SOF ANALYSIS PLAN

Date:  _November 18, 2002_  
Investigator’s Name:  _Deborah Barnes, PhD, MPH_  
Center:  _UCSF/Geriatrics_  
Tel.:  _415-221-4810 x. 4221_  
e-mail:  _barnes@medicine.ucsf.edu_  

Other investigators who will be working on this analysis:

_Kristine Yaffe, MD_

Research question:

What factors are associated with long-term maintenance of cognitive function in older white women?

Background:
It is known that mean cognitive test scores decline with age for most aspects of cognitive function (Schaie 1994; Tuokko and Hadjistavropoulos 1998). Furthermore, elders who develop mild cognitive deficits have an elevated risk of dementia (Petersen, Smith et al. 1999). However, cognitive function does not decline uniformly in all elders: some experience substantial decline, whereas others experience no decline or modest decline (Colsher and Wallace 1991; Nolan and Blass 1992; Teri, McCurry et al. 1997; Tuokko and Hadjistavropoulos 1998). Although many prior studies have examined risk factors for decline in cognitive function, little is known about elders who maintain or preserve their cognitive abilities with age. Identification of factors that are uniquely associated with preservation of cognitive function could lead to substantial improvements in quality of life in older adults.

The goal of our analysis is to characterize patterns of cognitive change in women participating in the SOF study and to identify factors associated with preservation of cognitive function over time. The SOF study provides a unique opportunity to examine maintenance of cognitive function because information has been gathered on a wide range of factors in a large number of women who have been followed longitudinally for 15 years.
Research Goals:

1) To classify SOF study participants based on their patterns of change in cognitive function with age.

2) To identify factors that are independently associated with preservation of cognitive function with age.

Analytic Strategy

We will use graphical and descriptive techniques to examine cognitive trajectories in SOF study participants over time. Based on the trajectories observed, we will group cohort members into logical categories (e.g., those who maintain cognitive function, experience slight decline or substantial decline). We will compare these groups based on their characteristics at baseline and over time. Bivariate analyses will be performed using analysis of variance (ANOVA) for continuous variables (e.g., age) and Chi-square tests for categorical variables (e.g., educational attainment). We then will use polytomous logistic regression techniques (Hosmer and Lemeshow 1989) to identify factors associated with maintenance of cognitive function over time. This technique is an extension of logistic regression to situations in which the outcome variable has multiple categories. For example, we could identify factors that are uniquely associated with maintenance of cognitive function by comparing cognitive maintainers to each of the other groups identified (e.g., slight cognitive decline, substantial cognitive decline). We also will explore the possibility of using random effects models to estimate trajectories of cognitive change for each individual (Diggle, Liang, and Zeger 1994).

References


Data sets to be used:

SOF – Baseline, Year 6, Year 8, Year 10 and Year 15 (if available).

Primary variables to be used in the analysis:

Primary outcome variable: Cognitive function (MMSE, Trails B)

Primary exposure variables:
- Physical performance (grip strength, gait speed/stride length, quad strength)
- Height/weight
- Psychosocial factors (depression, social support)
- Health behaviors (smoking, alcohol, physical activity)
- Medical conditions (prevalent diagnoses at baseline, incident diagnoses during follow-up)
- Falls/syncope
- Functional status
- Medications

Do you plan to submit an abstract based on these results?

Yes – probably either Gerontological Society of America or American Academy of Neurology.

Who will do the analyses (coordinating center/clinic)?

We will perform the analyses locally at UCSF.

Coordinating Center approval: ________________ Date:_______________________
Received and acknowledged by clinical centers: ______________________________
Center: ________________________________ Investigator: _________________
Date: _________________________________