

Racial/ethnic differences in microalbuminuria among persons with hypertension: National Health and Nutrition Examination Survey (NHANES) (1999-2004)

MODELE O. OGUNNIYI, MD, MPH^{1,2} ; JANET B. CROFT, PhD¹ ; WAYNE H. GILES, MD, MS¹

¹ *Centers for Disease Control and Prevention, Atlanta, GA*

² *Division of Cardiovascular Medicine, Vanderbilt University School of Medicine, Nashville, TN*

Background:

Microalbuminuria is a biomarker for renal damage caused by hypertension, diabetes and glomerular disease. An indicator of endothelial dysfunction, microalbuminuria predicts cardiovascular risk independent of conventional risk factors.

Objective:

To compare the prevalence of microalbuminuria among hypertension categories and examine ethnic/racial differences in microalbuminuria among those with hypertension.

Methods:

We analyzed data from NHANES (1999-2002), a cross-sectional survey of non-institutionalized US adults aged ≥ 20 years (N= 13172). Respondents were categorized by blood pressure (BP) levels according to the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) classification as having normal BP, 40.7% (39.0-42.4%), prehypertension, 30.0% (28.8-31.1%), stage 1, 23.7% (22.3-25.1%) or stages 2-3, 5.7% (5.1-6.3%). Microalbuminuria was defined as spot urinary albumin creatinine ratio of 30-299 mg/g. Logistic regression estimated the odds of having microalbuminuria among JNC 7 categories compared to normal BP (<120/80 mm Hg) after adjusting for age, race, gender, education, smoking, body mass index and diabetes.

Results:

The prevalence of microalbuminuria was 4.6% (3.8-5.4%) for normal BP, 6.6% (5.6-7.8%) for prehypertension, 11.9% (10.8-13.2%) for stage 1, and 25.6% (22.6-28.9%) for stages 2-3 hypertension. Compared to respondents with normal BP, the adjusted odds ratios and 95% confidence intervals for having microalbuminuria were 1.3 (1.0 -1.7) for prehypertension, 2.0 (1.6-2.5) for stage 1, and 5.5 (4.2-7.3) for stages 2-3 hypertension. Among hypertensives, non-Hispanic blacks, 17.1% (15.3-19.1%), and Mexican-Americans, 21.2% (17.6-25.3%) were more likely to have microalbuminuria than non-Hispanic whites, 13.2% (11.9-14.6%).

Conclusions:

Adults with hypertension had a higher likelihood of microalbuminuria than those with normal BP, but there was a non-significant trend for prehypertensives. Among hypertensives, a higher prevalence of microalbuminuria among non-Hispanic blacks and Mexican-Americans suggests greater target organ damage than in whites.

Measuring microalbuminuria may be a cost-effective approach to identify these high risk groups who may need further intervention. Therefore, clinicians should consider screening persons with hypertension and prehypertension for microalbuminuria.

Keywords: microalbuminuria, hypertension, race, ethnicity