

Cogpred: Web Tools For Predicting Risk Of Cognitive Impairment In Cognitively Normal Older Adults.

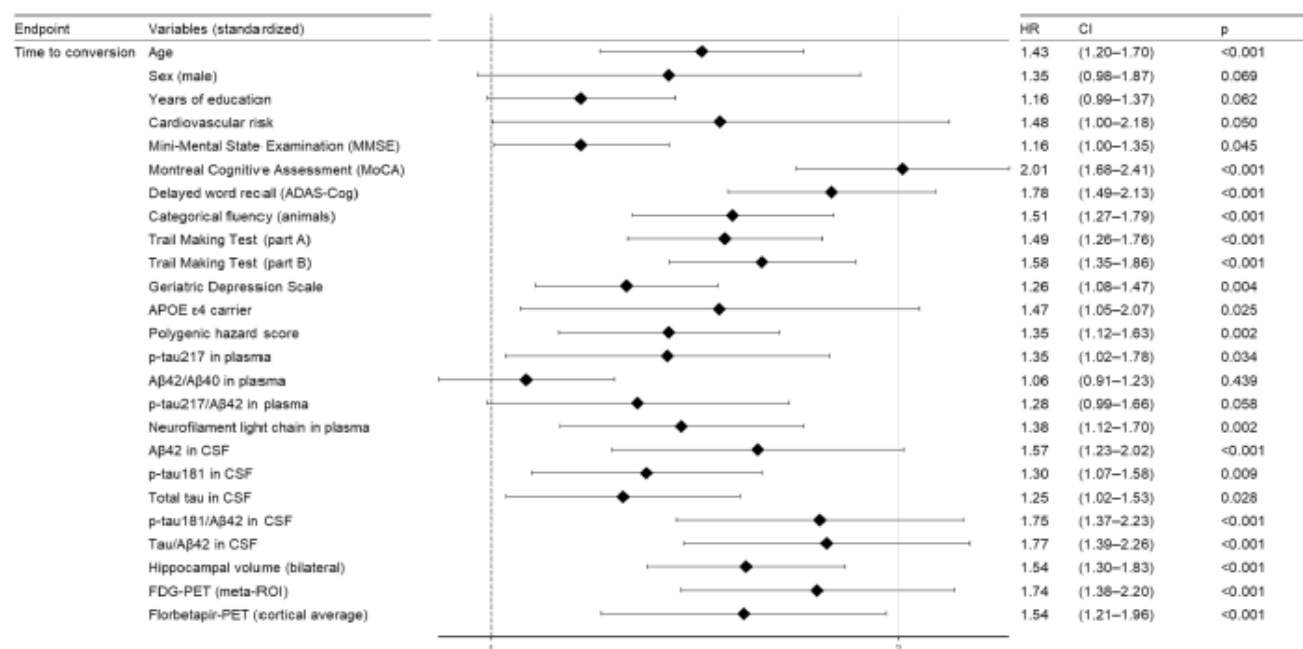
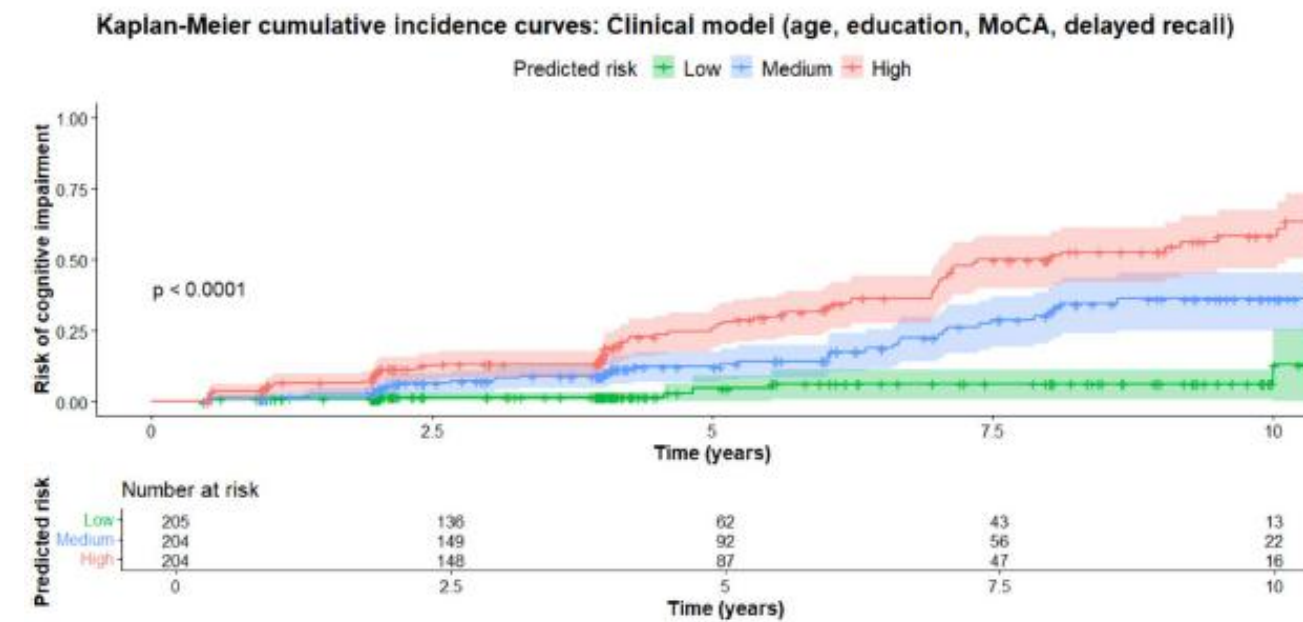
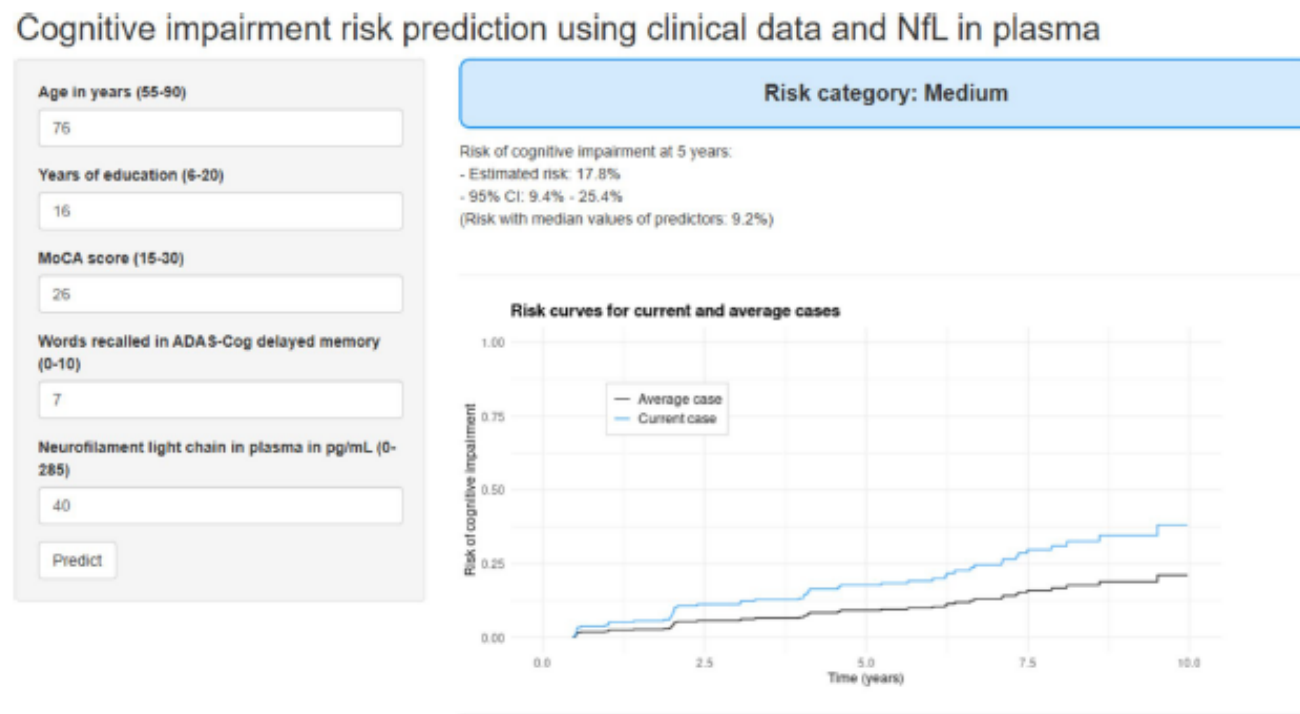
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Sofía Urtasun Galmés¹, Jimmy Santiago Ulloa Bravo¹, Rafael Villino-Rodríguez¹, Genoveva Montoya-Murillo¹, María Cruz Rodríguez-Oroz^{1,2}, Mario Riverol^{1,2}, Adolfo Jiménez-Huete¹

