Changes in racial disparities in viral suppression among people with HIV from 2013 – 2020: a statewide cohort study

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BACKGROUND

- Racial disparities in viral suppression (VS) among people with HIV (PWH) have been documented in existing literature.
- Nevertheless, most studies are cross-sectional studies without monitoring the temporal trend of racial disparities over time.
- Bronfenbrenner's socioecological model was applied to enhance understanding of social and structural drivers of HIV outcome inequities from the individual, exosystemic, and macrosystem levels and the impacts of social structure changes on health over time.
- There is a lack of longitudinal studies to comprehensively explore the relevant social structural factors of racial disparities in VS.

AIMS

- This study aims to examine the spatiotemporal trend and structural social determinants of racial disparities of VS among PWH.

METHODS

- A statewide population-based retrospective cohort study was conducted using the South Carolina (SC) HIV registry system from 2013 to 2020.
- Annual county-level VS rate was calculated as the percentage of PWH with a viral load < 200 copies/ mL at the most recent test in a county each year.
- Racial disparities in VS rate were measured using Black to White Ratio (BWR), Index of Disparity (ID), Weighted ID, and Gini coefficient.
- Twenty-four county-level variables (e.g., racial residential segregation, available healthcare resources, and health behavior) were included.
- Linear trend test was employed to explore the temporal trend of these racial disparity indices.
- Linear mixed-effect models were further used to assess the associations between structural social factors and these indices.

A notable decrease in racial disparities in VS was observed, counties with fewer Ryan White HIV centers within geographic accessibility and limited care and insurance support for PWH with disability appeared to have a higher risk of racial disparities in VS.

RESULTS

- The average VS rates increased from 75.01% in 2013 to 82.60% in 2020 across the 46 counties in SC.
- A decrease in racial disparity in VS ($P < 0.01$) was observed from 2013 to 2020 when measured by ID, Weighted ID, BWR, and Gini coefficient (Figure 1).
- Counties with higher ID and Gini coefficient were primarily found in the Pee Dee, Low Country, and Midlands in 2014, 2016, and 2018. However, by 2020, the Midlands region stood out with the highest ID and Gini coefficient values (Figure 2).
- When measured using Weighted ID and Gini coefficient, lower risk of racial disparities in VS was associated with more Ryan White HIV centers (β=-0.92, 95%CI: -1.49 to -0.39; β=-0.0046, 95%CI: -0.0075 to -0.002, respectively) and higher disability rates (β=-1.1, 95%CI: -1.67 to -0.27; β=-0.0055, 95%CI: -0.0083 to -0.0013, respectively).

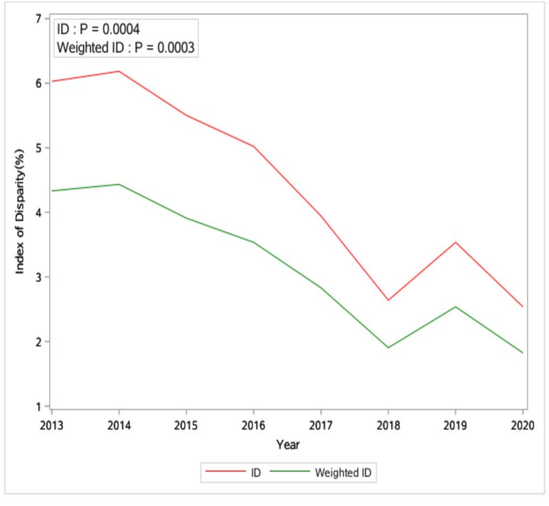


Figure 1 Temporal trend of Index of Disparity (ID) and Weighted version of the Index of Disparity (Weighted ID) from 2013 to 2020 in SC.

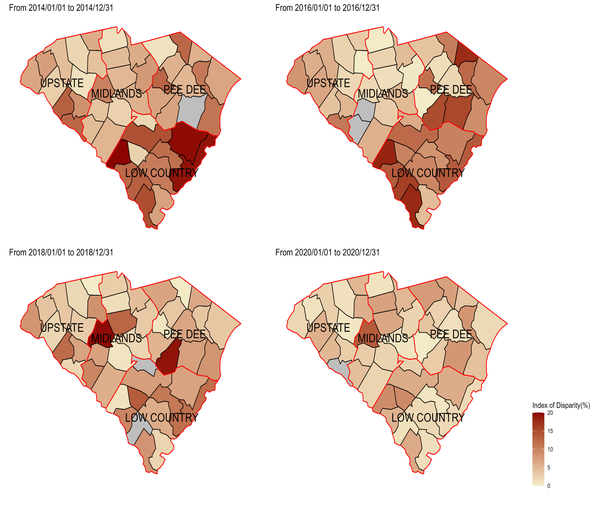


Figure 2 Geographic mapping of the index of disparity (ID) in SC in 2014, 2016, 2018, and 2020.

RESULTS (continued)

- When measured using ID, Weighted ID, and Gini coefficient, counties in Pee Dee region showed lower risk of racial disparities in VS (β=-3.89, -1.73, and -0.0086, respectively, P <0.05) compared with those in Lowcountry region.

CONCLUSIONS

- Our analysis offers a new look at trends in racial disparities in VS rates in SC spanning 10 years.
- A notable decrease in racial disparities in VS was observed among PWH in SC over time.
- Structural factors such as the presence of fewer Ryan White HIV centers within geographic accessibility and limited care and insurance support for PWH with disability may play a significant role in exacerbating these disparities, which underscores the importance of addressing social and structural factors that contribute to poorer HIV outcomes, particularly among marginalized populations.

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