

ORIGINAL ARTICLE

# CARDIOVASCULAR DISEASE RISK FACTOR SCREENING AMONG ALASKA NATIVE WOMEN: THE *TRADITIONS OF THE HEART* PROJECT

Vanessa Y. Hiratsuka <sup>1</sup>, Ryan Loo <sup>2</sup>, Julie C. Will <sup>2</sup>, Rebecca Oberrecht <sup>1</sup>, Patricia Poindexter <sup>2</sup>

<sup>1</sup> Southcentral Foundation, Anchorage, Alaska, USA

<sup>2</sup> Centers for Disease Control and Prevention, Atlanta, Georgia, USA

roberrecht@southcentralfoundation.com

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## ABSTRACT

**Objectives.** To describe tobacco use, obesity and overweight, high blood pressure, high blood cholesterol and impaired glucose tolerance in Alaska Native and American Indian women living in the Anchorage area.

**Study Design.** Cross-sectional evaluation of women enrolled in the *Traditions of the Heart* program.

**Methods.** *Traditions of the Heart* was a randomized controlled trial of an intervention to reduce risk factors for cardiovascular disease. Starting in October 2000, Southcentral Foundation provided a 12-week group lifestyle intervention to eligible Alaska Native and American Indian women aged 40 to 64 residing in the Anchorage area. The study included assessment of biochemical and behavioral risk factors for cardiovascular disease.

**Results.** Of the 1334 women who enrolled between October 2000 and July 2005, 33.5% were current smokers, 78.8% were overweight or obese, 10.9% were hypertensive, 21.4% had elevated total cholesterol, and 5.6% had fasting glucose concentrations  $\geq$  126 mg/dL.

**Conclusions.** The women in this study had many risk factors for cardiovascular disease. Interventions are needed to reduce these risk factors among Alaska Native women.

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**Keywords:** Alaska Native, American Indian, cardiovascular disease prevention, women, health

## INTRODUCTION

In the United States deaths due to cardiovascular causes accounted for about 39% of all deaths in 2000 (1). Currently Alaska is the only state in the U.S. in which the leading cause of death is cancer, rather than cardiovascular disease (2). Out-migration of Alaskans with heart disease and other chronic illnesses may be artificially reducing the state's observed mortality rates. The younger age structure of the state's population also contributes to the lower cardiovascular disease mortality rate.

The largest minority group in Alaska is Alaska Native and American Indian people who comprise 15.6% of the state population and 7.7% of the population of the Anchorage municipality (3). Twenty-five percent of the Alaska Native people are Alaskan Indian (Athabascan, Tlingit, Haida, Tsimpian and Eyak), 40.1% are Eskimo (Inupiaq, Cupik, Yupik, and Siberian Yupik), 8.7% are Aleut (Unangan, Alutiiq, and Sugpiaq), and 22.1% are tribal members of state and federally-recognized American Indian tribes (4).

Few studies have explored the impact of cardiovascular disease risk factors in this population (5). *Traditions of the Heart*, a Well-integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) project at Southcentral Foundation was a randomized controlled trial to identify and reduce cardiovascular disease risk factors among Alaska Native and American Indian women (6, 7). The *Traditions of the Heart* program provided screening for risk factors for cardiovascular disease and education to reduce these risks for uninsured and under-insured Alaska Native and American Indian women ages 40-64 years.

## MATERIAL AND METHODS

The study sample included 1334 women 40 through 64 years of age who were members of Alaska Native and American Indian tribes, resided in communities in the Anchorage area and were eligible to participate in the National Breast and Cervical Cancer Early Detection Program. The National Breast and Cervical Cancer Early Detection Program eligibility requirements included being female ages 40-64 years of age with an income level 250% or less of the federal poverty guideline and underinsured or uninsured. Volunteers were recruited to take part in the *Traditions of the Heart* study from the Anchorage Native Primary Care Center through targeted recruitment.

This article describes clinical examination findings from baseline screenings conducted between October 2000 and March 2005. The clinical examinations occurred in the outpatient Family Medicine Clinic of the Anchorage Native Primary Care Center. This study was approved by the Institutional Review Boards of the Alaska Area and the Centers for Disease Control and Prevention, and received tribal approval from the Southcentral Foundation Board of Directors. Written informed consent was obtained from each participant.

The clinical examination consisted of anthropometrical and physiological measures and self-administered questionnaires to obtain information on education, tobacco use, medical history, diet and exercise behavior. Each participant's height was measured to the nearest 0.1 cm using a wall-mounted calibrated stadiometer (Perspective Enterprises, Portage, Michigan). The participant, in street clothes and stocking feet, was weighed to the nearest 0.1 kg using a Scaletonix digital scale (Scal-

etronix, Wheaton, Illinois). Participants were weighed after voiding for a urinalysis. Obesity was defined according to criteria established for the National Health and Nutrition Examination Survey as body mass index greater than or equal to 25 kg/m<sup>2</sup> for women (8). Individuals were referred for follow-up for repeat testing for fasting glucose values greater than or equal to 126 mg/dL (9). Two consecutive measurements of blood pressure were performed after five minutes of rest with the participant seated. Measurements were taken on the right arm using the appropriate size cuff with a Datascope Accutorr Plus NIBP automatic blood pressure monitor (Datascope, Monteval, New Jersey) (10). The mean of the measurements was used to estimate the prevalence of hypertension and the population mean blood pressures. Individuals were classified as hypertensive according to the criteria in the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (11). Hypertension was defined as a mean systolic blood pressure (SBP) of  $\geq 140$  mm Hg or diastolic blood pressure (DBP) of  $\geq 90$  mm Hg. All participants were required to fast for at least eight hours for fasting blood samples obtained between 8:00-9:30 in the morning. Approximately 10 milliliters of blood were collected by venipuncture from an antecubital vein. Analysis of samples was conducted by the laboratory at the Alaska Native Medical Center. Samples were analyzed for blood glucose and lipids (total cholesterol, total triglyceride, high density lipoprotein [HDL] cholesterol, low density lipoprotein [LDL] cholesterol). High cholesterol was defined according to the criteria of the Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) as a total

cholesterol value greater than or equal to 240 mg/dL (12).

