



Cochlear Implant Data Logging in Single Sided Deafness

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Introduction to Single Sided Deafness (SSD)



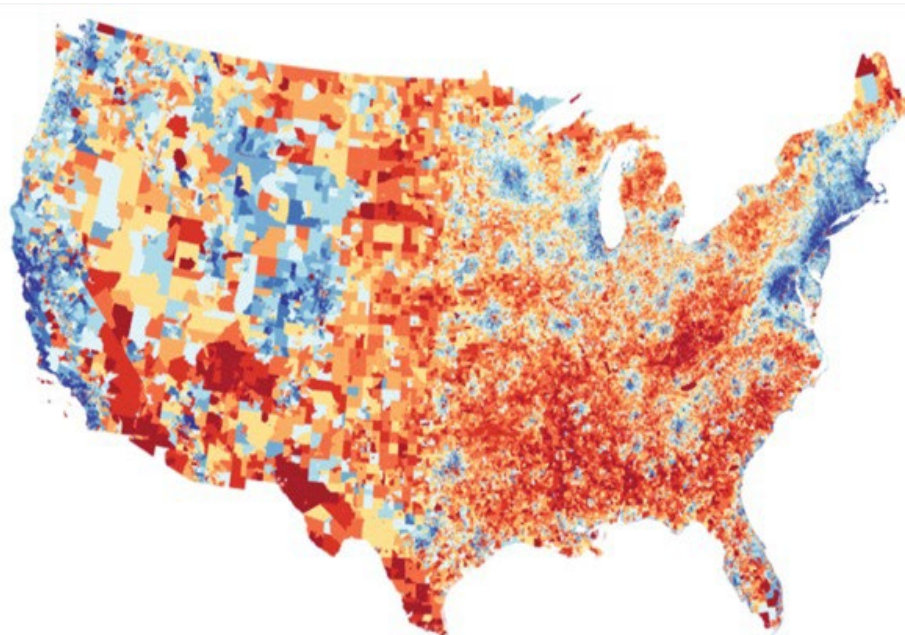
- Hearing loss is a prevalent sensory impairment that can have significant impact on patient lives and functionality.
- For the purposes of this study, SSD is defined as a better ear with a PTA less than 45 dB and word discrimination greater than 80% correct.

Cochlear Implants (CIs)



- Cochlear implants have emerged as a revolutionary solution to hearing loss.
- Cochlear implantation is the only method of restoring sound localization to SSD patients (Laszig et al., 2004) and can improve speech understanding in noise (Firszt et al., 2010)
- Cochlear implant (CIs) logs can provide insight into a patient's everyday environment and use time.

Introduction to Area Deprivation Index



- Social determinants of health are widely recognized as fundamental drivers of health inequities.
- The Area Deprivation Index is a tool that displays the relative socioeconomic conditions of neighborhoods using a measure called the Area Deprivation Index (ADI).
- The ADI is created from publicly-available data in the theoretical domains of income, education, employment and housing quality (Kind et. al, 2018).

