The Nun Study

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What is the Nun Study?

The Nun Study is a longitudinal study of aging and Alzheimer’s disease. It began in 1986 as a pilot study on aging and disability using data collected from the older School Sisters of Notre Dame living in Mankato, Minn. In 1990, the Nun Study was expanded to include older Notre Dames living in the midwestern, eastern, and southern regions of the United States. The goal of the Nun Study is to determine the causes and prevention of Alzheimer’s disease, other brain diseases, and the mental and physical disability associated with old age.

How is the study funded?

The Nun Study is funded by the National Institute on Aging (one of the institutes within the National Institutes on Health). More than $2 million in federal tax dollars have been invested so far in this study. In addition, private foundations including the Robert J. Kleberg, Jr. and Helen C. Kleberg Foundation in San Antonio, Texas, have given significant financial support to this endeavor.

When did the study begin?

David Snowdon, Ph.D., and his colleagues at the University of Minn began a pilot study in 1986 using data collected from School Sisters of Notre Dame living in Mankato, Minn. When Dr. Snowdon joined the College of Medicine faculty at the University of Kentucky in 1990, the study was expanded to include older Notre Dames throughout the United States. The Nun Study is housed within the Sanders-Brown Center on Aging at the University of Kentucky Chandler Medical Center. The Center on Aging is internationally recognized for its research on the neuropathology of Alzheimer’s disease.

How long will the study continue?

The Nun Study is an ongoing, one-of-a-kind resource for the study of brain diseases in the elderly. We expect that data, tissue, and genetic material collected in this study will be used by scientists for decades into the future.

What are the research questions?

The primary research question in the Nun Study is “What factors in early, mid, and late life increase the risk of Alzheimer’s disease and other brain diseases such as stroke?” Other research questions relate to the determinants of longevity and the quality of life in the elderly.

Who participates in the study?

Participants in the Nun Study are American Roman Catholic sisters who are members of the School Sisters of Notre Dame, an international religious congregation that began more than 150 years ago in Bavaria, Germany. The 678 participants in the Nun Study were 75 to 103 years old when the study began, and the average age of the participants was 85 years. Over 85 percent of these participants were teachers. Participants in the Nun Study include women representing a wide range of function and health, from sisters in their 90s who are highly functional with full-time jobs to sisters in their 70s who are severely disabled, unable to communicate, and bed-bound.

What are the participants required to do?

Each of the 678 participants in the Nun Study agreed to participate in annual assessments of their cognitive and physical function, medical exams, blood drawing for genetic and nutritional studies, and brain donation at death for neuropathologic studies. The Nun Study represents the largest brain donor population in the world. In addition, the sisters have given investigators full access to their convent and medical records.

What gems are buried in the convent archives?

The convent archives are particularly useful in our study of Alzheimer’s disease because they contain accurate risk factor data spanning the entire lifespan of the participants. Accurate information on early and mid-life risk factors is difficult or impossible to obtain in most other studies on Alzheimer’s disease because individuals with this memory disorder cannot accurately recall their history. The convent archives contain a wealth of information including baptismal records, birth certificates, socioeconomic characteristics of the family, education documentation, autobiographies written in early, mid, and late


Why study nuns?
Extrapolation of findings from this unique population may be limited. However, this potential disadvantage is largely offset by other advantages of this population, such as the convent archives. Many factors that confound (or confuse) the findings of other studies are either eliminated or minimized because of the relatively homogeneous adult lifestyles and environments of these women. Participants in this study are non-smokers, drink little if any alcohol, have the same marital status and reproductive history, have lived in similar housing, held similar jobs, and had similar access to preventive and medical care.

Where are the sisters?
Participants in the Nun Study live in seven religious provinces of the School Sisters of Notre Dame located throughout the Eastern, Midwestern, and Southern regions of the United States. These provinces are in St. Louis, Baltimore, Milwaukee, Chicago, Dallas, Mankato MN, and Wilton CT. While not currently participating in this study, other sisters in this congregation live throughout Eastern and Western Europe, Asia, Africa, South America, and the Caribbean.

Why is brain donation a requirement for participation in this study?
All 678 participants in the Nun Study agreed to donate their brain at death to the University of Kentucky. A definitive diagnosis of Alzheimer’s disease can only be made at death by determining whether a sufficient number of Alzheimer’s disease lesions (senile plaques and neurofibrillary tangles) were present in the cortex of the brain to cause the clinical symptoms of the disease (i.e., impairment in memory; impairment in another area of cognition, such as language and visuospatial ability; and impairment in social or occupational functioning). To receive a diagnosis of Alzheimer’s disease, participants in the Nun Study must have sufficient Alzheimer’s disease lesions in the brain, as well as cognitive and social impairments indicative of clinical dementia. In short, we use a clinical-neuropathologic diagnosis of Alzheimer’s disease. In addition to diagnostic information, the brain tissue provides a rich source of information on how the structure and chemical make-up of the brain may provide individuals protection against brain diseases.

Why do the sisters participate in this study?
During the last 150 years, education has been the primary mission of the School Sisters of Notre Dame congregation. Sisters in this congregation have spent their adult lives educating others and providing other services to their church and community. Most sisters enrolled in the Nun Study because they believed their participation would help other women throughout the world. Many felt that they could continue teaching and helping others in their old age, and even after their death, by participating in this study. The bottom line is that these women are altruistic.

Who is conducting the Nun Study?
The Nun Study is a collaborative effort between the University of Kentucky and the School Sisters of Notre Dame congregation. Scientists from other universities also are actively collaborating with this study (e.g., University of South Florida, University of Kansas, Medical College of Wisconsin, Duke University, Emory University and Louisiana State University). In addition to many scientists and technicians, many leaders and health care providers of the School Sisters of Notre Dame congregation have made vital contributions to this study during the last ten years. Two Notre Dames, Sisters Gabriel Mary Spaeth and Marlene Manney, have devoted more than five years of full-time effort to the Nun Study.

What are you finding?
We are finding that traits in early, mid, and late life have strong relationships with the risk of Alzheimer’s disease, as well as the mental and cognitive disabilities of old age. Abstracts of our recent publications are presented on another page of this website. Complete copies of these publication can be obtained at any medical or university library.

* The Nun Study is directed by Dr. David Snowdon. He is a Professor of Neurology at the University of Kentucky’s College of Medicine. He earned a Ph.D. from the University of Minnesota in epidemiology (i.e., the study of the causes of diseases in populations). His earliest education was strongly influenced by his primary teachers, who were Catholic sisters. He was born in Redlands, California in 1952.