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EPIDEMIOLOGY

Memory Concerns and Cognitive Change in a Diverse Cohort of Oldest Old Individuals: LifeAfter90 Study

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Abstract

Background: Whether subjective evaluations of cognition can accurately predict cognitive decline is not well understood in ethnically diverse populations nor oldest-old. In a multi-ethnic cohort of adults aged 90+, we aim to investigate the association between self-perceived memory concerns and objectively measured cognitive change.

Method: LifeAfter90 is an active longitudinal cohort study of Kaiser Permanente Northern California members ages 90+ with no prior dementia diagnosis. Verbal episodic memory (VEM) and executive function (EF) were assessed every 6 months between July 2018 and March 2022 using the Spanish and English Neuropsychological Assessment Scales (SENAS). At baseline, participants answered the question "Are you concerned that you have a memory or other thinking problem?" We evaluated associations between memory concerns and domain-specific cognition at baseline and over time using linear mixed models with random intercepts and slopes, adjusted for baseline age, sex, race/ethnicity, education, interview mode (in-person or phone), and practice effects. Sensitivity analyses stratified by 1) gender and 2) age (+/- 95 years).

Result: At baseline, participants (n = 975) had a mean age of 92.4 (SD = 2.3) years, 61% were women, 73% were racial/ethnic minorities, and 36% reported memory concerns (Table 1). Memory concerns were associated with worse baseline VEM (b = -0.17, 95% CI -0.27,-0.07; Table 2) and EF (b = -0.08, 95% CI -0.15,-0.01; Table 3), but not associated with rate of change for either domain. When stratified by gender, both men and women with memory concerns had worse baseline VEM (b = -0.21, 95% CI -0.36,-0.06 and b = -0.15, 95% CI -0.27,-0.02, respectively; Table 2). Additionally, men with memory concerns had worse baseline EF (b = -0.19; 95% CI -0.30,-0.08; Table 3). Among participants younger than 95 years, memory concerns were associated with worse baseline VEM (b = -0.15, 95% CI -0.25,-0.04; Table 2) and EF (b = -0.10, 95% CI -0.17,-0.02; Table 3).

Conclusion: In this diverse cohort of oldest-old, those with subjective memory concerns had worse baseline VEM and EF. Although memory concern may suggest objective cognitive impairment, it is not associated with decline over the short term; (an average follow up time of 1.05 years). Additional follow up will identify how changes in memory concerns may be associated with cognitive change.

Table 1. Baseline Characteristics of Participants by Self-reported Memory Concerns in *LifeAfter90*

Characteristic	Overall (N=975)	No memory concerns (N=621)	Memory concerns (N=354)
Average age, N (SD)	92.4 (2.3)	92.3 (2.2)	92.6 (2.5)
< 95 years of age, N (%)	831 (85.2)	529 (85.2)	302 (85.3)
Female, N (%)	597 (61.2)	367 (59.1)	230 (65.0)
< College, N (%)	635 (65.1)	409 (65.9)	226 (63.8)
Race/ethnicity, N (%)			
Asian	233 (23.9)	143 (23.0)	90 (25.4)
Black	224 (23.0)	152 (24.5)	72 (20.3)
Hispanic/Latino	192 (19.7)	122 (19.7)	70 (19.8)
White	264 (27.1)	161 (25.9)	103 (29.1)
Other	62 (6.4)	43 (6.9)	19 (5.4)
Interviewed by phone, N (%)	259 (26.6)	187 (30.1)	72 (20.3)

Table 2. Association between Self-reported Memory Concerns and Verbal Episodic Memory (VEM) SENAS Cognitive Scores

	Overall		Gender				Age Group at Baseline			
			Female		Male		Below 95		95 and above	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI	β	95% CI
Memory concerns	**-0.17**	**-0.27, -0.07**	**-0.15**	**-0.27, -0.02**	**-0.21**	**-0.36, -0.06**	**-0.15**	**-0.25, -0.04**	-0.25	-0.49, 0.001
Memory concerns * Time	-0.01	-0.08, 0.05	-0.02	-0.10, 0.07	-0.01	-0.12, 0.09	-0.03	-0.11, 0.04	0.08	-0.07, 0.22

Estimates are from linear mixed models adjusting for age at baseline, sex, education (< college, ≥ college), race/ethnicity (White, Hispanic/Latino, Black, Asian, other/multiracial), interview by phone or in-person, and practice effects (offset).
Abbreviations: SENAS = Spanish and English Neuropsychological Assessment Scales

Table 3. Association between Self-reported Memory Concerns and Executive Function (EF) SENAS Cognitive Scores

	Overall		Gender				Age Group at Baseline			
			Female		Male		Below 95		95 and above	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI	β	95% CI
Memory concerns	**-0.08**	**-0.15, -0.01**	-0.01	-0.09. 0.07	**-0.19**	**-0.30, -0.08**	**-0.10**	**-0.17, -0.02**	0.01	-0.16, 0.17
Memory concerns * Time	0.02	-0.02, 0.06	0.01	-0.04, 0.06	0.03	-0.04, 0.11	0.03	-0.02, 0.08	-0.04	-0.13, 0.06

Estimates are from linear mixed models adjusting for age at baseline, sex, education (< college, ≥ college), race/ethnicity (White, Hispanic/Latino, Black, Asian, other/multiracial), interview by phone or in-person, and practice effects (offset).
Abbreviations: SENAS = Spanish and English Neuropsychological Assessment Scales