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Putting It All Together: Summary of the NHLBI Workshop on the Epidemiology of Hypertension in Hispanic American, Native American, and Asian/Pacific Islander American Populations

SYNOPSIS

THE AUTHORS OF THIS PAPER SUMMARIZED the major themes that emerged from a 2-day workshop entitled Epidemiology of Hypertension in Hispanic Americans, Native Americans, and Asian/Pacific Islander Americans, sponsored by the National Heart, Lung, and Blood Institute (NHLBI) in Washington, DC. Data from the papers were synthesized using seven points: similarities, variability within and between groups, lost prevention opportunities, emergence of explanatory variables, differences in types of data collected, missing or inconsistently reported data, and socioeconomic characteristics.

Virtually all of the population groups demonstrated rises in blood pressure with age. These rises appear to be largely attributable to potentially modifiable risk factors, for example, high body mass index (BMI). Despite high levels of awareness, the levels of control of high blood pressure were poor in each population studied.

Based on the themes that emerged from the data, we presented several recommendations to the workshop. One was that data be collected on these population groups repeatedly and in a standardized fashion. Another called for increased efforts aimed at control of high blood pressure in these groups. A third recommended major nationwide programmatic efforts aimed at the prevention and control of high blood pressure.

Summarizing more than 25 separate papers and presentations is a daunting task. In this summary we present key findings from the National Heart, Lung, and Blood Institute's workshop entitled Epidemiology of Hypertension in Hispanic Americans, Native Americans, and Asian/Pacific Islander Americans and from the workshop papers prepared for publication in this supplement to *Public Health Reports.*

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The themes that emerged from both the papers and the authors' longer presentations at the NHLBI workshop, along with recommendations, are presented below.

Overview of the NHLBI Workshop Papers and Presentations

Tables 1 to 3 summarize some of the key findings from the papers on hypertension in Hispanic, Asian, and American-Indian populations. The tables demonstrate how difficult it is to represent adequately diverse findings from so many studies. They also illustrate the difficulty in distinguishing the relative importance of genetic, socioeconomic, and cultural factors, and their effects on the well-established risk factors such as obesity, unhealthy diet, excess alcohol consumption, and diabetes in the etiology of high blood pressure in these diverse groups.

From the papers and some additional data given in the presentations, a number of themes emerged. Our synthesis of these themes and our subsequent recommendations reflect a public health perspective.

We used seven points to synthesize the data from the papers and presentations. First, the similarities among the different populations were remarkable. In virtually all of the populations, there is an extraordinary increase in the prevalence of high blood pressure as the population ages. Also, the prevalence rates of optimal blood pressure are very low (under 25% using the criterion of blood pressure under 140/90 mmHg), particularly in those age 50 and older. This is in striking contrast to the levels of awareness of high blood pressure, which are quite high among all of these groups.

Second, within and between groups there was a considerable amount of variability. For example, among American Indian tribes there are significant differences in the prevalence of hypertension and the mortality that is associated with it, suggesting that there is considerable room for improvement in those with higher rates.

Third, we observed a large number of lost opportunities for undertaking preventive efforts, which should begin early, starting in childhood and continuing throughout adult life.

Fourth, a number of explanatory variables emerged that were fairly consistent across the different presentations. Modifiable characteristics included high body mass index (BMI), central obesity, and intra-abdominal fat, and their sequelae, such as impaired glucose tolerance (IGT), and non-insulin dependent diabetes mellitus. These conditions are prevalent in several populations, for example, American Indians among whom the prevalence of diabetes and impaired glucose tolerance at times exceed 60%. Another modifiable characteristic identified in a number of studies was excess alcohol consumption. A less easily modifiable explanatory variable that emerged repeatedly was low education.

Fifth, researchers collected and reported their data differently, making comparisons across data sets difficult.

Sixth, data were missing or not reported consistently in some cases, including data on dietary variables—perhaps because they were not collected—and data on physical activity and alcohol consumption.

Seventh, high poverty and unemployment rates characterized most of the study populations. That obviously has implications in terms of the ease of successfully implementing high blood pressure prevention and control programs.

Recommendations for the Future

With this summary as a prelude, we provide seven recommendations for the future:

- First, develop a larger database on high blood pressure for minority populations. We have not systematically collected data on all large minority groups in this country. Included within that database should be 1) levels of blood pressure; 2) treatment, awareness, and control rates for high blood pressure; and 3) information on potential etiologic variables such as diet. Further, these measurements should be made on random samples of the respective populations.

