

Interaction Between Intellectual Disability and Cerebral Palsy on the Co-Occurrence of Autism Spectrum Disorder and Epilepsy



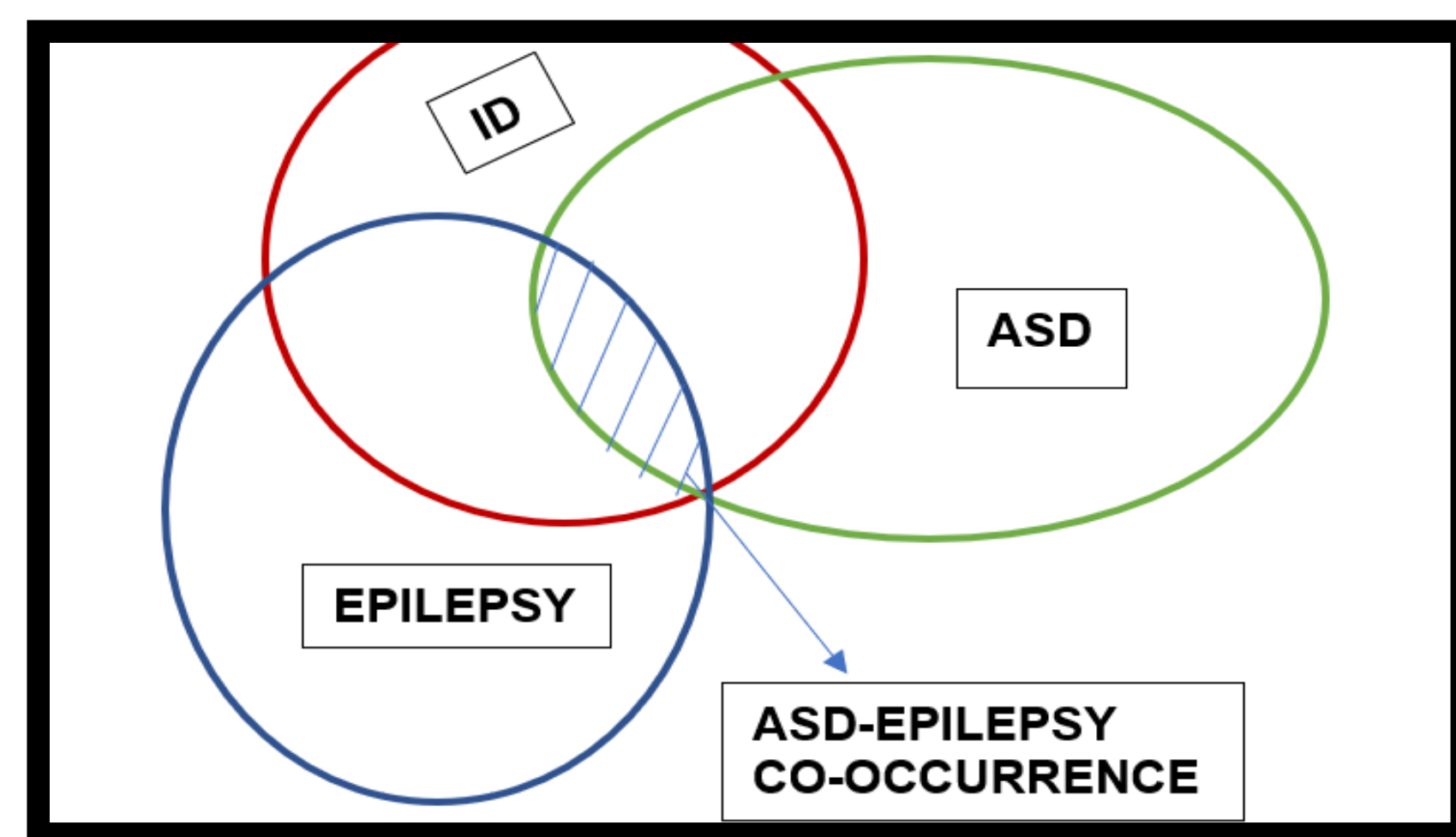
Public Health

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BACKGROUND

Intellectual disability (ID) is possibly a reason for the higher co-occurrence of Autism Spectrum Disorder (ASD) in children with epilepsy^(1,2,3). Cerebral Palsy (CP) has also been found to co-occur⁽⁴⁾ with ASD (6.9%-hypotonic, 18.4%-spastic subtype) and with epilepsy (41%). Given that intellectual disability is a significant predictor⁽¹⁾ of ASD-epilepsy co-occurrence, it is unclear if the co-occurrence varies by the presence of both, ID and CP.



