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Chair: Anja Leist, University of Luxembourg

Social and Behavioral Factors in Cognitive Aging: Applying the Causal Inference Framework in Observational Studies

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Rationale: There is an urgent need to better understand how to maintain cognitive functioning at older ages with lifestyle interventions, given that there is currently no medical cure available to prevent, halt or reverse the progression of cognitive decline and dementia. However, in current models, it is still not well established which social and behavioral modifiable factors (e.g. education, BMI, physical activity, sleep, depression) matter most at which ages, and which behavioral profiles are most protective against cognitive decline. In the last years, advances in the fields of causal inference have equipped epidemiology and social sciences with methods and models to approach causal questions in observational studies.

Method: The presentation will give an overview of the causal inference framework to investigate the value of behavior changes in cognitive aging. Motivated by conflicting recent publications if physical activity should or should not be recommended to reduce individual risk of cognitive decline, we emulate a target trial where sedentary people are followed over the course of the Survey of Health, Ageing and Retirement in Europe (SHARE). We compare their cognitive development depending on initiating or not physical activity at a later measurement. Extended inclusion/exclusion criteria, and concepts of incident versus prevalent users, and multiple eligibility considerations are presented.

Discussion: The causal inference framework applied to observational studies is able to guide study design and likely to reconcile much conflicting evidence from intervention and observational studies. Investigations under the new framework have fewer ethical considerations compared to intervention research and, considering the need to follow up individuals over several decades, are considerably more cost-effective. Limitations are discussed.

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