

Developing a Predictive Algorithm for Identifying Infants at Risk of Intellectual Disability

Katelyn Ryu, 2024, Neuroscience

Telethon Kids Institute, Perth, Australia

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Introduction

- The Child Disability Team at Telethon Kids Institute investigates many different issues related to intellectual disability (ID) using link data with the goal of improving the lives of children with intellectual disability and their families.

Objective of Internship

- Learn new quantitative research methods
- Gain a better understanding of child intellectual disability risk factors using statistical data analysis

Work profile

- Read literature on the risk factors of ID and reviewed the population-linked data sets for familiarization with the project
- Used Stata to conduct data analysis (from data preparation to logistic regression)
- Attended weekly meetings

Reflection

- Using Stata, I analyzed Australian population data on children born 1983-2010 linked to their birth, antenatal and perinatal history, maternal hospitalization, and ID status.
- Using ICD codes, I prepared a data set on the children's mother's hospitalization history of interest (diabetes, hypertension, schizophrenia, etc.).
- After merging the different data sets, I conducted a logistic regression analysis for each risk factor and helped build a predictive model for intellectual disability.
- The results of the data analysis mostly aligned with previous literature and the systematic review.
- Some of the most significant risk factors for child intellectual disability were found to be male gender (especially for ASD+ID), low birth weight, maternal schizophrenia, advanced maternal age, lower socioeconomic status, etc.
- On the other hand, some factors like geographical remoteness did not seem to significantly increase the subsequent risk of intellectual disability.



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Conclusion

- Combinations of multiple risk factors (biological, social, genetic) can help predict children's likelihood of intellectual disability. A predictive algorithm based on these combinations can allow for early diagnosis and intervention to improve the children's lives.

Looking ahead

- This internship allowed me to develop my quantitative research skills and reinforced my interest and passion for child developmental disabilities.

Questions

- How might environmental factors affect the risk of ID in children, especially with modern environmental changes?
- What can be done in early intervention to improve the lives of children with ID?

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