

YASHIN Admin Supp: Time Trends in Alzheimers Disease: Addressing the Changing Role of Risk Factors and Instrument Validity

<https://neurodegenerationresearch.eu/survey/yashin-admin-supp-time-trends-in-alzheimers-disease-addressing-the-changing-role-of-risk-factors-and-instrument-validity/>

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Contact information of lead PI

Country

USA

Title of project or programme

YASHIN Admin Supp: Time Trends in Alzheimers Disease: Addressing the Changing Role of Risk Factors and Instrument Validity

Source of funding information

NIH (NIA)

Total sum awarded (Euro)

€ 2,812,014.68

Start date of award

01/01/2014

Total duration of award in years

3

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)... Brain Disorders... Dementia...

Research Abstract

DESCRIPTION (provided by applicant): The overall objective of the proposed research is to significantly improve quality of health forecasting for the US elderly. This objective will be reached by constructing a set of new health predicting models having different levels of complexity, evaluating quality of their predictions, and using verified models to predict future prevalence of cancer, coronary heart disease (CHD), stroke, diabetes, and Alzheimer's disease (AD) under different scenarios. The models will use information about factors affecting health and survival available in five datasets including the Framingham Heart Study (FHS), Health and Retirement study merged with Medicare files (HRS-M), National Long Term Care Survey linked to Medicare records (NLTCS-M), the Surveillance, the Epidemiology and End Results data merged with Medicare records (SEER-M), and the 5% Medicare (5%-M) file. The most sophisticated models will use information about genetic and non-genetic factors, and take pleiotropic, polygenic, and age-specific effects of genes on health and survival, as well as dynamic mechanisms of aging related changes, into account. The following specific aims will be addressed: 1. Predict age patterns of prevalence for cancer, CHD, stroke, diabetes, and AD for years 2020, 2025, 2030, and 2035 using models having different levels of complexity constructed using data from SEER-M, and 5%-M files, NLTCS-M and HRS-M (without genetic data) for males and females under different scenarios. 2. Identify sets of genetic variants showing individual and pleiotropic associations with health and survival traits in the FHS and HRS-M data using candidate genomic regions enriched for pleiotropic genetic effects on health traits. Identify genes related to selected genetic variants and evaluate their roles in metabolic and signaling pathways and disease networks. Construct polygenic score indices and evaluate their influence on health and survival traits. 3. Predict age patterns of prevalence for the same diseases and time horizons as in Aim 1, however applying advanced modeling approaches incorporating the genetic information about pleiotropic, polygenic and age-specific effects of genetic variants on health and survival and using different scenarios. Test the quality of health predictions using subsets of available data. Use verified models in health forecasting for time horizons specified above. 4. Predict age patterns of prevalence of diseases listed above using extended multistate health and mortality models by considering risks of health transitions as functions of genetic factors, as well as observed covariates and physiological variables. For these purposes, evaluate risks of transitions and their time trends for subsequent birth cohorts using FHS and HRS-M data. Test quality of health predictions using subsets of available data. Use verified models in health forecasting under different scenarios. Compare results of health predictions using different models constructed in this project, as well as models available in the literature. Make recommendations concerning the proper use of data and models in health forecasting for time horizons specified above.

Lay Summary

PUBLIC HEALTH RELEVANCE: The result of these analyses will clarify roles of genetic mechanisms in forming health and longevity traits, reduce uncertainty in health forecasting, and contribute to improvement of functioning of health care system which will result in improvement of population health in the US elderly.

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