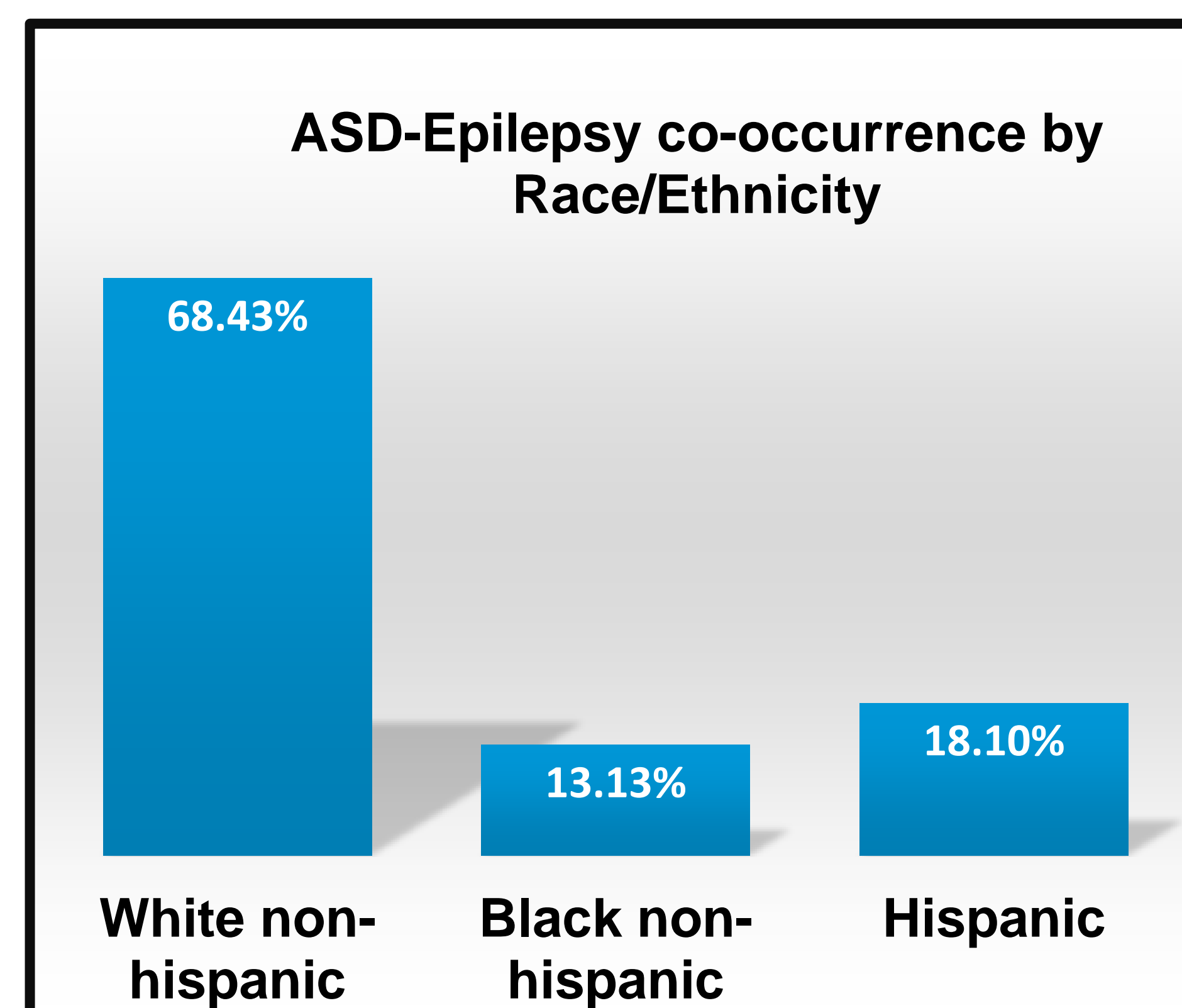
OBJECTIVE

To determine the effect modification of cerebral palsy on ASD-epilepsy co-occurrence among US children aged 2-17 years having intellectual disability.

METHODS

- Using 2016-2017 National Survey of Children's Health data (n=50,212), descriptive epidemiology of ASD-Epilepsy co-occurrence were produced across 4 age categories.
- Weighted multivariable logistic regression models assessed the association between ID and CP as independent variables and the co-occurrence of ASD-epilepsy as the dependent variable after controlling for age, race/ethnicity, sex, parental education, insurance coverage and poverty among US children between the ages of 2-17.
- Interaction between CP and ID was also evaluated and graphed.
- Statistical analyses incorporated design effects and were conducted using SAS 9.4.

RESULTS



- Overall prevalence of ASD-epilepsy co-occurrence was 16.37%.
- After adjustment, higher odds of co-occurrence were observed among intellectually disabled children compared to those without ID (POR=34.66; 95% CI, 22.58-53.221; p<0.05), males (POR=3.04; 95% CI, 2.29-4.03; p<0.05) and among children with CP compared to those without CP (POR=3.847; 95% CI, 1.083-13.673; p<0.05).
- Interaction between CP and ID on ASD-epilepsy co-occurrence was found to be synergistic (p<0.0001).