Questions administered during the clinical examination assessed demographic information, lifestyle, behaviors and medical history. Additionally a self-administered medical history questionnaire assessed tobacco use and smoking status: "Do you now smoke cigarettes?" and "Do you use smokeless tobacco (chew, snuff, dip, etc.)?" Self-reported history of high cholesterol was assessed with the question "Have you ever been told by a doctor, nurse or other health professional that your blood cholesterol is high?" (13). Self-reported high blood pressure was assessed by asking, "Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?" (13). A history of diabetes was assessed with the question, "Have you ever been told by a doctor, nurse or other health professional that you have diabetes?"(13).

Responses to self-administered questionnaires were collected on Scantron forms and automatically scanned into a participant database. Individual measurements were recorded by study-trained registered nurse examiners and manually entered into the participant database by study personnel.

## RESULTS

Between October 2000 and July 2005 1334 Alaska Native and American Indian women enrolled in the study. The average age of the women was 50 years. Of the participants, 54.6% were aged 40-49 years, 36.9% were aged 50-59 years and 8.5% were aged 60-64 years. More than 85% of the participants had completed high school. Selected characteristics and risk factors are shown in Table I.

**Table I.** Selected characteristics and selected cardiovascular disease risk factors among Alaska Native and American Indian women in the *Traditions of the Heart* program (n=1334).

Characteristic	Proportion (%)
Education ≤ 12 years	85.3
Current cigarette smoker	33.5
Body mass index ≥ 25 and < 30	32.0
Body mass index ≥ 30 and < 40	35.9
Body mass index ≥ 40	10.9
Hypertension	10.9
Self-reported high blood pressure	45.6
Total cholesterol ≥ 240 mg/dL	21.4
Self-reported high cholesterol	11.5
HDL-cholesterol < 40 mg/dL	5.4
Fasting glucose ≥ 126 mg/dL	5.6
Self reported diabetes	5.4

HDL = high density lipoprotein

Thirty two percent of the participants were overweight and 46.8% were obese. The prevalence of high cholesterol was 21.4% but 42.8% were not previously aware of having high cholesterol. The prevalence of fasting glucose ≥ 126 mg/dL was 5.6% but 27.7% were not aware of this problem. The prevalence of hypertension was 10.9% but 5.3% reported being unaware of having high blood pressure.

Table II shows that almost all (97.4%) of those with hypertension were classified as having stage I hypertension.

## DISCUSSION

This study identified many risk factors for cardiovascular disease in a group of Alaska Native women who volunteered for the *Traditions of the Heart* program. This is consistent with other recent studies on Alaska Native women (14-18). According to the 2002-2004 combined results of the Alaska Behavioral Risk Factor Surveillance Survey, Alaska Native adults were approximately twice as likely as non-Native adults to report smoking; 45% of Alaska Native people reported smoking compared to 23% of non-Native Alaskans (19). According to this same source, Alaska Native adults were more likely than non-Native Alaskans to report overweight or obesity; 67% of Alaska Native adults reported overweight or obesity compared to 61% of non-Native Alaskans. Thirty two percent of Alaska Native adults reported having no leisure time physical activity compared to 16% of non-Native Alaskan adults.

This study has several limitations. The study did not include a review of participant medical records to determine if the participants received treatment for the risk factor, nor did the ques-

**Table II.** Prevalence of hypertension among Alaska Native and American Indian women enrolled in the *Traditions of the Heart* program.

Characteristic	Age group			
	40-49 (n=729)	50-59 (n=492)	60-64 (n=113)	40-64 (n=1334)
Blood Pressure (mm Hg)				
Mean Systolic	118.95	124.46	132.45	122.45
Mean Diastolic	75.78	75.55	75.00	75.61
Hypertension (%)				
SBP ≥ 140 or DBP ≥ 90	10.1	6.9	33.6	10.9
SBP ≥ 160 or DBP ≥ 100	3.0	4.0	0.9	3.0

SBP = systolic blood pressure  
 DBP = diastolic blood pressure  
 mm Hg = millimeters mercury

tionnaire ask about treatment adherence for high blood pressure, dyslipidemia, or diabetes treatments. Also, the volunteers who participated were more likely to be concerned about and interested in health, and thus the study group may have been healthier than Alaska Native women in general. This suggests that a higher prevalence of these risk factors might be found in the general population of Alaska Native women. Early recognition and diagnosis of these risk factors and development of culturally competent clinic and community-based interventions aimed at aggressive correction is needed to prevent cardiovascular disease among Alaska Native women.

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*Rebecca Oberrecht  
Southcentral Foundation  
4501 Diplomacy Drive  
Anchorage, Alaska 99508  
USA  
Email: [roberrecht@southcentralfoundation.com](mailto:roberrecht@southcentralfoundation.com)*