



Racial & Ethnic Differences In Liver Transplantations: A 2019 & 2022 New York State Analysis

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Objective:

To evaluate racial and ethnic differences in liver transplantation utilization in New York State between 2019 and 2022

Introduction

- End Stage liver disease (ESLD) remains a major cause of morbidity and mortality in the United States, and liver transplantation is the only definitive treatment for many patients with decompensated cirrhosis and acute liver failure.
- Despite increasing transplant volume, **9,527 liver transplants in 2022 nationally**, the number of patients awaiting transplantation continues to exceed organ availability, with over **10,500 adults on the waitlist**.
- Prior national registry studies have demonstrated racial and ethnic disparities across multiple phases of transplantation including:
 - Referral for transplant evaluation
 - Waitlist placement
 - Waitlist mortality
 - Transplant receipt
- Black and Hispanic patients experience lower transplantation rates despite comparable or higher burden of chronic liver disease. These disparities are thought to reflect structural determinants of health, including:
 - Socioeconomic barriers
 - Insurance status
 - Geographic access to transplant centers
 - Referral patterns and evaluation completion
 - Disease recognition and timing of hepatology care
- New York State provides a unique population for disparity analysis due to its racial diversity and dense transplant center network.
- In this statewide analysis, 218 liver transplants were identified in 2019 and 364 in 2022.

Methods

- Study Design:** Retrospective cross-sectional analysis
- Data Source:**
 - New York State Statewide Planning and Research Cooperative System (**SPARCS**)
 - De-identified all-payer inpatient discharge database containing:
 - Demographics
 - Diagnoses
 - Procedures
 - Hospital characteristics
- Study Population:** Patients undergoing liver transplantation identified using **CCSR Procedure Code: HEP011 (Liver Transplant)**
- Race/Ethnicity Categories:**
 - White Non-Hispanic (reference group)
 - Black Non-Hispanic
 - Hispanic (all races)
 - Other / Multi-Racial / Unknown
- Statistical Analysis:**
 - Proportion of transplant recipients calculated for each racial/ethnic group
 - Comparisons performed using Z-tests for difference in proportions
 - 95% confidence intervals
 - Two-tailed p-values
 - Significance: $p < 0.05$

Results

Year	Total Liver Transplants
2019	218
2022	364

Table 1: Study Cohort and Transplant Volume by Year

Total liver transplants in New York State in 2019 (n = 218) and 2022 (n = 364). White Non-Hispanic patients represented the largest recipient group in both years.

Group	%	Z	p-value
White Non-Hispanic	47.3%	Reference	—
Black Non-Hispanic	9.6%	-3.30	0.001
Hispanic	16.5%	-3.42	0.0006
Other/Multi/Unknown	26.6%	-2.80	0.005

Table 2: Racial and Ethnic Distribution of Liver Transplants in New York State in 2019

Proportion of liver transplant recipients by race and ethnicity. White Non-Hispanic patients served as the reference group for statistical comparison.

Group	%	Z	p-value
White Non-Hispanic	42.9%	Reference	—
Black Non-Hispanic	8.8%	-3.73	0.0002
Hispanic	19.8%	-3.62	0.0003
Other/Multi/Unknown	28.6%	-2.60	0.0094

Table 3: Racial and Ethnic Distribution of Liver Transplants in New York State in 2022

Proportion of liver transplant recipients by race and ethnicity. White Non-Hispanic patients served as the reference group for statistical comparison.

Discussion

This statewide analysis demonstrates persistent racial and ethnic disparities in liver transplantation utilization in New York State across two time points separated by the COVID-19 era.

Notably:

- Disparities are stable over time**
 - Increasing transplant numbers did not reduce inequity, suggesting structural rather than supply-based drivers
- Disparities likely occur upstream of surgery**
 - Our findings do not measure waitlist status, implying barriers may exist in:
 - Referral
 - Evaluation completion
 - Listing eligibility
- Black patients are disproportionately affected**
 - Despite higher prevalence of cirrhosis complications nationally, Black Non-Hispanic patients received significantly fewer transplants
- Hispanic representation increased but remained significantly lower than White patients**
 - Suggests partial improvement but persistent access gap

Key Findings

- Significant racial/ethnic differences observed in both study years
- Black Non-Hispanic patients had the lowest transplant utilization
- Disparities persisted despite increased transplant volume in 2022
- Confidence intervals did not overlap with White Non-Hispanic reference group

Conclusions

Significant racial and ethnic differences in liver transplantation utilization persist in New York State.

Black Non-Hispanic patients consistently received liver transplants at significantly lower rates than White Non-Hispanic patients across both years studied.

These findings suggest disparities likely occur prior to surgical intervention and emphasize the need for:

- Referral pathway evaluation
- Listing criteria transparency
- Equity-focused transplant policy initiatives

Limitations

- SPARCS is an administrative database and does not include MELD score, laboratory data, transplant indication, or measures of disease severity. Therefore, we cannot determine whether differences reflect clinical eligibility or access to care.
- This analysis includes only patients who underwent transplantation and does not capture referral, evaluation, waitlist placement, or waitlist outcomes. The stage at which disparities occur cannot be identified.
- Race and ethnicity are based on administrative documentation and may be misclassified. Grouping smaller populations into an Other or Unknown category may mask heterogeneity.
- This study is observational. Causality cannot be inferred, and unmeasured confounders such as socioeconomic or insurance factors may influence results.