¹ Neurology Department, Clínica Universidad de Navarra (Madrid and Pamplona, Spain).

² Navarra Institute for Health Research (IdisNA), Pamplona, Spain.

- Cogpred apps predict future impairment risk in cognitively normal adults. Enables earlier identification of high risk individuals.
- It uses a web-based, individualized risk prediction model.
- It combines demographic, cognitive, clinical and genetic information.
- Not a diagnostic tool-estimates risk to support clinical decision making.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	
Early identification of individuals at high risk of cognitive impairment is crucial for timely intervention. We developed and validated a series of predictive models, implemented as five web-based tools, to estimate long-term risk of cognitive impairment in cognitively normal older adults.	Using the ADNI database (n = 729), we fitted Cox proportional hazards models incorporating demographic, neuropsychological, genetic, neuroimaging, and fluid biomarker (plasma and CSF) variables. Model performance was evaluated using the C-index and calibration slope. Internal validation was performed via bootstrap resampling, and key models were externally validated using the HABS cohort (n = 287).	A clinical model including age, education, MoCA, and delayed recall demonstrated good discrimination (C-index: 0.721; 95% CI: 0.672-0.772) and excellent calibration (slope: 0.940). Adding genetic, fluid biomarker, and neuroimaging measures modestly increased discrimination, with the highest C-index observed for a model incorporating FDG and florbetapir PET uptake (C-index: 0.805; 95% CI: 0.759-0.886).	Performance was consistent across internal validation and, for key models, external validation. We deployed five web-based CogPred apps to provide easy access to 5-year risk estimates and 10-year survival curves using the clinical model and the models incorporating either hippocampal volume, plasma NfL, CSF tau/Aβ42 ratio or PET measures.	CogPred apps are user-friendly tools for individualized prediction of cognitive impairment risk in cognitively normal older adults. These tools may support early detection and targeted interventions in both research and clinical settings.
				CONTACT Sofía Urtasun Clínica Universidad de Navarra surtasungalmes@unav.es ALZHEIMER'S ASSOCIATION AAIC 26