

ARIC Manuscript Proposal # 987

PC Reviewed: 12/15/03

Status: A

Priority: 2

SC Reviewed: 12/16/03

Status: A

Priority: 2

1. a. Full Title:

Consequences of obesity in the ARIC and the Peoples Republic of China (PRC) cohorts

b. Abbreviated Title (Length 26 characters):

Consequences of obesity in ARIC and PRC

2. Writing Group (list individual with lead responsibility first):

Lead:

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Writing group members:

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Collaborator:

Ed Davis, PhD, University of North Carolina, Chapel Hill

3. Timeline:

2004-2006

We anticipate that it will take 1 to 2 years to complete analyses and writing. This project will form part of the doctoral dissertation of the lead author.

4. Rationale:

The World Health Organization (WHO) has provided cutpoints for body mass index (BMI) to define overweight and obesity. Recently there has been significant debate whether these cutpoints, which were mainly derived from populations of European descent, should be applied to individuals of Asian ethnicity (Stevens, 2003a; Stevens, 2003b; Misra, 2003). Increases in the prevalence of Type 2 diabetes and other morbidities associated with excess weight in many Asian countries, coupled with relatively modest increases in average BMI, have prompted several investigators and policy making organizations to propose that BMI cutpoints used to define obesity and overweight be lower in Asian countries. Numerous reports from cross-sectional studies have shown elevations in levels of plasma glucose and blood pressure within the "normal" range (18.5 to 24.9) of BMI. Also in support of the notion of different cutpoints is a strong literature showing that at the same BMI, percent body fat and waist to hip ratio are higher in Asians compared to Caucasians (Deurenberg 1998).

The literature is limited by the paucity of prospective cohort studies that directly compare health risk associated with anthropometry in Asians and Caucasians. Without such direct comparisons, it is difficult to evaluate whether the risks associated with BMI truly differ between these groups. Toward this goal, we propose the analysis of data from 2 large prospective cohort studies that used similar methodologies with data collection organized by the Coordinating Center at the University of North

Carolina -Chapel Hill. Data from Asians will be from the People's Republic of China (PRC) Study of 10,052 middle-aged men and women in two regions of China from 1983 to 1998. Data from Caucasians and African Americans will be from the Atherosclerosis Risk in Communities (ARIC).

The proposed work will not be able to separate the effects of race, culture and environment. Nevertheless, it will provide an important contribution to this literature in which there is so little comparative information available. To the best of our knowledge, this will be the first study to directly compare associations between BMI and CVD risk factors in Asians and Caucasians using longitudinal data.

5. Main Hypothesis/Study Questions:

Aim 1. We will compare the risk estimates for diabetes, hypertension, dyslipidemia and all cause mortality in Asians living in China to Caucasians and Blacks living in the United States to:

- 1) determine if, at the same BMI, the incidence is different.
- 2) determine if the relative risk associated with elevated BMI is different.
- 3) determine if the risk difference associated with elevated BMI is different

Aim 2. We will compare the three types of risk estimates in Aim 1 to determine if the risks associated with waist circumference (WC) and waist to hip ratio (WHR) are different in Asians living in China compared to Caucasians and Blacks living in the United States for the outcomes of diabetes, hypertension and dyslipidemia.

REFERENCES

Deurenberg, P., M. Yap, et al. (1998). "Body mass index and percent body fat: a meta analysis among different ethnic groups." Int J Obes **22**: 1164-71.

Stevens, J. (2003a) . "Ethnic-specific cutpoints for obesity vs country-specific guidelines for action." Int J Obes **27**: 287-8.

Stevens, J. (2003b). "DEBATE: Ethnic-specific revisions of body mass index cutoffs to define overweight and obesity in Asians are not warranted." Int J Obes **27**: 1297-9.

Misra, A. (2003). "DEBATE: Revisions of cutoffs of body mass index to define overweight and obesity are needed for the Asian-ethnic groups." Int J Obes **27**: 1294-6.

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

These analyses will utilize data from all 4 ARIC visits in addition to the mortality follow-up file.

Permission for use of the PRC data is being obtained separately.

7.a. Will the data be used for non-CVD analysis in this manuscript? 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? 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 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/cscs/ARIC/stdy/studymem.html>

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)?

Several of the manuscripts on obesity in ARIC have been authored by Dr. Stevens and Dr. Cai, who are member of this writing group. ARIC manuscript proposals on obesity or body weight are shown below. In addition we show other proposals that have used data from both the ARIC and the PRC study. Dr. Davis was a co-author on those publications and is a member of this writing group.

Proposal #289

Title: BMI, fat patterning and CVD risk factors

Proposal #315

Title: Weight change and IMT

Proposal #343

Title: Diabetes and CHD

Proposal #387

Title: Weight change and IMT change

Proposal #392

Title: Weight change prior to baseline in participants who die within the first years of follow-up

Proposal #413

Title: Fat Patterning and sex differences in lipids

Proposal #505

Title: Weight change and hypertension

Proposal #598

Title: Aging and weight change

Proposal #657

Title: Anthropometric cutpoints

Proposal #710

Title: Weight change and mortality

Proposal #749

Title: Impact of decision rules for choosing obesity cutpoints: Examples from African American and White women.

Proposal #815

Title: Benefits of weight stability

Proposal # 828

Title: Beneficial Effects of 5 -15% Weight Loss on Metabolic Risk Factors for Type 2 Diabetes and Cardiovascular Disease

Proposal # 830

Title: Association between body composition and functional and self-rated health in a bi-ethnic cohort: the Atherosclerosis Risk in Communities Study

Proposal #910

Title: Obesity and Retirement

Below are proposals that used data from both the ARIC and the PRC cohort:

Proposal #153

Title Multi-Country HDL

Proposal #434

Title: Prevalence and Predictors of Obesity in Five Countries

Proposal #391

Title: Multi-country association of insulin and glucose with hypertension and triglycerides

11. Manuscript preparation is expected to be completed in one to three years. If a manuscript is not submitted for ARIC review at the end of the 3-years from the date of the approval, the manuscript proposal will expire.