Table 1. Summary of papers on high blood pressure in American Indians

Lead Author	*Study Population*	*Key Findings*
Acton	Indian Health Service	Threefold difference in regional rates of HBP; overall 1/2 rate in U.S. as a whole
Casper	Inter-Tribal Heart	Much higher prevalence of diabetes, slightly higher prevalence of HBP than U.S. whites
de Courten	Pima Indian	HBP strongly related to high prevalence of obesity, diabetes
Gilbert	Navajo Adolescents	3x prevalence of obesity, 2x prevalence of high normal BP of U.S. whites
Howard	Strong Heart	Lower prevalence of HBP than U.S. whites, 30% rate of control; 40 to 70% prevalence of diabetes
Percy*	Navajo Health & Nutrition	<20% control; more strokes with poor control
Schraer	Alaska Native	Sample size too small to draw conclusions

* Presented at NHLBI workshop but did not submit paper for publication in this supplement.

Table 2. Summary of papers on high blood pressure in Asian and Pacific Islander Americans

Lead Author	*Study Population*	*Key Findings*
Curb	Honolulu Heart Native Hawaiian	High rates of HBP in Japanese Americans, low rates of control Similar to U.S. rates, low rates of control
Fujimoto	Seattle Japanese American	Diabetes, IGT, visceral obesity associated with more HBP
Imazu	Hawaii-Los Angeles-Hiroshima	BPs in Hawaii > in Los Angeles > in Hiroshima; associated with higher insulin, glucose, lipid levels
Klatsky	Kaiser Permanente	BPs in Filipino > Japanese, Chinese
Liu	Chicago School Children	BPs in Asian children > Hispanics
Sherwin	MRFIT Screenees	"Orientals" lower SBPs; young American Indian BPs > whites; older American Indian BPs < whites

- Second, collect data in a standardized fashion so that we can make comparisons among different groups. This might include, for example, measuring blood pressure as follows: have participants sit quietly for at least 5 minutes, use a mercury syphgmomanometer for the reading, and record the fifth Korotkoff sound.
- Third, collect data repeatedly, much as the National Health and Nutrition Evaluation Survey (NHANES) is doing with the larger population groups, that is, whites, blacks, and Hispanics. These data should be updated regularly for major Hispanic, Asian, and American-Indian sub-populations. We should track awareness and control rates over time to ascertain improvement or maintenance of the status quo. For example, the data for Mexican Americans have not changed for the past 10 years for either awareness or control.
- Fourth, compare data both within and between groups. The data from these groups should also be compared with data from white and black populations.
- Fifth, launch major efforts to prevent high blood pressure. One of the key findings that emerged repeatedly in the different data sets is the striking increase of high blood pressure with age, as well as large disparities within and between different ethnic groups.

There is a great deal we can do to prevent high blood pressure. We need to have systematic programs mounted that will address this issue, focusing both on the general population, as well as culturally sensitive programs targeting black, Hispanic, Asian, and American-Indian populations. All of these groups need preventive efforts, focusing on weight control, sodium restriction, physical activity, and moderation in alcohol.

- Sixth, reinforce and reinvigorate the high blood pressure control programs in this country. We saw very few populations that had better than a 25% control rate, and many that were considerably lower than that, in the 5% to 10% range. We need to do much better than that; however, we are going to need some resources to raise control rates. Furthermore, some of the minority groups that had particularly low control rates will need special attention.
- Seventh, conduct further research on the reasons for the disparities among different population groups. We saw hints of some of the underlying causes in many of the presentations and papers. We need to tease out those hints and do further research aimed at assessing how to improve the current status of prevention and control efforts.

Table 3. Summary of papers on high blood pressure in Hispanics

Lead Author	*Study Population*	*Key Findings*
Berenson	Bogalusa Heart Brooks County	BPs in blacks > in whites BPs in Hispanic boys > white, black boys
Crespo	Hispanic HANES adults	BPs in Mexican Americans, Cuban Americans > Puerto Ricans; men > women; < 10% controlled
Haffner	San Antonio Heart	Less HBP in Mexican Americans than whites, but 1/3 rate of control; Mexicans had 2/3 prevalence of Mexican Americans
Hanis	Starr County, Texas	Prevalence HBP low in Mexican American women until age 45
Hazuda	Mexico City Diabetes	HBP inversely associated with SES, assimilation in Mexican Americans; similar association in Mexican women, mixed in Mexican men
Loria	Hispanic HANES children	BPs in Mexican Americans, Cuban Americans > Puerto Ricans; boys > girls
Rewers	San Luis Valley Diabetes	BPs in Hispanics with IGT < whites with IGT
Winkleby	Stanford Five-City	BPs in whites > Hispanics, but confounded by sociodemographic variables