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Racial/Ethnic Disparities in the Awareness, Treatment, and Control of Hypertension — United States, 2003–2010

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Hypertension is a leading cause of cardiovascular disease and affects nearly one third of U.S. adults (1,2). Because the risk for cardiovascular disease mortality increases as blood pressure increases, clinical recommendations for persons with stage 2 hypertension (systolic blood pressure [SBP] ≥ 160 mmHg or diastolic blood pressure [DBP] ≥ 100 mmHg) include a more extensive treatment and follow-up regime than for those with stage 1 hypertension (SBP 140–159 mmHg or DBP 90–99 mmHg) (3). Although racial/ethnic disparities in the prevalence of hypertension have been well documented (4); ethnic disparities in the awareness, treatment, and control within blood pressure stages have not. To examine racial/ethnic disparities in awareness, treatment, and control of high blood pressure by hypertension stages, CDC analyzed data from the National Health and Nutrition Examination Survey (NHANES) for the period 2003–2010. This report describes the results of that analysis, which indicated that the proportion of Mexican-Americans and blacks with stage 1 and stage 2 hypertension was greater than for whites.* Among those with stage 1 hypertension, treatment with medication was significantly lower for Mexican-Americans compared with their non-Hispanic counterparts. Although treatment among persons with stage 2 hypertension did not differ by race/ethnicity, less than 60% of those with stage 2 hypertension were treated with medication. More efforts are needed to reduce barriers to accessing health care and low-cost medication, as well as increasing clinicians' hypertension treatment knowledge and adherence to clinical guidelines.

NHANES is an ongoing, stratified, multistage probability sample of the noninstitutionalized U.S. civilian population.¹ Interviews and detailed physical examinations are performed. To obtain statistically stable estimates within racial/ethnic groups, CDC analyzed data from four 2-year cycles (2003–2010). Examination response rates ranged from 75% to 77% during this period, resulting in a total of 22,992 adult (aged ≥ 18 years) participants. The analysis excluded women who were pregnant ($n = 732$), participants without a blood pressure measurement ($n = 1,339$), other Hispanics and persons of other race or of multiple race ($n = 2,693$), and persons without hypertension ($n = 14,313$). Some participants were excluded based on more than one criterion, yielding a final study sample of 6,632 participants. Hypertension was defined as an average SBP ≥ 140 mmHg or DBP ≥ 90 mmHg, based on the average of up to three blood pressure measurements,[§] or self-report of currently using blood pressure–lowering medication. Hypertension treatment was identified as the use of blood pressure–lowering medication and did not include lifestyle or dietary approaches. Hypertension stages were classified as stage 1 hypertension (SBP 140–159 mmHg or DBP 90–99 mmHg) and stage 2 hypertension (SBP ≥ 160 mmHg or DBP ≥ 100 mmHg) (3). Blood pressure control was defined as an SBP < 140 mmHg and DBP < 90 mmHg among those with hypertension. Hypertension awareness was determined based on whether a participant was ever told they had high blood pressure by a health-care provider. Health-care coverage was categorized into three groups: 1) Medicare, 2) private insurance, or 3) public insurance, which included Medicaid, a military health plan, or a state-sponsored plan.

All analyses were performed using statistical software to account for sampling weights and adjust variance estimates for the complex sampling design. A univariate chi-square test of independence was used to determine statistically significant ($p < 0.05$) differences across racial/ethnic groups. Because multiple NHANES cycles were combined, trends over time could not be examined, and prevalence estimates could not be age adjusted. Population counts were estimated using the Current Population Surveys provided from NHANES by averaging the population during the period coinciding with the four NHANES cycles.[†]

Among those with hypertension, the proportion of persons who were aged < 65 years was greater for blacks (74.1%) and Mexican-Americans (71.9%) compared with whites (57.4%) (Table 1). Hypertension awareness, treatment, and control were lowest among Mexican-Americans (68.7%, 58.7%, and 35.5%, respectively) compared with whites (aware: 79.1%, treated: 71.2%, and controlled: 48.6%) and blacks (aware: 80.8%, treated: 71.9%, and controlled: 43.0%).

Among those with uncontrolled hypertension, awareness and treatment was greater for blacks (66.3% and 50.7%, respectively) compared with whites (aware: 59.4%, treated: 44.0%) and Mexican-Americans (aware: 51.4%, treated: 35.9%) (Table 2). Blacks with stage 1 hypertension had greater awareness (61.3%) and treatment (47.4%) compared with whites (awareness: 57.4%, treatment: 42.1%) and Mexican-Americans (awareness: 45.2%, treatment: 30.0%). Among those with stage 2 hypertension, blacks had greater awareness (77.6%) compared with whites (65.7%) and Mexican-Americans (66.0%); however, no difference was observed in hypertension treatment by race/ethnicity. Health-care coverage for those with uncontrolled hypertension was lowest for Mexican-Americans (59.3%) compared with blacks (77.7%) and whites (89.4%). However, among all persons with uncontrolled hypertension who were treated, the proportion who had health-care coverage was lower for Mexican-Americans (75.0%) compared with blacks (86.9%) and whites (94.4%). Awareness and treatment increased from stage 1 to stage 2 hypertension across all racial/ethnic groups.

