



Study of Latinos - Investigation of Neurocognitive Aging

Diabetes and plasma biomarkers: Results from the Study of Latinos – Investigations of Neurocognitive Aging (SOL-INCA) study.

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INTRODUCTION

➤ **Background:** Hispanic/Latino individuals are the largest minority group in the US and have twice-fold risk of developing Alzheimer’s Disease and Related Dementias (ADRDs) compared to non-Hispanic whites. Diabetes has been linked to increased risk of stroke and dementia, however fluid biomarkers such as neurofilament light chain (NfL), phosphorylated tau-181 (ptau-181), and glial fibrillary acidic protein (GFAP) remain understudied. It is also unclear how these biomarkers change over time in individuals with diabetes, which could be useful for early detection and predicting ADRD risk. **Objectives:** Examine the associations of diabetes with changes in plasma biomarker concentrations over 7 years.

METHODS

➤ **Data:** Data from the Hispanic Community Health Study-SOL (HCHS/SOL) and the ancillary Study of Latinos-Investigations of Neurocognitive Aging (SOL-INCA) were used. Plasma concentrations (SIMOA) were determined from fasting blood draws collected at Visits 1 (2008-2011) and 2 (2014-2017) among SOL-INCA individuals.

➤ **Sample:** N=6,264 participants ages 50+ **Exposure:** Diabetes status at visit 1.

➤ **Covariates:** Age, sex, background, education, testing center, body mass index (BMI), physical activity, kidney function

➤ **Outcome:** Plasma ptau-181, NfL, GFAP were included. We first estimated the top quartiles of plasma concentrations (as indicators of elevated risk) at Visits 1 and 2 and grouped individuals into stable/improved, transitioned to high-risk (high risk at visit 2) and consistently high-risk (high risk at both visits).

METHODS (cont’d)

➤ **Statistical analysis:** We used multinomial logistic regression models to estimate association between our exposure (diabetes) and outcome (risk group) and adjusted for confounders.

