The VETSA Longitudinal Twin Study of Cognition and Aging (VETSA 3)

https://www.neurodegenerationresearch.eu/survey/the-vetsa-longitudinal-twin-study-of-cognition-and-aging-vetsa-3/

Principal Investigators

KREMEN, WILLIAM S.

Institution

UNIVERSITY OF CALIFORNIA SAN DIEGO

Contact information of lead PI
Country

USA

Title of project or programme

The VETSA Longitudinal Twin Study of Cognition and Aging (VETSA 3)

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 8,115,587.16

Start date of award

01/09/2015

Total duration of award in years

2

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Behavioral and Social Science... Brain Disorders... Clinical Research... Clinical Research - Extramural... Dementia... Epidemiology And Longitudinal Studies... Neurodegenerative... Neurosciences... Prevention

Research Abstract

? DESCRIPTION (provided by applicant): Advances in early identification and treatment of risk factors are likely to be major weapons in the battle against Alzheimer's disease (AD) and age-related cognitive decline, just as they are for cardiovascular disease and cancer. For AD, it is only relatively recently that researchers concluded that a likely reason for treatment ineffectiveness is the fact that the disease process unfolds decades before dementia onset. AD jumped from the 32nd ranked disease for years of life lost in 1990 to 9th in 2010 (largest increase of any disease), and from 17th to 12th for years lived with disability, in contrast to substantial improvements in cardiovascular disease or cancer where early identification and treatment of risk factors are emphasized. With these alarming trends, it is no wonder that there is now an ever stronger push for earlier identification of AD and cognitive impairment. Therefore, our focus is on mild cognitive impairment (MCI), which can be a precursor to AD. A disease process beginning decades before dementia also calls for a focus on midlife and the transition from middle age to early old age. However, this age period remains notably understudied. We propose to collect a third wave of data in the Vietnam Era Twin Study of Aging (VETSA). VETSA has a narrow 10-year age cohort for assessing within-person differences. Data from mean ages 55 and 61 plus wave 3 data at age 67 will provide a 12-year follow-up for early identification of MCI. Aim 1 is to construct a maximally valid MCI definition using a state-of-the-art approach based on longitudinal consistency, proportion of people converting to MCI and reverting to normal, and associations with biomarkers. We will include 3 categories of biomarkers with potential for screening large populations: blood-based (Aß, exosomal p-tau, clusterin, APOE, NT-proBNP, CRP, free testosterone); externally-validated polygenic risk scores for AD and cognitive impairment; and physiological (pupillometry, light reflex, erectile dysfunction, metabolic syndrome). The first 2 categories are new to this proposal. Capitalizing on plasma stored from VETSA 1, we will examine blood-based biomarkers from VETSA 1 and 3. Aim 2 is to develop the first risk index specifically for MCI based on the combination of biomarkers and traditional risk factors that maximizes sensitivity and specificity. Aim 3 is to elucidate the heterogeneity of continuously measured cognitive function and cognitive change, and identify predictors and correlates. In doing so, we will identify different subgroups of change patterns, and differential sensitivity of cognitive change to particular environmental contexts depending on genetic factors. Aim 4 is to determine predictors of cognitive resilience (being high on polygenic or blood-based risk factors but having no cognitive impairment), so that we can be informative about successful cognitive aging as well as decline. We will have 1261 twins with wave 3 data. After completion, we will make the data publicly available for research. Our unique combination of features puts VETSA ahead of curve with respect to its ability to gain knowledge about early identification and modifiable risk factors that can have a profound public health impact.

Lay Summary

PUBLIC HEALTH RELEVANCE: With the growing aging population, the estimate that a 5-year delay of the dementia phase of Alzheimer's disease will reduce the number of cases by more than half is an increasingly important public health issue. The ability of the longitudinal VETSA project to make unique contributions to early identification of both mild cognitive impairment (MCI) and cognitive resilience stands to have a substantial impact on efforts to slow all levels of age-related cognitive decline, and thereby improve quality of life and reduce societal burden.

Further information available at:

Types:

Investments > €500k

Member States:
United States of America

Diseases:
Alzheimer's disease & other dementias

Years:
2016

Database Categories:
N/A

Database Tags:
N/A