Apolipoprotein E genotype, cognitive performance, and dementia in Hispanic populations.

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Introduction

Dementia in Hispanic populations:

- Higher incidence of Late onset Alzheimer Disease (LOAD) than in Non-Hispanic whites.
- It is unclear the effect of identified risk genes (e.g, ApoE4) in LOAD in Hispanics.
- APOE-ε4 allele is the most significant genetic risk factor for late-onset Alzheimer disease (AD).

The magnitude of the association between the APOE-ε4 allele, AD, and cognitive decline has been shown to be stronger in populations of European descent relative to populations of African descent.

These associations have been understudied in more admixed populations, including Latin American (LatAm) populations.

Objective

1.To determine the associations between ApoE-ε4, cognitive performance, and dementia prevalence in Hispanic population.

2.To examine the effects of admixture as a modifier of the relation between ApoE-ε4, Dementia in Hispanic population.

6,075 older adults from LatAm (Cuba, Dominican Republic [DR], Puerto Rico [PR], and Venezuela) drawn from the 10/66 Dementia Research Group study.

Methods and Materials

Participants: Population based cohort recruited **(**65-year-old **)**, using a door-to-door strategy, followed by an incidence wave (4.5 years after cohort Inception). Assessment included:

- ❖ Structured interview/Physical
- ❖ Behavior and lifestyles
- ❖ Cognitive Performance

- Dementia diagnosis was established using the previously validated 10/66 diagnostic algorithm and DSM-IV criteria.
- ApoE genotype was available for Cuba, Dominican Republic, Puerto Rico and Venezuela.
- Individual measures of ancestry were available for Cuba, Dominican Republic. Genetic admixture was determined using 60 ancestry informative SNPs.
- Multivariable regressions were used to determine the associations between ApoE4 and dementia.

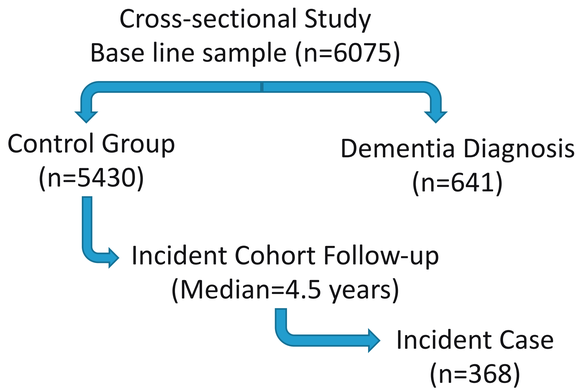
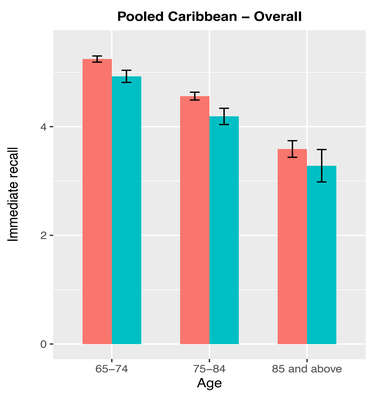


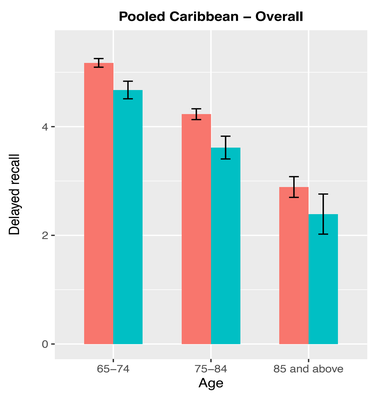
Figure 1. 10/66 Cohort baseline and follow-up.

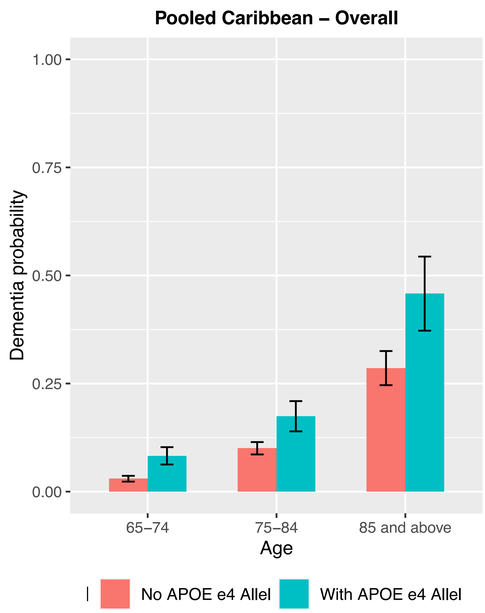
Results

Table 1. Distribution of APOE Genotype and APOE allele frequency by site

		DR n=1059	Venezuela n=1028	Cuba N=2520	Puerto Rico N=1468
# of APOE e4 alleles.	0	811 (78.9)	716 (67.6)	2104(83.5)	1117(76.0)
	1	197 (19.2)	318 (30.0)	379 (15.0)	322(22.0)
	2	20 (1.9)	25 (2.4)	37 (1.5)	29(2.0)
Any APOE e4 allele		217 (21.1)	343 (32.4)	416 (16.5)	351(24.0)







Results (Cont…)

Table 2. Associations of APOE genotype with dementia prevalence pooling data across sites.

Genotype	Dementia prevalence(%)	Adjusted† PR (95% CI)
e2/e2	1/15 (6.7)	0.98 (0.18-5.31)
e2/e3	41/466 (8.8)	1.07 (0.78-1.47)
e3/e3	256/3105 (8.2)	1.00 (ref)
e2/e4	14/73 (19.2)	2.04 (1.27-3.29)
e3/e4	128/808(15.8)	1.94 (1.59-2.36)
e4/e4	19/81 (23.5)	3.29 (2.14-5.07)

† Adjusted for age, sex and level of education, PR: Prevalence Ratio

Conclusions

- Compared to previous reports in European descent populations the effect of APOE-ε4 is attenuated in Caribbean origin populations. Higher African ancestry may moderate the effect of APOE-ε4 but will require further confirmation using larger samples.
- African admixture, controlled for age, sex and education, was not associated with the prevalence of dementia or cognitive performance.

Future Directions

- Develop better ways of defining and accurately measuring “ethnicity” in the context of Health and Social Disparities.
- Effects of admixture and ApoE genotype on cognitive decline rate and median survival in patients with AD?
- Effects of admixture on atrophy rate and other biomarkers?

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