E-DADS

Early Detection of Alzheimer's Disease Subtypes.

Alzheimer's disease (AD) is a global health burden. There are currently no treatments that prevent AD or modify the course of the disease. Recent work has identified several subtypes of Alzheimer's disease that become apparent once clinical symptoms appear. These subtypes can guide improved treatment and care decisions. Here we aim to predict which subtype of Alzheimer's disease an individual will develop late in life from earlier life risk factors. This is important for developing and trialling new treatments because Alzheimer's disease pathology starts decades before clinical symptoms appear.

We will develop and apply novel statistical methods to achieve this, including combining results from multiple existing medical datasets, which are publicly available or are maintained by our partners. Data sets include anonymised demographics, genetics, clinical assessments of function and cognition, features from biological samples (measures from the fluid surrounding the brain), and features extracted from medical images including magnetic resonance imaging (MRI) and positron emission tomography (PET) data.

The statistical models we employ were designed to detect subgroups of patients that follow different disease trajectories and link those to existing co-morbidities, genetics or life-style choices. We will explore various technical refinements to existing methods (many developed by us and project partners) to improve their predictive performance.

Using this methodology, we will investigate the following main questions:

1. Is an individual's genetic and environmental profile predictive of Alzheimer's disease subtype at an early stage (mid-life) and does it increase confidence in subtype assignment?
2. Are subtype disease models useful in clinical practice? Including for optimising treatment and prevention strategies.

Website: https://e-dads.github.io Twitter: @EDADS_jpnd

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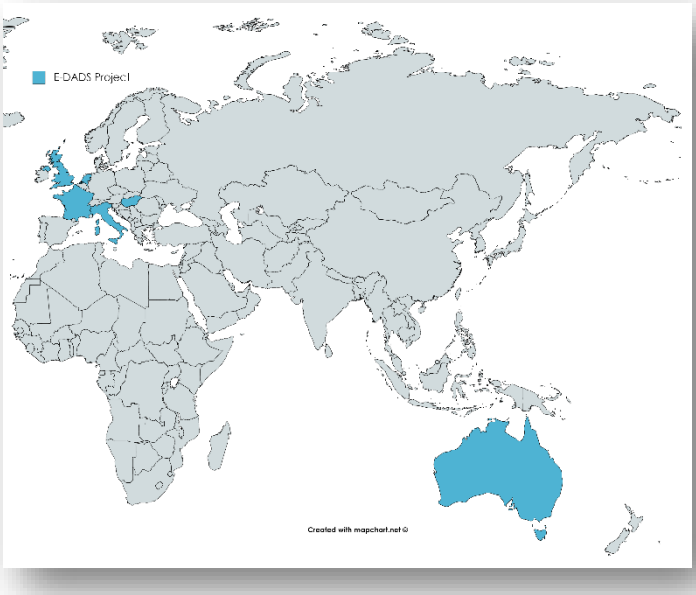

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