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Alcohol Use and Hypertension in African Americans and European Americans: 15 years of the CARDIA Study

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Background: Hypertension (HTN) affects 32% of U.S. adults and a third of individuals with HTN are unaware of it. Multiple studies have shown that higher levels of alcohol use elevate blood pressure (BP), while low and moderate levels are cardioprotective and have a beneficial impact on HTN. However, controversies remain. Moreover, HTN morbidity and mortality is at least three-fold higher in African Americans (AA) than in European Americans (EA). In addition to a higher prevalence of HTN, AA experience elevated BP earlier in life and have higher rates of HTN-related death. The reasons for these disparities are unclear. Most previous studies of alcohol use and HTN were cross-sectional analyses and focused on EA, often of higher socioeconomic status. The Coronary Artery Risk Development in Young Adults (CARDIA) Study, a biracial population based cohort, provides an ideal opportunity to examine the longitudinal impact of alcohol use and misuse on HTN related outcomes.

Specific Aims: We propose to examine the impacts of alcohol consumption on the 1) development, 2) recognition, and 3) control of HTN. We will investigate whether the impacts vary by race/ethnicity and sex, and whether they are mediated by mutable factors such as medication adherence, and health care access and utilization.

Setting: In 1985, the NHLBI-funded CARDIA Study started collecting data on 5,115 subjects aged 18-30 years, from 4 urban areas, approximately half of whom were AA, half were female, and half had low educational attainment. Participants underwent an extensive baseline examination that included detailed sociodemographic, behavioral, cardiovascular risk factor, anthropometric, and biochemical information, and were re-examined at years 2, 5, 7, 10, and 15. Self-reported alcohol use is available for each of the 6 examinations.

Methods: The independent variable, alcohol use, will be examined as a continuous (drinks/day) and categorical (abstain, low, moderate, and hazardous) variable. We will also consider binge drinking. We will regress the dependent variables (HTN development, awareness, and control) on alcohol use, interaction terms of alcohol use with race/ethnicity and sex, as well as other covariates such as health care access/utilization, antihypertensive medication adherence, and individual physiological/psychological variables.

Implications for Practice and Policy: The effects of alcohol use, even in moderation, on the development and control of HTN are still in question. The U.S. Preventive Service Task Force advises screening for hazardous drinking, although the recommendation is often not followed. Effective interventions, in the primary care setting, can reduce alcohol consumption by 3 to 9 drinks per week. If low and moderate alcohol use, in addition to hazardous consumption, is associated with HTN and poor control in AA, as found in previous studies, physicians may need to counsel against any alcohol consumption in AA with difficult to control HTN. Additionally, uncontrolled HTN should herald further investigation into a patient's alcohol consumption, including binging. Further, if alcohol use increases the risk of medication non-adherence with negative effect on HTN control, additional emphasis on adherence counseling for hypertensive patients who consume alcohol could be helpful.

From a public health standpoint if alcohol use, including binge drinking, impacts development of HTN in later life, youths at risk for HTN who generally have not yet interacted with health care should be targeted for healthy alcohol use interventions.