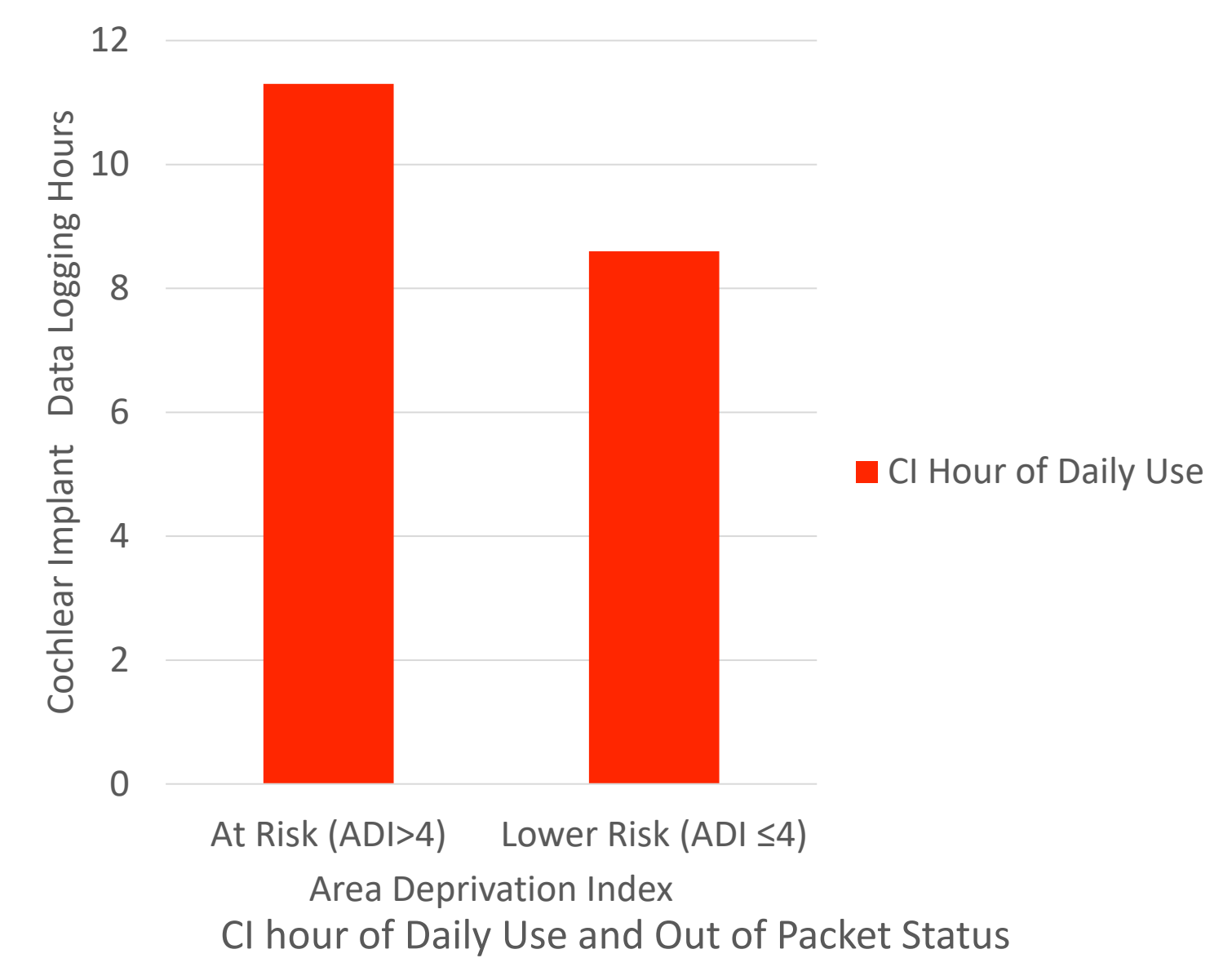
Methods

- A retrospective, observational study was conducted on series of patients with single sided deafness presenting January 2020-December 2023.
- A total of 22 adult patients with CI for single sided deafness (SSD) data logs were accessed and analyzed.
- Demographics and outcomes were collected, including ADI. ADI is scored from 1 (least disadvantaged) to 10 (most disadvantaged). Patients were stratified into more (ADI >4) and less (ADI ≤4) disadvantaged cohorts.

