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# Characterization of Alzheimer's Disease in South Asians: Analysis of cardiovascular disease prevalence as a risk factor

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**Background.** Alzheimer's Disease (AD), a growing public health issue affecting an estimated 6.7 million Americans, is characterized by a slow progressive decline in cognition. While there is extensive research focused on Non-Hispanic European populations, data is limited on underrepresented minorities, particularly South Asians. This study aims to analyze cardiovascular disease prevalence as a risk factor in relation to AD in South Asians.

**Methods.** The National Alzheimer's Coordinating Center (NACC) Uniform Data Set was utilized for this study. The study sample consists of 47,165 participants, including 66 South Asian individuals, which represents 0.1% of the total population selected for the study. The data was filtered to include the first visits of participants, and a characterization code was implemented to clearly define and recode participants into ethnic groups based on the primary language spoken. Multinomial logistic regression and cross tabulation analysis were done on Statistical Package for the Social Sciences (SPSS).

**Results.** The outcome variable used for all analyses was the presence or lack of cognitive impairment/AD. The independent predictor variables included the presence or absence of cardiovascular disease, with two levels where the absence of cardiovascular disease was considered the reference level, and ethnic groups, with 16 different levels/ethnic groups. The reference category for the multinomial logistic regression was no cognitive impairment. The results from the multinomial logistic regression indicated that there is a significant difference among Middle Eastern (p=0.036) & OR-4.137 (95% CI: 1.095 – 15.628), South Asian (p=0.015) & OR- 4.497 (95% CI: 1.335 – 15.142), Hispanic White Spanish Speaker (0.007) & OR- 3.745 (95% CI: 1.445 – 9.706), and Afro-Hispanic English Speaker (p=0.005) & OR- 0.497 (95% CI: 0.124 – 1.988) populations in association with severe cognitive impairment prevalence. The crosstabulation analysis results indicated that cognitive impairment is 7.5% higher in South Asians who have a history of cardiovascular disease compared to Non-South Asians.

**Conclusion.** The results of this study could have been significantly enhanced and accurate with a more ethnically diverse group of participants, particularly from under-researched ethnic groups such as South Asians. The confidence intervals were similarly too wide due to the limited sample size. Future research should be focused on procuring a diverse sample of individuals and including specific markers for ethnicity, cultural lifestyle, and socio-economic information. It should also aim to understand the overlap between cardiovascular risk factors and cognitive impairment across ethnic groups, particularly in those whose primary language is not English. Understanding the interplay of both environmental, genetic, and social factors in the progression and diagnosis of Alzheimer's disease can help facilitate the development of precision medicine.