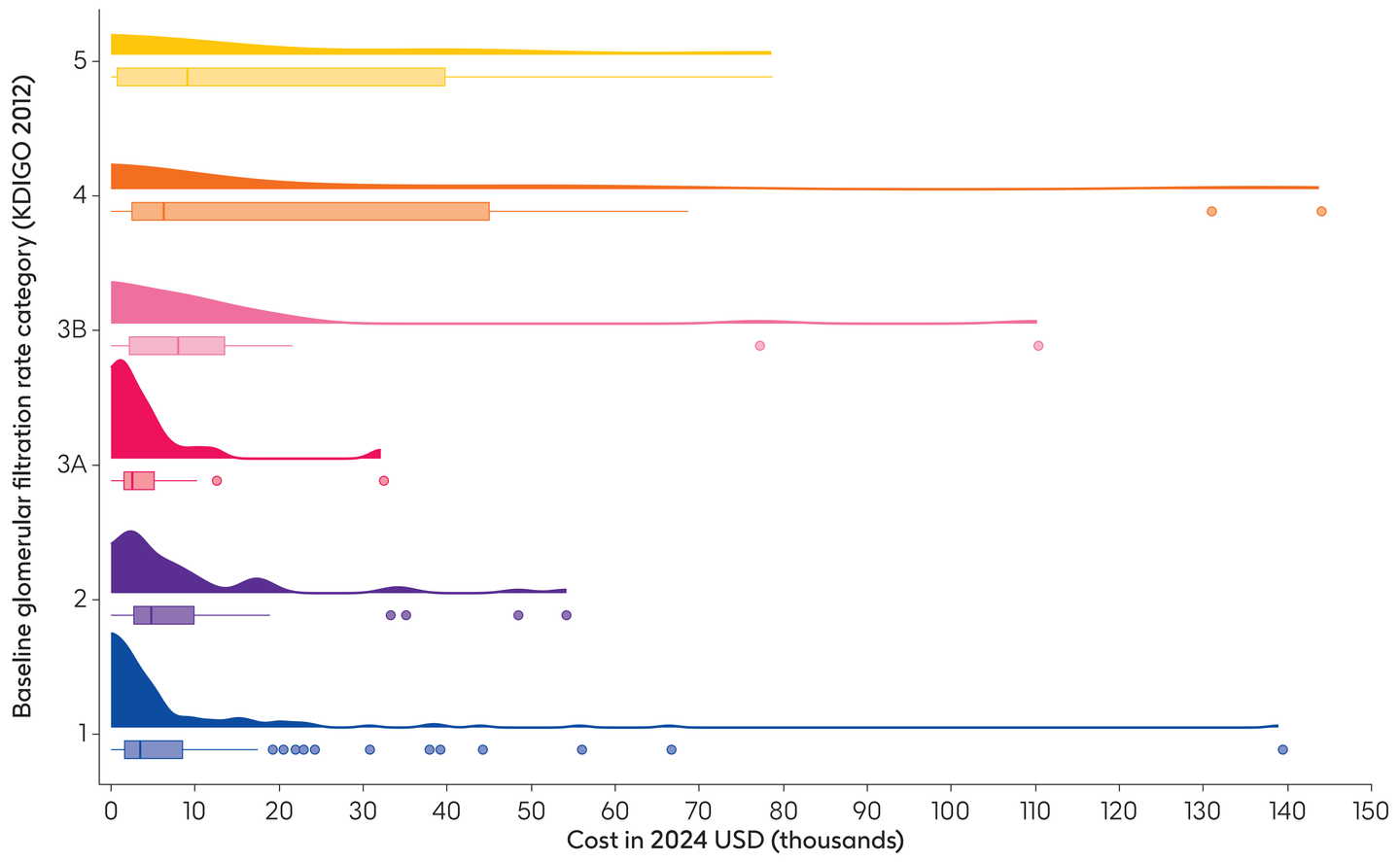

Table 1: **Clinical characteristics and costs by subsystem affiliation**

Variable	Contributory (n=155)	Subsidised (n=88)
Age (years), mean (SD)	32.8 (13.6)	28.3 (10.2)
Sex (female), n (%)	138 (89.0)	75 (85.2)
Hypertension, n (%)	32 (78.1)	23 (85.2)
De novo nephritis, n (%)	84 (54.2)	47 (53.4)
Alcohol consumption, n (%)	0	2 (2.3)
Smoking, n (%)	2 (1.3)	2 (2.3)
Kidney function at baseline (KDIGO 2012), n (%)		
Grade 1	62 (42.2)	49 (58.3)
Grade 2	34 (23.1)	10 (11.9)
Grade 3A	18 (12.2)	5 (6.0)
Grade 3B	17 (11.6)	8 (9.5)
Grade 4	10 (6.8)	9 (10.7)
Grade 5	6 (4.1)	3 (3.6)
SLE disease activity index at baseline, n (%)		
No activity (0)	5 (7.5)	5 (11.6)
Mild (1–5)	7 (10.5)	14 (32.6)
Moderate (6–10)	24 (35.8)	5 (11.6)
Severe (11–19)	22 (32.8)	8 (18.6)
Very severe (20+)	9 (13.4)	11 (25.6)
Crude annual direct cost (2024 USD), mean (SD)	9,436 (15,858)	15,573 (29,083)
Adjusted annual direct cost (2024 USD), mean (SE)	7,979 (935)	12,251 (1,942)

Table 2: **Generalised linear model results**

Variable	Ratio	p-value	95% CI
Healthcare subsystem affiliation			
Contributory	(ref)	–	–
Subsidised	1.54	0.036	1.03, 2.29
Sex			
Female	(ref)	–	–
Male	1.17	0.578	0.67, 2.03
Age[a]	0.98	0.009	0.97, 1.00
Hypertension[b]	1.10	0.686	0.69, 1.74
De novo nephritis[b]	1.55	0.021	1.07, 2.26
Alcohol consumption[b]	0.08	0.012	0.01, 0.57
Smoking[b]	0.78	0.736	0.19, 3.26
Kidney function at baseline			
Grade 1	(ref)	–	–
Grade 2	1.23	0.404	0.75, 2.02
Grade 3A	0.65	0.201	0.33, 1.26
Grade 3B	1.82	0.054	0.99, 3.35
Grade 4	3.35	0.001	1.67, 6.73
Grade 5	3.17	0.021	1.19, 8.45
Constant	9,277	–	5,267, 16,343

Model covariates selected by consulting clinical experts and published literature. [a] Continuous variable. Ratio indicates change for each one-year increase in age. [b] Reference category for this variable is the absence of the condition (e.g., smoker vs non-smoker)

Background

- The Colombian healthcare system is public and provides universal coverage under four subsystems. 95% of the population is affiliated to one of the following:
  - Contributory (44%), covering formal workers and their family beneficiaries