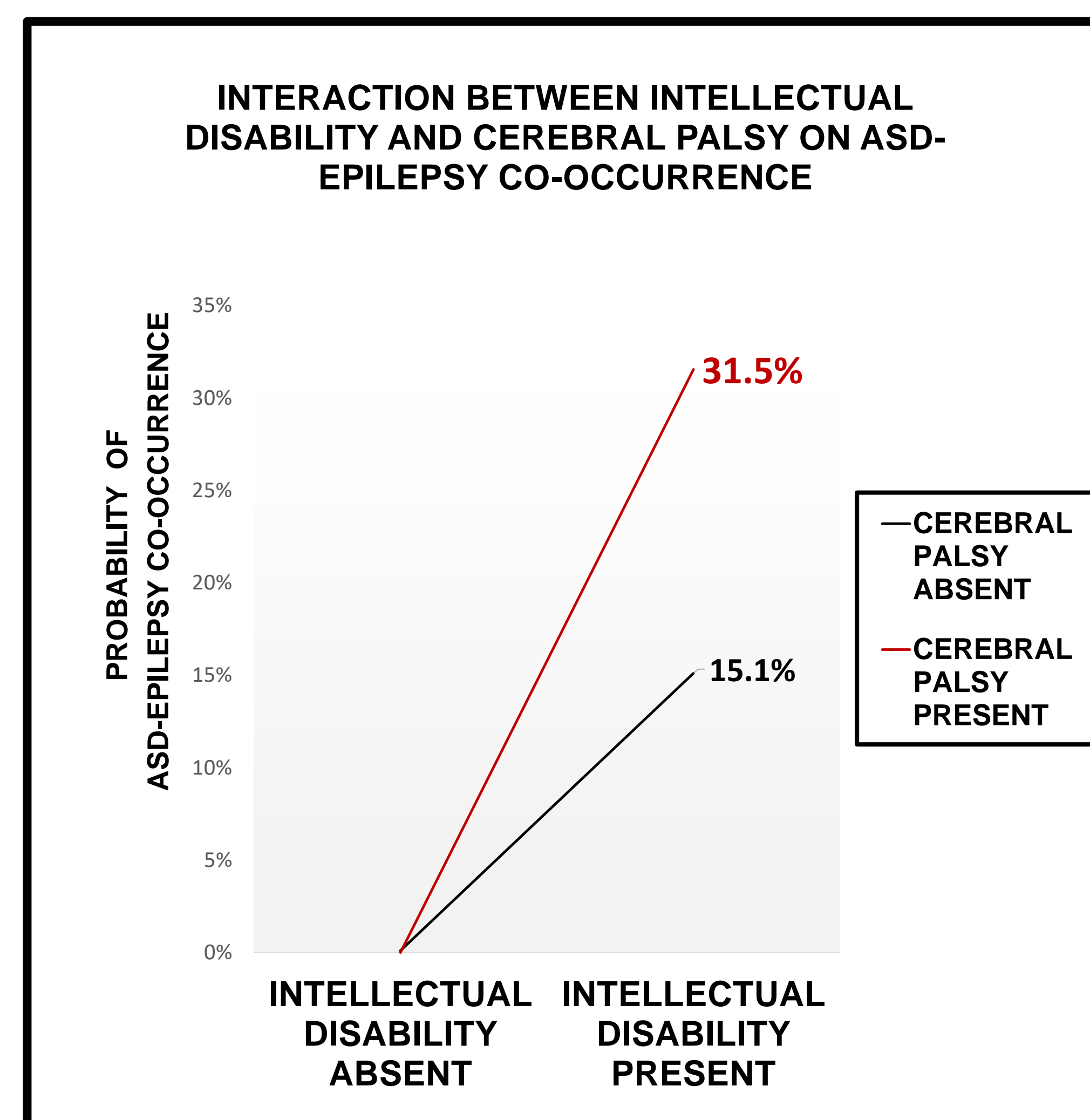
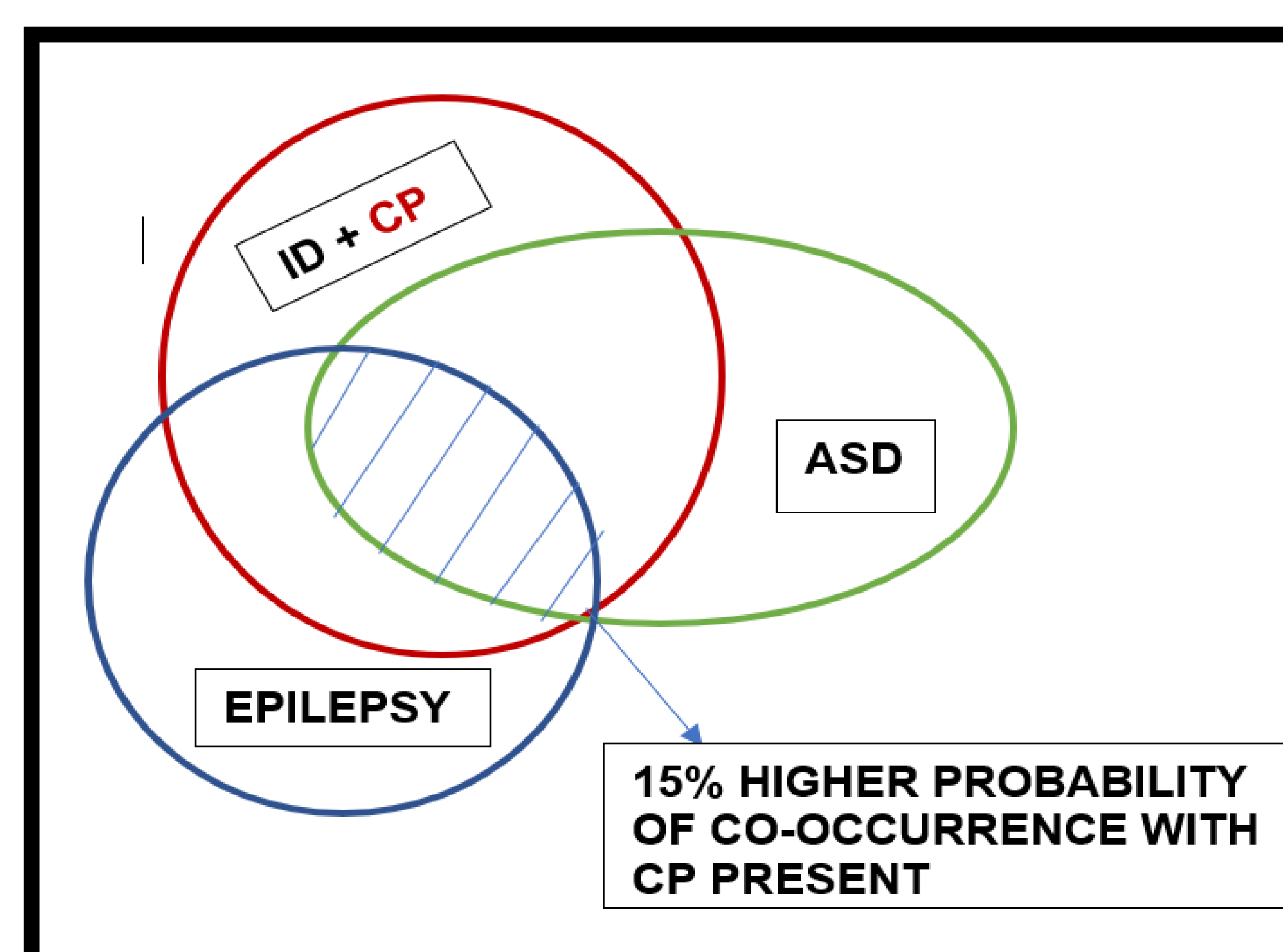


