Racial Disparities in Cochlear Implantation for Bilateral Sensorineural Hearing Loss

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Introduction

Cochlear implants (CIs) are a well-established treatment modality for moderate to profound bilateral sensorineural hearing loss (SNHL). Access to CIs may be limited by certain factors, such as race. Despite having a higher prevalence and more severe bilateral SNHL, data show that black patients are less likely to receive CIs than their white counterparts [1].

Reasons for these disparities are likely multifactorial and could be secondary to insufficient health insurance (or the lack thereof), transportation barriers, mistrust towards medical providers, and many more [2]. However, one study controlled for insurance status, income, and comorbidities, and the disparity persisted [3].

There is conflicting data regarding differences in hearing loss etiology between white and black patients. Rates of genetic causes and noise induced hearing loss appear to be similar among the two groups[4-5]. However, black patients were more likely to have hypertension and diabetes, which are risk factors for hearing loss [6].

This retrospective study aimed to investigate the impact of race on the likelihood of receiving CIs in patients residing in Southwest Tennessee with bilateral SNHL.

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Methods

- IRB approved retrospective analysis
- All patients in Southwest Tennessee (primarily Memphis) with bilateral SNHL diagnosed between 2014-2023
  - TriNetX Research Platform linked to the Clinical Trials Network of Tennessee EHR system
- **Exclusion Criteria**:
  - Race category other than Black or non-Hispanic White
  - Lack of treatment pathway
- **Cohorts**:
  - 252 white patients who received intervention included in the EHR network (HAs or CIs)
  - 210 black patients who received intervention included in the EHR network (HAs or CIs)

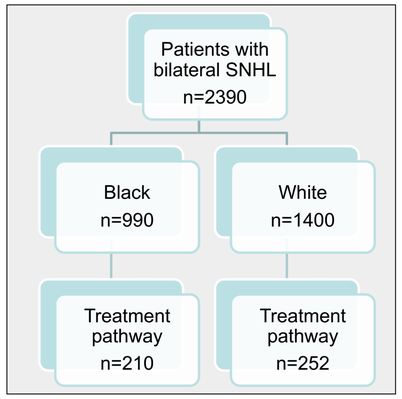

Figure 1. Flow diagram of patient selection

Results

	CI	HA	HA followed by CI
White (n=252)	162 (64.3%)	86 (34.1%)	9 (10%)
Black (n=210)	40 (19%)	167 (79.5%)	17 (10%)
P-value	**<.0001**	**<.0001**	0.95

*Table 1. Interventions received (CI, HA, HA followed by CI) in Black and White patients with bilateral SNHL. *Two sample proportion test was used to determine P-value*

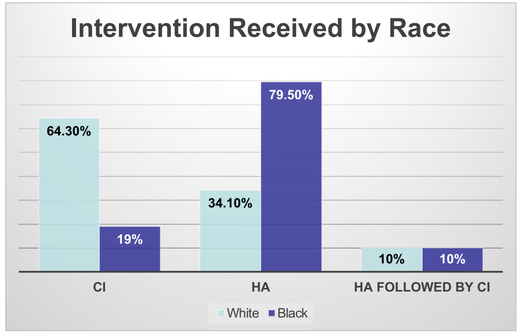

Figure 2. Graphical representation of intervention received (CI, HA, HA followed by CI) by race.

Conclusions

Consistent with existing literature, the results of this study indicate that Black patients are far less likely to receive CIs for the treatment of bilateral SNHL than White patients. Furthermore, the data suggests that Black patients are treated with HAs at a significantly higher rate than their White counterparts.

The study was limited by its retrospective design and the inability to obtain all pertinent patient information, a characteristic inherent to the TriNetX database. While specifics such as hearing loss severity was not controlled for, the data is still suggestive of a possible impact of race on treatment pathways in SNHL.

Although reasons for this disparity have been proposed, such as insufficient insurance, transportation and geographic barriers, cultural beliefs, etc., further research is required. Future directions for this data set will be to analyze the time elapsed from diagnosis to definitive treatment as well as the role of insurance status.

References

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