  - Subsidised (51%), covering unemployed citizens and people with very low income. Until 2012, this subsystem had access to a limited national formulary
- Despite having access to the same therapies, the network of insurers and healthcare providers available to each subsystem is mostly distinct

Conclusions

Healthcare resource use for SLE and LN treatment is higher in patients affiliated to the subsidised healthcare system in Colombia, compared with those in the contributory system. This is likely caused by differences in disease severity

There is an opportunity to close the gap among different healthcare systems in Colombia and guarantee quality access to healthcare among patients

Abbreviations

CCEMG, Campbell & Cochrane Economics Methods Group; CI, confidence interval; COP, Colombian peso; EPPI, Evidence for Policy and Practice Information; GDP, gross domestic product; KDIGO, Kidney Disease Improving Global Outcomes; LN, lupus nephritis; ref, reference category; SLE, systemic lupus erythematosus; SD, standard deviation; SE, standard error; USD, United States dollar

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Disclosures

The study sponsor did not participate in data collection and analysis. **SIP**: speaker for Astellas, Janssen Novo Nordisk, and Roche; **AAHJ**: speaker for Abbie, Alexion Pharma Colombia, Biopas, Bristol Myers Squibb, Eli Lilly, Janssen, Novamed, Novartis, Pfizer, and Roche; **DdC**: speaker for AbbVie, Janssen, Lilly, Pfizer, and Pharmalab. **DGFA:** speaker, advisor or consultant for Abbott, AbbVie, Biopas, Boehringer Ingelheim, Gedeon Richter, GlaxoSmithKline, Janssen, Lilly, and Pfizer; **AMAG**: speaker for AbbVie, Amgen, Biopas, Bristol Myers Squibb, Celltrion, Eli Lilly, Janssen, Novartis, and Pfizer, and attended preceptorships sponsored by AbbVie, Bristol Meyers Squibb, Eli-Lilly, and Janssen; **PMP**: speaker for Pharmalab, Lilly and Janssen; **NP and CDR**: employees of GSK; **TMG**, **LV**, **AV**, **LMM**, **PMP** and **GA**: no conflicts of interest to declare.

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