Table 1: Univariable association between demographic variables, predictors and ASD-epilepsy co-occurrence

Variable	Adjusted POR	95% Confidence Limits	
Age			
2-5 years	1.12	0.71	1.75
6-9 years	1.19	0.86	1.64
10-14 years	1.17	0.89	1.54
15-17 years	1.00	Reference	
Sex			
Male	3.04	2.29	4.03
Female	1.00	Reference	
Race/Ethnicity			
White Non-Hispanic	1.13	0.84	1.53
Black Non-Hispanic	0.99	0.57	1.70
Hispanic	1.00	Reference	
Intellectual Disability (ID)			
ID Present	34.66	22.58	53.22
ID Absent	1.00	Reference	
Cerebral Palsy (CP)			
CP Present	3.84	1.08	13.67
CP Absent	1.00	Reference	
Parental Education:			
High school or Less	1.17	0.91	1.49
More than High school	1.00	Reference	
Federal Poverty Level (FPL):			
0-199% FPL	1.11	0.84	1.47
>200% FPL	1.00	Reference	
Insurance			
Uninsured	0.55	0.42	0.71
Insured	1.00	Reference	



CONCLUSION

- Considering the higher probability of ASD-epilepsy co-occurrence, management of neurologic and psychiatric conditions comorbid with cerebral palsy requires special attention. Further research into such interaction is required to understand the association and contribute to evidence-based guidelines for the management of cerebral palsy.
- Awareness of the co-occurrence and education about ASD and epilepsy must be provided to the immediate care givers of children with cerebral palsy. Additional information about the trigger factors of epilepsy with initial management steps are helpful.

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