COMPARISON OF BLOOD PRESSURE BETWEEN INDIANA AMA AND NMA MEMBERS

F.M. Baker, MD, MPH
Salisbury, Maryland

Objective: 1) To determine whether African-American physicians, compared to caucasian physicians, were at increased risk to develop hypertension; and 2) to determine whether physicians' knowledge of cardiovascular risk factors influenced their pattern of exercise.

Design: A mailed survey of members of the American Medical Association (AMA) and the National Medical Association (NMA) was completed to assess health status and plans for retirement.

Results: High-normal blood pressure was defined as systolic blood pressure of 85–89 mmHg. Mild (stage-1) hypertension was defined as systolic blood pressure of 140–159 mmHg and diastolic blood pressure of 90–99 mmHg. Gender (male), age, and body mass index (BMI) were significantly correlated with elevated levels of selected blood pressure measures. Using regression analysis to control for gender, age, and BMI, ethnicity was identified as a fourth factor accounting for elevated blood pressure. NMA physicians had 3.25 times the risk of having systolic blood pressure in the mild (stage-1) hypertension range, 5.78 times the risk for blood pressure in the high-normal diastolic hypertension range, and 5.19 times the risk for blood pressure in the mild (stage-1) diastolic hypertension range. Medical specialty and type of psychological support were not significant predictors of elevated blood pressure.

Conclusion: These data suggest that African-American physicians may be at an increased risk to develop abnormal blood pressure, compared to caucasian physicians, potentially affecting the number of physicians available to minority communities. (*J Natl Med Assoc.* 2003;95:1033-1041.)

Key words: hypertension ♦ physicians ♦ comparison of black and white physicians ♦ Meharry Cohort Study ♦ hypertension severity

INTRODUCTION

The Meharry Cohort study followed a class of Meharry Medical College graduates from their medical school years to their practice years—completing a 20-year follow-up.[1,2] These studies found that essential hypertension was identified during their medical school years for some students. At the 20-year follow-up, 44% of the 313 re-examined physicians had blood pressure consistent with stage-1 hypertension.[2]

For African Americans, the increased risk of mortality from coronary heart disease resulting from hypertension has been reported.[3-5] In addition, specific concern has been raised about the loss of physicians providing care to underserved minority populations.[6,7] Although the African-American population has a higher prevalence of hypertension, obesity, diabetes, glaucoma, and osteoarthritis[8-11]—which contribute to excess deaths—the presence of these chronic illnesses are influenced, also by socioeconomic and behavioral factors. Given that African-American physicians are trained in the identification of risk factors for illness and have incomes and knowledge of how to access the health care system, one would expect that their health status would be better than that of

 From the Lower Shore Clinic, Salisbury, MD. Send correspondence and reprint requests for *J Natl Med Assoc.* 2003;95:1033-1041 to: F.M. Baker, Medical Director, Lower Shore Clinic, 505 E. Main St., Salisbury, MD 21804; phone: (410) 341-3420; fax: (410) 341-3397

Table 1. Sample Description of Demographic Variables for Caucasian and African-American Physicians

		Caucasian		African American		Total		Chi-square test of significance			
Variable	**Level**	***n***	**%**	***n***	**%**	***N***	**%**		χ^2	***df***	***p***
	Total	93	66.9[a]	46	33.1[a]	139		Overall	15.9	1	<0.001
Gender	Male	88	94.6	32	69.6	120	86.3	Overall	73.4	1	<0.001
	Female	5	5.4	14	30.4	19	13.7	Interaction	16.4	1	<0.001
Age	30–39	1	1.1	11	24.4	12	8.7	Overall	41.6	4	<0.001
	40–49	1	1.1	17	37.8	18	13.0	Interaction	65.1	4	<0.001
	50–59	40	43.0	5	11.1	45	32.6				
	60–69	38	40.9	9	20.0	47	34.1				
	>69	13	14.0	3	6.7	16	11.6				
Marital Status	Married	84	90.3	35	76.1	119	85.6	Overall	70.5	1	<0.001
	Other	9	9.7	11	23.9	20	14.4	Interaction	5.1	1	0.024
Income	(1) <$100,000	16	18.4	10	25.0	26	20.5	Overall	7.8	4	NS
	(2) $100,000–$149,000	20	23.0	13	32.5	33	26.0	Interaction	3.7	4	NS
	(3) $150,000–$199,000	25	28.7	6	15.0	31	24.4				
	(4) $200,000–$249,000	15	17.2	6	15.0	21	16.5				
	(5) >$249,000	11	12.6	5	12.5	16	12.6				

Note: Inconsistency in total *N* sizes is due to incomplete data.
NS = not significant.
χ^2 values based on cell sizes of five or less should be interpreted with caution.
a These percents are based on the total *N*=139. Other percents are based on columns (i.e., respective ethnic *n* sizes).

many African-American community residents who are socioeconomically disadvantaged. Recent papers have addressed recent advances in the treatment of hypertension,[12-16] the importance of lifestyle and increased physical activity,[17] and the role of diet in increasing longevity[18] and decreasing the risk for coronary disease.[19]

This paper is the first report of data comparing African-American physician members of the National Medical Association (NMA) and caucasian members of the American Medical Association (AMA) on blood-pressure level, preventive health measure, and psychological support. This study was designed to determine whether African-American physicians, compared to caucasian physicians, might be at an increased risk to develop hypertension based upon a physiologic risk that was not related to socioeconomic factors. A second question was the extent to which the physicians' knowledge of risk factors for cardiovascular disease influenced the amount of exercise of these physicians and whether psychological support and medical specialty affected blood pressure levels.

