ARIC Manuscript Proposal # 910

PC Reviewed: 10/07/02   Status: __A__   Priority: __2__
SC Reviewed: 10/17/02   Status: __A__   Priority: __2__

1.a. Full Title: Association between obesity and retirement in a bi-ethnic cohort: the Atherosclerosis Risk in Communities Study

  b. Abbreviated Title (Length 26 characters): obesity and retirement

2.   Writing Group (list individual with lead responsibility first): June Stevens, Jianwen Cai, Denise Houston, David Blau

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Writing group members:
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David Blau, PhD, is a Professor in the Department of Economics at the University of North Carolina at Chapel Hill and has considerable experience in research on retirement and the labor force behavior of older individuals.

3.   Timeline: Dataset preparation and analysis will start immediately upon approval.

4.   Rationale:

   The elderly population is growing and is estimated to increase to approximately one-fifth of the U.S. population by 2030.[1] While the white elderly population is expected to double by the year 2050, the African American elderly population is expected to more than triple.[2] Although there have been recent declines in the disability rate among U.S. elderly, it has been estimated that the number of disabled elderly will triple between 1985 and 2050 because of the dramatic increase in the number of elderly.[3] In the 1997 National Health Interview Survey (NHIS), African American men and women aged 45 years and older were more likely to report being unable to work because of a physical, mental, or emotional problem than white men and

women.[4] Among men aged 51-61 years of age, health problems influenced retirement plans more strongly than economic factors, with those reporting poor health or functional limitations planning retirement 1-2 years earlier than average[5].

Obesity and retirement patterns

Several studies conducted in European countries have investigated the associations between obesity and retirement patterns.[6-10] In these countries, work disability and sick leave pensions are at least partially reimbursed by the government.[11] In Sweden, obese women were more than twice as likely as nonobese women to receive disability pensions.[6] Among Swedish men, obesity was associated with almost a three-fold increased risk of disability pension over 11 years of follow-up.[7] In Finland, there was an increased risk of disability pension among obese men and women compared to normal weight men and women over 11 years of follow-up.[8] However, another Finnish study found no association between obesity and disability retirement over 4 years of follow-up in men.[9] In Denmark, men and women with a BMI greater than 27 kg/m^2 had over two times the risk of being granted disability pension over 15 years of follow-up.[10]

To our knowledge, there is only one study that has examined the association between obesity and retirement patterns in the United States.[12] The Health and Retirement Study (HRS) is a nationally representative sample of men and women born between 1931 and 1941 and their spouses (n=9,790). The study began in 1992 (cohort aged 51-61 years) and had 3 waves of follow-up at 2-year intervals. African Americans, Hispanics and residents of the state of Florida were over-sampled, however, no ethnic specific estimates were provided. The report from this work targeted the effects of alcohol consumption on disability, but some information was given on BMI as one of several covariates. The investigators found that a low (<18.5 kg/m^2) and high (>25 kg/m^2) BMI was associated with significantly increased odds of limitations (including impairment or health problem that limits the kind or amount of paid work) compared to the reference BMI category (BMI 18.5-24.9 kg/m^2). Contrary to what might be predicted, compared to the reference, participants with elevated BMI levels up to 35 kg/m^2 were at decreased risk of Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI) benefits. For those with a BMI greater than 35 kg/m^2 the odds were increased, but not statistically significant. There were several limitations in this research, some of which undoubtedly resulted from the fact that the authors' intent was not to study BMI. One important issue is that the analyses controlled for a list of "health conditions" in a combined single variable which treated serious conditions that often lead to substantial weight loss (for instance stroke), the same as conditions likely to be caused by obesity, but not usually associated with weight loss (hypertension). An additional limitation is the use of self-reported weight and height rather than measured.

Summary

The elderly population, in particular African Americans, is projected to increase dramatically over the next 50 years. African Americans have a higher prevalence of obesity, diabetes, hypertension, impaired functional health, poor self-rated health, and other health-related conditions than whites. Nevertheless, there are few studies that have examined the association between nutritional status and aging-related issues in African Americans and no studies of obesity and retirement in African Americans. The Atherosclerosis Risk in Communities Study offers a unique opportunity to help fill this gap and increase our knowledge of the role of modifiable life-style factors, i.e. obesity and weight change, on retirement in African Americans and whites.

5. Main Hypothesis/Study Questions:

1. Determine the associations of body weight in young adulthood with retirement in African American and white men and women. We hypothesize that elevated body mass index (BMI) at age 25 is associated with a higher odds of retirement over an observation period 20 to 48 years later.

