SOF Analysis Plan Submission Form

Date: October 20, 2010

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Clinical Center: UCSF

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Other investigators who will be working on this analysis: Peggy Cawthon

Analysis Plan Title: The relationship between alcohol consumption and cognitive outcomes in the oldest old

Data sets to be used: Baseline and Year 20

Primary variables to be used in the analysis: Alcohol consumption and cognition

Do you plan to submit an abstract based on these results? ☒ YES ☐ NO

If YES, when is the abstract due? February 2011

Who will perform the analyses?

☐ Coordinating Center
☒ Other local analyst, please specify: Tina Hoang

Please attach a 1-2 page description of your analysis plan. Please include the following:

1) Short background/rationale for addressing the research question
2) Brief description of statistical methods
3) Mock tables

E-mail this completed form (as an attachment) to Dana Kriesel (dkriesel@sfcc-cpmc.net).
Background

The relationship between alcohol consumption and dementia is controversial; a recent meta-analysis of 15 prospective studies indicates that light to moderate amounts of alcohol may decrease the risk for any type of dementia as well as for Alzheimer's Disease but not for cognitive decline. The data included in this meta-analysis focused on older populations, but only a smaller number had follow-up periods longer than 5 or 6 years and none focused on the oldest old, a growing population at high risk for dementia. In addition, while some studies assessed alcohol consumption patterns over time and in one case, estimated trajectories of alcohol use over 7 years, very few studies have evaluated the relationship between lifetime alcohol consumption and cognitive impairment. Results from two cross-sectional investigations of older populations suggest that lifetime moderate alcohol consumption is not beneficial. The protective mechanisms of moderate alcohol consumption are unknown, and proposed pathways may be related to lowering lipid levels, modifying hormone levels, preconditioning, or in the case of wine, antioxidant effects. However, most of the existing epidemiological data exploring the benefits of moderate alcohol consumption focus on younger old populations, and current research suggests that traditional risk factors for dementia and cognitive impairment in the young old may not be the same risk factors for the oldest old. The current evidence regarding moderate alcohol use in the oldest old is inconclusive. In the 90+ Study, there was no relationship between alcohol consumption and risk of dementia, but in the Cache County Study, moderate drinkers were more likely to survive to age 85 without dementia compared to never users. We propose to investigate the relationship between alcohol consumption and cognitive outcomes in the Study of Osteoporotic Fractures oldest old cohort.

Research Aims
To determine the association between alcohol consumption and cognitive outcomes including cognitive decline, mild cognitive impairment, and dementia in the oldest old.

Hypothesis
We hypothesize that lifetime moderate alcohol consumption will be associated with decreased risk of cognitive decline, mild cognitive impairment and dementia in the oldest old.

Variables
Primary exposure:
- Alcohol use at v1
- Alcohol use in the past 30 days at v1, 4, 5, 6, and 8

Primary outcome of interest: MCI and dementia diagnosis at v9 and cognitive decline (Mini-Mental State Exam and Trails B scores)

Confounders (from v1):
1) Demographic characteristics: age, education, race, living situation
2) Health status: medical history, smoking
3) Clinic measures: blood pressure, height/weight
4) Biological markers: Apolipoprotein E genotype

Analytic Plan
We will compare baseline characteristics with alcohol consumption using chi-square tests, ANOVA, or Kruskal-Wallis tests as appropriate. To compare the relationship of alcohol consumption with each cognitive outcome, cognitive decline (changes on Trails B and Mini-Mental State Exam scores over 20 years using random effects models), mild cognitive impairment, or dementia, we will run logistic regression models with baseline alcohol use considered as a continuous or categorical variable and adjust for potential confounders. We will
also consider change in alcohol use over time. If the interactions are significant, we will conduct stratified analysis.
Table 1. Baseline characteristics of women by alcohol consumption status

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Light</th>
<th>Moderate</th>
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</thead>
<tbody>
<tr>
<td>Age (y), mean (SD)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Years of education, mean (SD)</td>
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<tr>
<td>Marital Status</td>
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<tr>
<td>Medical History</td>
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<tr>
<td>Diabetes, %</td>
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<td></td>
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<td>Hypertension, %</td>
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<td>Stroke, %</td>
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<tr>
<td>Myocardial Infarction, %</td>
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<tr>
<td>Ever smoker, %</td>
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<tr>
<td>Body mass index, mean (SD), kg/m²</td>
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</tbody>
</table>
Table 2. Association of Alcohol Consumption with Cognitive Impairment

<table>
<thead>
<tr>
<th></th>
<th>Cognitive Impairment</th>
<th>Mild Cognitive Impairment</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted OR (95% CI)</td>
<td>Adjusted* OR (95% CI)</td>
<td>Unadjusted OR (95% CI)</td>
</tr>
<tr>
<td>Never</td>
<td></td>
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<td></td>
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<tr>
<td>Light</td>
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<td></td>
<td></td>
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<tr>
<td>Moderate</td>
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</table>

Updated: 9/29/2008
References