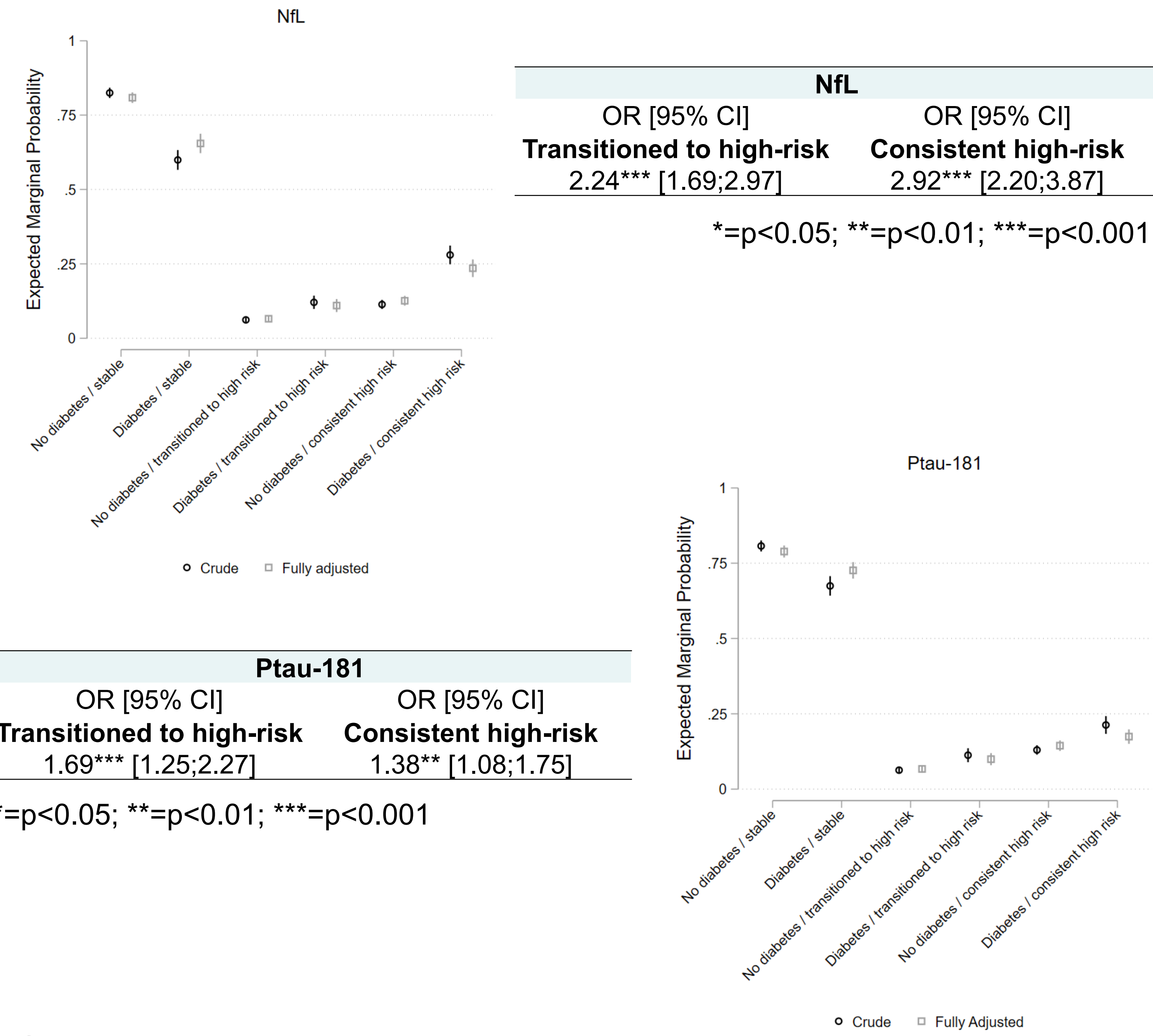
Descriptives

	No Diabetes	Diabetes	Total	P-value
N	4529	1735	6264	
%	71.3	28.7	100	
BMI mean (SD)	29.06 (5.14)	31.47 (5.65)	29.75 (5.41)	P<0.001
Age	61.24 (7.85)	65.13 (8.12)	62.36 (8.12)	P<0.001
Women % (SE)	54.24 (1.07)	55.40 (1.79)	54.57 (0.85)	P=0.603
Testing Center				
Bronx	26.48 (1.56)	29.28 (2.19)	27.28 (1.51)	P=0.174
Chicago	12.09 (0.87)	13.91 (1.33)	12.61 (0.86)	
Miami	37.05 (2.33)	33.90 (2.96)	36.15 (2.30)	
San Diego	24.39 (1.78)	22.90 (1.99)	23.96 (1.65)	
Physical Activity				
Inactive	23.70 (1.00)	28.92 (1.65)	25.20 (0.88)	P<0.001
Low Activity	13.75 (0.83)	18.70 (1.63)	15.17 (0.73)	
Medium Activity	11.08 (0.68)	13.46 (1.20)	11.76 (0.60)	
High Activity	51.47 (1.18)	38.92 (1.74)	47.87 (0.96)	
Hispanic/Latino background				
Dominican	9.37 (0.75)	9.71 (1.16)	9.47 (0.76)	P=0.226
Central American	12.90 (0.78)	11.15 (1.08)	12.40 (0.71)	
Cubans	26.30 (1.96)	24.37 (2.67)	25.75 (1.91)	
Mexican	33.20 (1.79)	32.87 (2.18)	33.10 (1.68)	
Puerto Rican	14.35 (0.87)	18.10 (1.39)	15.43 (0.83)	
South American	3.89 (0.55)	3.79 (0.81)	3.86 (0.45)	

Note: individuals that met criteria for prediabetes were placed in the no diabetes group

RESULTS

Diabetes is associated with increased odds of transitioning to high risk or placing consistently in high risk in NfL and ptau, but not GFAP



Conclusions

➤ Diabetes was associated with both transitioning to and persistently elevated risk of biomarkers reflective of neurodegeneration.

➤ Increased diabetes testing and treatment could be useful for lowering or slowing the accumulation of such biomarkers.

Next steps:

➤ Examine longitudinal associations using an expanded NULISA battery.



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Funded by:
National Institute on Aging (R01-AG048642, R01-AG075758)

NIH National Institute on Aging

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