2. Determine the associations of body weight in middle adulthood with retirement in African American and white men and women. We hypothesize that elevated BMI is associated with higher odds of retirement over a 3-year interval in participants that are 45 to 70 years of age.

3. Determine the associations between long-term weight change and retirement in African American and white men and women. We hypothesize that weight gain from age 25 to ages 45 to 70 is associated with increased odds of retirement over a 3-year interval.

6. Data (variables, time window, source, inclusions/exclusions):

Retirement status

Self-reported employment status at each visit will be used to determine retirement status. Participants were asked to identify the employment/retirement status that best described their current occupation. Participants who reported that they were 1) unemployed (looking or not looking for work) or 2) retired and not working for pay will be classified as not employed. Participants who reported that they were 1) employed (either full or part time), 2) employed but temporarily away from regular work, or 3) retired from their usual occupation but working for pay will be classified as employed. Exploratory analyses will be conducted to determine if the associations with our exposures of interest differ between participants who reported that they were retired from their usual occupation but working for pay and participants who reported they were employed. If these categories are found to differ, then retirement status will be examined in 3 categories: 1) employed, not retired, 2) employed, but retired from usual occupation, and 3) not employed. Participants who reported that they were homemakers will be excluded from the analyses. In addition, we will also determine the effects of obesity and weight change on retirement due to health reasons as determined by responses of "yes" or "partially" (visit 1 only) to the question "Did you retire because of health reasons?"

We will use the following data from ARIC:

    Identification information:
      Participant identification number (visits 1 - 4)
      Visit date (visits 1 - 4)
      ARIC field center (visit 1)

    Demographics:
      Ethnicity (visit 1)
      Gender (visit 1)
      Date of birth (visit 1)
      Age (visits 1-4)
      Marital status (visits 2 & 4; annual follow-up)

Education (visit 1)

Anthropometrics (visits 1 - 4):
    Weight
    Height
    BMI

Employment status (visits 1 - 4):
    Current employment
    Retired because of health reasons

Others:
    Smoking status (visits 1 - 4)
    Physical activity (visits 1 & 3)
    Prevalent CHD (visit 1)
    Incident CHD (visits 2-4, annual follow-up)
    Prevalent cancer (visit 1)
    Incident cancer (visits 2-4, annual follow-up)
    Prevalent stroke (visit 1)
    Incident stroke (visits 2-4, annual follow-up)
    Hypertension (visit 1-4)
    Diabetes (visits 1-4)

Exclusions:
    Minorities other than African American
    African Americans residing in Minnesota and Maryland
    Participants who reported that they were homemakers will be excluded from these analyses
    Some analyses will exclude participants with illnesses that are associated with weight loss

7.a. Will the data be used for non-CVD analysis in this manuscript?   __X_ Yes   ____ No

  **b. If Yes, is the author aware that the file ICTDER02 must be used to exclude persons
    with a value RES_OTH = "CVD Research" for non-DNA analysis, and for DNA
    analysis RES_DNA = "CVD Research" would be used?   __X_ Yes   ____ No**
    (This file ICTDER02 has been distributed to ARIC PIs, and contains
    the responses to consent updates related to stored sample use for research.)

8.a. Will the DNA data be used in this manuscript?   ____ Yes   _X__ No

**8.b. If yes, is the author aware that either DNA data distributed by the Coordinating
    Center must be used, or the file ICTDER02 must be used to exclude those with value
    RES_DNA = "No use/storage DNA"?   ____ Yes   ____ No**

9. **The lead author of this manuscript proposal has reviewed the list of existing ARIC Study manuscript proposals and has found no overlap between this proposal and previously approved manuscript proposals either published or still in active status.** ARIC Investigators have access to the publications lists under the Study Members Area of the web site at: http://bios.unc.edu/units/cscc/ARIC/stdy/studymem.html

    __X___ Yes   _____ No

10. **What are the most related manuscript proposals in ARIC (authors are encouraged to contact lead authors of these proposals for comments on the new proposal or collaboration)?**

    Manuscript #830 "Association between body composition and functional and self-rated health in a bi-ethnic cohort: The ARIC Study"

    Manuscript #711 "Obesity and fat patterning as predictors of mortality"

    Manuscript #333C "Influence of retirement on physical activity patterns"

10. References

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12. Ostermann, J and Sloan, F, *Effects of alcohol consumption on disability among the near elderly: a longitudinal analysis*. Milbank Quarterly, 2001. **79**: p. 487-515.