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EPIDEMIOLOGY

Cognitive Change in a Diverse Group of Individuals Aged 90+:
The LifeAfter90 Study

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Abstract

Background: The oldest-old are the fastest growing segment of the elderly population but very little is known about cognition in this age group; particularly in diverse populations. Our goal was to evaluate if domain specific cognitive change was different across different ethnoracial groups in those aged 90+.

Method: LifeAfter90 (LA90) is an ongoing cohort of participants aged 90+ who are long-term members of Kaiser Permanente Northern California participants. Participants (n = 984) were interviewed every 6 months for up to 3.5 years (1-7 visits). Executive Function (EF) and Verbal Episodic Memory (VEM) were measured every six months using z-standardized Spanish English Neuropsychological Assessment Scale. Racial/ethnic identify (Asian, Black, Latino, or White participants) was used in linear mixed models with random slopes and intercepts adjusting for baseline age, gender, education, interview mode, and practice effects.

Result: Participants were 20% Latino, 23% Black, 24% Asian, 27% White, and 7% other individuals with a mean age of 92.4 (SD = 2.3) and a mean follow up time 1.1 years (Table 1). 39% of the cohort were men, 35% were college educated, and 29% were high school or less educated. Average annual change in EF was -0.06 (95% CI: -0.12, -0.00). Stratified models with Latino as the reference group showed White participants had significantly greater decline in EF ($\beta = -0.13$; 95%CI:-0.20,-0.06), followed by Asian participants ($\beta = -0.09$; 95%CI:-0.17,-0.01). EF scores among Black participants and participants who identified as other declined at a similar rate as Latino participants ($\beta = -0.03$; 95%CI:-0.11,-0.05; $\beta = 0.00$; 95%CI:-0.10, 0.11; respectively) (Table 2: model 2). VEM had an annual change of -0.26 (95%CI: -0.40, -0.13), but there were no significant differences across ethnoracial groups in rate of decline.

Conclusion: In this population of individuals aged 90+, decline in EF over the study period varied across ethnoracial group with White participants experiencing the fastest decline and Black, Latino, and other participants experiencing the slowest decline. Continued follow up will identify if there are differences in risk of cognitive impairment in this diverse population of oldest-old. The results suggest the disparities in cognitive aging for those aged 90+ don't mirror disparities seen in younger-elderly ages.

Table 1: Characteristics of Participants Stratified by Race/Ethnicity at baseline in the LifeAfter90 Study

Characteristics	Overall (n=984)		Black (n=225)		Asian (n=233)		White (n=266)		Latino (n=192)		Other (n=68)	
	n	%/Mean (SD)	n	%/ Mean (SD)	n	%/ Mean (SD)	n	%/ Mean (SD)	n	%/ Mean (SD)	n	%/ Mean (SD)
Age (years)*	984	92.4 (2.3)	225	92.4 (2.6)	233	92.0 (1.9)	226	92.7 (2.4)	192	92.7 (2.4)	68	92.3 (2.1)
Female Sex*	603	61	151	69	127	54	155	59	122	65	48	70
Education*												
High School/GED or less	287	29	66	29	39	17	66	25	95	50	21	31
Some College or tech/trade	349	36	98	44	84	36	73	28	65	34	29	43
College or higher	344	35	60	27	110	47	126	48	31	16	17	25
Phone Interview*			65	29	77	33	47	18	64	33	6	9

*Differed by race with p-value<0.05

Table 2: Longitudinal Association of Race/Ethnicity and Spanish English Neuropsychological Assessment Scales (SENAS) in LifeAfter90 Study

Models	Cognitive Domains	
	Executive Function (95% CI)	Verbal Episodic Memory (95% CI)
Model 1^a		
Black*Yrs Since Baseline	-0.03 (-0.10, 0.05)	-0.03 (-0.19, 0.14)
Asian*Yrs Since Baseline	-0.09 (-0.17, -0.01)	-0.10 (-0.26, 0.07)
White*Yrs Since Baseline	-0.13 (-0.20, -0.06)	0.00 (-0.15, 0.15)
Other*Yrs Since Baseline	0.00 (-0.10, 0.10)	0.17 (-0.05, 0.39)
Latino* Yrs Since Baseline (ref)	0.00	0.00
Model 2^b		
Black*Yrs Since Baseline	-0.03 (-0.10, 0.05)	-0.04 (-0.19, 0.13)
Asian*Yrs Since Baseline	-0.09 (-0.17, -0.01)	-0.10 (-0.27, 0.07)
White*Yrs Since Baseline	-0.13 (-0.20, -0.06)	-0.01 (-0.16, 0.14)
Other*Yrs Since Baseline	0.00 (-0.10, 0.11)	0.16 (-0.06, 0.38)
Latino* Yrs Since Baseline (ref)	0.00	0.00

Note. CI: Confidence Interval

a. Model 1 was adjusted for baseline age and practice effects

b. Model 2 was additionally adjusted for gender, education, interview mode

Bold p-value < 0.05