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Editorial Note

The results presented in this report indicate that during 2003–2010, racial/ethnic disparities existed among U.S. adults with hypertension and within hypertension stages for age, awareness, treatment, and health-care coverage. Mexican-Americans and blacks with hypertension were significantly younger than whites. This might reflect earlier onset of hypertension among these racial/ethnic groups (5). Awareness and treatment was highest among blacks. This association is consistent with previous studies (6,7) and might be a result of efforts to reduce the persistent high prevalence of hypertension among blacks. Although no significant difference was observed in hypertension treatment by race/ethnicity among those with stage 2 hypertension, treatment was low overall (50%–58%) in this high-risk group, for whom clinical guidelines recommend a two-drug combination (3). Data on the number or type of medication used by participants, including two-drug combinations, were not examined in this report. A greater proportion of blood pressure control among those treated for hypertension has been observed among Mexican-Americans (74%) and whites (75%) compared with blacks (62%) (6). To improve treatment and achieve the *Healthy People 2020* goal of blood pressure control in 61.2% of persons with hypertension (8) across all race/ethnic groups, targeted implementation of demonstrated, evidence-based community and clinical strategies is necessary (1).

In this study, the proportion of persons with health-care coverage was lowest among Mexican-Americans. Lack of health-care coverage has been associated with lower rates of hypertension awareness, treatment, and control (9). This might partially explain the observed lower treatment and awareness of hypertension among Mexican-Americans in this report.

The findings in this report are subject to at least five limitations. First, although the focus of the study was to investigate racial/ethnic disparities within blood pressure stages, CDC did not consider other racial/ethnic groups or respondents who were multiracial because sample sizes were too small for meaningful analysis. Similarly, the study could not consider other Hispanic subpopulations or Hispanics as a whole because of differences in NHANES sample design between the 2003–2006 and 2007–2010 cycles. Second, hypertension awareness and treatment as well as other covariates were self-reported and subject to recall bias. Third, hypertension treatment was based only on medication use, not accounting for participants who were using lifestyle or dietary approaches to reduce blood pressure, which might have resulted in an underestimation of proportion of adults with hypertension who received "treatment." Fourth, because of a limited number of participants with stage 2 hypertension within each cycle of NHANES, changes over time in the estimates were not evaluated. Finally, NHANES examination response rates ranged from 75% to 77%.

Racial/ethnic disparities exist in blood pressure, awareness, treatment, and control, with Mexican-Americans having a lower awareness and treatment of hypertension, as well as less health-care coverage, compared with blacks and whites. Multiple national efforts target improvements in high blood pressure prevention, treatment, and control (3). The Million Hearts initiative, co-led by CDC and the Centers for Medicare and Medicaid Services, is focusing efforts on preventing 1 million heart attacks and strokes by 2017, partially achieved by increasing blood pressure control for 10 million persons in the United States (10).** Million Hearts is working to reduce cardiovascular disease risk factors through parallel efforts aimed at clinical settings and communities with a focus on the "ABCS" (i.e., appropriate aspirin use for those at risk, blood pressure control, cholesterol management, and smoking cessation). The initiative aims to improve prescription and patient adherence to appropriate medications for the ABCS, promote a heart-healthy lifestyle, and refine access to effective care, while bringing clinicians' attention to cardiovascular disease prevention, including appropriate drug regimens. Million Hearts also provides communities and clinical settings with resources and materials that are tailored for different racial/ethnic populations.

References

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* For this report, all persons of black or white race are non-Hispanic. Mexican-Americans might be of any race.

† Additional information available at <http://www.cdc.gov/nchs/nhanes.htm>.

§ Additional information available at <http://www.cdc.gov/nchs/nhanes.htm>.

¶ Additional information available at http://www.cdc.gov/nchs/nhanes/response_rates_cps.htm.

** Additional information available at <http://millionhearts.hhs.gov/index.html>.

What is already known on this topic?

It has been previously reported that one in three U.S. adults had high blood pressure during 2009–2010, and approximately half (53.3%) had their condition under control. The prevalence of high blood pressure differs by race/ethnicity, with the condition being more common among blacks (40.4%) compared with whites (27.4%) and Mexican-Americans (26.1%).

What is added by this report?

Based on data from the National Health and Nutrition Examination Survey for the period 2003–2010, high blood pressure control differed for whites (48.6%), blacks (43.0%), and Mexican-Americans (35.5%). Among those with hypertension, the proportion with stage 2 hypertension was greater for Mexican-Americans (19.2%) and blacks (17.7%) compared with whites (12.3%).

What are the implications for public health practice?

To reduce the prevalence of uncontrolled high blood pressure and the associated racial/ethnic disparities, efforts are needed to increase hypertension awareness and hypertension treatment and adherence, especially in the Mexican-American population. The Million Hearts initiative focuses on addressing these issues by presenting a multifactorial approach focusing on reducing cardiovascular risk factors, such as high blood pressure, and tailoring this approach to effectively reach different racial/ethnic populations.

TABLE 1. Prevalence of selected characteristics among adults aged ≥18 years with hypertension,* by race/ethnicity — National Health and Nutrition Examination Survey, United States, 2003–2010†

Characteristic	Mexican-American N = 1,062	White, non-Hispanic N = 3,766	Black, non-Hispanic N = 1,804	p-values‡
	% (95% CI)	% (95% CI)	% (95% CI)	