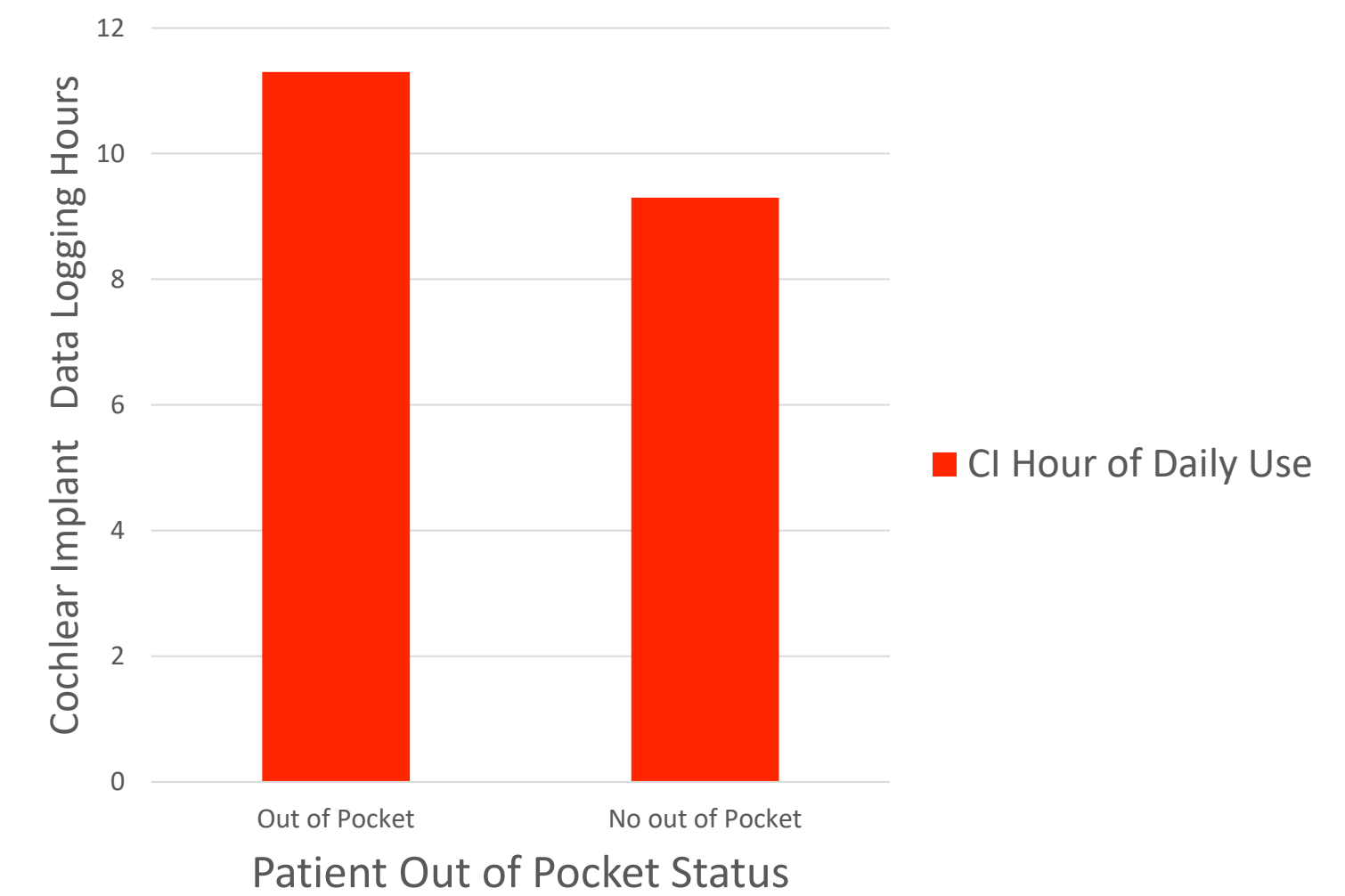
Results

- Univariate analysis indicated that maximum hours of data logging at one year is impacted by ADI ($p= 0.021$).
 - The average maximum hour in the data logs for at risk ADI scores (above 4) was 11.3 compared to 8.6 for lower risk ADI score (4 or lower).
- Patients who paid out of pocket had higher maximum hour data logging (11.3 hours) versus those who did not (9.3 hours) ($p=.46$)

CI Hour of Daily Use and Area Deprivation Index



CI hour of Daily Use and Out of Pocket Status



Discussion

- ADI can be a tool to inform health delivery and policy, especially for the most disadvantaged neighborhood groups.
- This is the first study to utilize ADI scores in patients with cochlear implants. These scores are important tools for addressing social inequalities and improving the well-being of disadvantaged communities.
- The findings of this study are important to consider as previous studies have demonstrated lower income groups have a lower likelihood of CI implantation (Quimby et. al) , but our cohort study on univariate analysis suggest those who receive a CI for SSD in disadvantaged neighborhoods have higher daily CI use.
- Although not statistically significant, paying out of pocket for CI may be associated with higher CI daily use.
- Limitations: This current project is limited by small study size.

Conclusion

- Our cohort study suggest those who receive a CI for SSD in disadvantaged neighborhoods have higher daily CI use.

References

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