ARE INFECTIONS THE MISSING ELEMENTS IN PREDICTING ALZHEIMER'S DISEASE

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WITH AN ODD RATIO SIMILAR TO APOE, SOME COMBINATION OF RISK FACTORS, LIKE INFECTIONS, SHOULD BE INCLUDED IN PREDICTION MODELS FOR ALZHEIMER'S DISEASE

BACKGROUND

- Some combinations of risk factors increase the risk of Alzheimer's disease (AD).
- Co-infection with herpes simplex virus and cytomegalovirus (OR: 5.662 95% CI 1.606-19.96)[1] produce an OR in the range of APOE (Ɛ3/Ɛ4 OR:3.55 95% CI 3.17-3.98 AND Ɛ4/Ɛ4 OR: 10.70 95% CI 9.12-12.56)[2] but is generally not included in models.
- GOAL: A systematic review of dementia risk models with a special focus on infection as a predictor of AD.
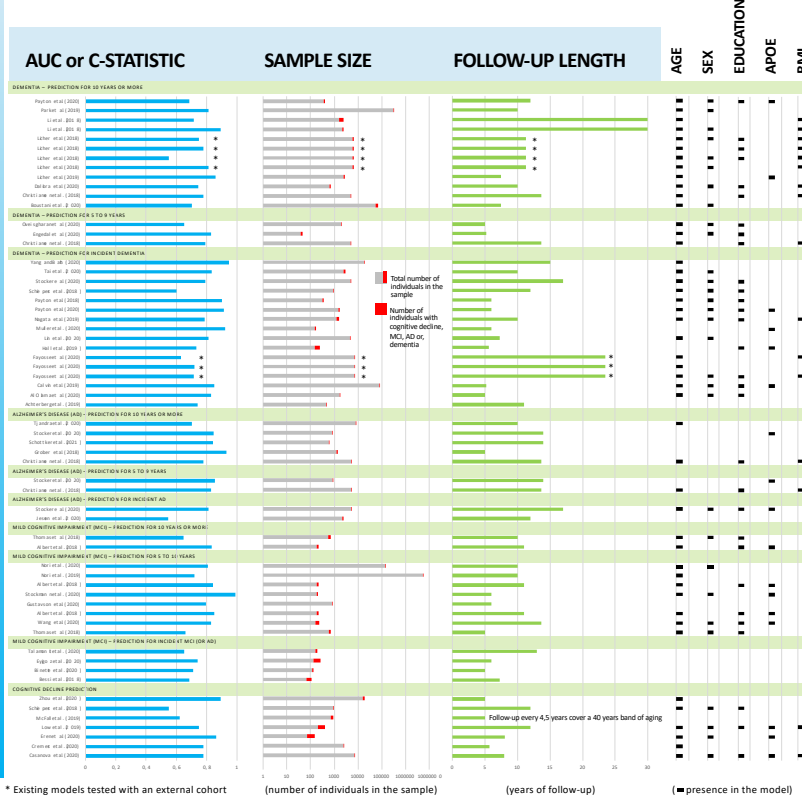
METHODS

- Using the same strategy employed in previous reviews [3,4,5], we perform a systematic review of the literature, published between January 2018 to May 2021, for the prediction of AD in cognitively intact individuals or subjective cognitive decline participants from the general population
- Studies were researched with: PubMed, MEDLINE, EMBASE, IEEE Xplore, PsycINFO and Web of Science.
- We examined input data, sample size, length of follow-up and performance of the prediction models with a particular focus on infection.
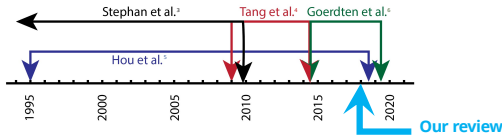
Key words in three categories:

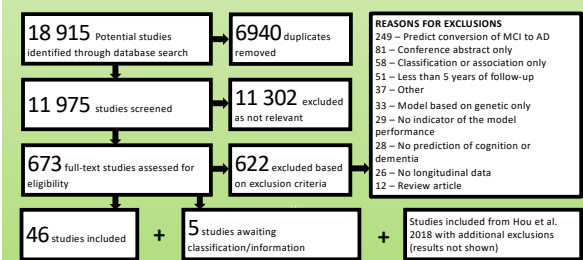| 1) Dementia or AD:	2) Prediction of AD:	3) Performance indices:
AD, dementia, neurocognitive disorders	predict*, develop*, incident, model*	sensitivity, specificity, ROC, receiver operating characteristic, AUC, area under the curve, c-statistic, concordance statistic

DEMENTIA, AD, MILD COGNITIVE IMPAIRMENT OR COGNITIVE DECLINE PREDICTION MODELS

* Existing models tested with an external cohort
(number of individuals in the sample) · (years of follow-up) · (■ presence in the model)

RESULTS

- Most models identified chronological age as a predictor of AD.
- No studies included serological infection status as a potential predictor.

PRISMA FLOW DIAGRAM

REASONS FOR EXCLUSIONS
249 – Predict conversion of MCI to AD
81 – Conference abstract only
58 – Classification or association only
37 – Less than 5 years of follow-up
37 – Other
33 – Model based on genetic only
29 – No indicator of the model performance
28 – No prediction of cognition or dementia
26 – No longitudinal data
12 – Review article

CONCLUSION

- Long-term prediction models in cognitively intact adults often include age, sex, education, APOE and BMI as predictors of AD.
- Serological infection status was not examined as a potential predictor and thus must therefore be further assessed.

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