METHODS

Sample

A roster of members ages 50 and older of the Indianapolis, IN, chapter of the AMA was reviewed. Physicians who indicated their medical specialty as internal medicine, family practice, obstetrics and gynecology, neurology, and pediatrics were identified for the study sample of AMA members. The cut-off age of 50 years was selected in order to obtain a sample of physicians who were actively concerned with retirement planning. These medical specialties were selected as being similar to the anticipated range of specialties of the majority of practicing NMA members. The AMA sample for mailing was 187 physicians.

In 1895, African-American physicians formed their own professional organization, the NMA, at a

Table 2. Proportional Differences Between Caucasian and African-American Physicians on Blood-Pressure Measures

		Caucasian		African American		Total		Chi-square test			
Blood Pressure	**Level**	***n***	**%**	***n***	**%**	***N***	**%**		$\chi 2$	***df***	***p***
Systolic (high-normal)	Low or normal (<130)	64	68.8	29	63.0	93	66.9	Interaction	0.5	1	NS
	High (≥130)	29	31.2	17	37.0	46	33.1				
Systolic (mild [stage-1] hypertension)	Low or normal (<140)	75	80.6	31	67.4	106	76.3	Interaction	3.0	1	NS
	High (≥140)	18	19.4	15	32.6	33	23.7				
Diastolic (high-normal)	Low or normal (<85)	76	81.7	31	67.4	107	77.0	Interaction	3.6	1	(0.059)
	High (≥85)	17	18.3	15	32.6	32	23.0				
Diastolic (mild [stage-1] hypertension)	Low or normal (<90)	84	90.3	36	78.3	120	86.3	Interaction	3.8	1	(0.051)
	High (≥90)	9	9.7	10	21.7	19	13.7				
Systolic + Diastolic (high-normal)	Both not high	60	64.5	27	58.7	87	62.6	Interaction	4.7	2	NS
	Only one high	20	21.5	6	13.0	26	18.7				
	Both high	13	14.0	13	28.3	26	18.7				
Systolic + Diastolic (mild [stage-1] hypertension)	Both not high	73	78.5	30	65.2	103	74.1	Interaction	4.6	2	NS
	Only one high	13	14.0	7	15.2	20	14.4				
	Both high	7	7.5	9	19.6	16	11.5				

Note: NS = not significant.

time when nonwhite physicians were excluded from membership in the AMA. In the 21st century, the NMA remains an important resource for the professional lives of African-American physicians and all NMA members. *The Journal of the National Medical Association* (*JNMA*) remains the major source of information concerning the diagnosis and treatment of disorders in the African-American population in the United States. The NMA has local chapters in each of the 50 states and over 3,000 physicians attend its annual meeting.

A roster, which was not specified by medical specialty of the members of the Indianapolis, IN, chapter of the NMA, was obtained. The NMA sample for mailing was 85. All NMA members were selected, because the age distribution of the NMA membership was unknown.

Since NMA members were no longer restricted from membership in the AMA, a comparison of the AMA and NMA rosters was made and persons with dual membership in the AMA and NMA were deleted from the AMA roster. Each physician was assigned an identifying number that was stamped on each page of the questionnaire in order to maintain confidentiality. Only the authors had a copy of the master log which enumerated the physicians' names and identifying numbers.

Procedures

Three mailings were sent to AMA and NMA members between January 16, 1998 and March 10, 1998. Concurrent with the second and third mailing, AMA and NMA members were called at their offices to advise them that the questionnaire was sent, to explain the study, and to answer any questions beyond those addressed in the accompanying cover letter. After three mailings and two telephone calls, 58% of AMA members (109 of 187) and 65% of NMA members (55 of 85) returned completed questionnaires.

Measures

The seven-page, double-sided questionnaire was

Table 3. Correlation Matrix Between Predictor Variables and Blood-Pressure Measures

		Blood-Pressure Measures							
		Systolic			Diastolic			Systolic + Diastolic	
Predictor Variable	*N*	Continuous	High Normal	Mild (Stage-1) Hypertension	Continuous	High Normal	Mild (Stage-1) Hypertension	High Normal	Mild (Stage-1) Hypertension
Ethnicity	139	-0.04	0.06	0.15	0.04	0.16	0.17	0.12	0.17*
Gender	139	-0.24**	-0.10	-0.12	-0.28***	-0.22*	-0.16	-0.18*	-0.16
Age	138	0.36****	0.19*	0.10	0.24**	0.18*	0.12	0.21*	0.12
Marital Status	139	-0.03	-0.07	-0.08	-0.14	-0.08	0.02	-0.08	-0.04
Income	127	-0.08	-0.08	-0.08	-0.14	-0.08	-0.13	-0.09	-0.12
Medical Specialty	138	-0.16	-0.06	-0.10	-0.14	-0.10	-0.11	-0.09	-0.12
BMI	135	0.31***	0.28**	0.33****	0.27**	0.27**	0.26**	0.31***	0.34****
Exercise	139	-0.05	-0.03	-0.04	-0.04	-0.09	0.00	-0.07	-0.02
Psychological Support[a]	139	-0.03	0.08	0.04	-0.02	0.01	0.01	0.05	0.03
Spiritual[b]	139	-0.06	0.02	0.03	-0.04	-0.01	0.00	0.00	0.02
Creative[b]	139	-0.02	0.14	0.04	-0.02	0.06	0.02	0.11	0.04
Other[b]	139	0.14	0.06	0.05	0.04	0.06	0.11	0.07	0.09

a As a continuous variable.
b As a dichotomous variable.
Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$; ****$p<0.0001$.

used to collect the data for a larger study examining the health status and retirement plans for physicians. The study instrument was a revision of an instrument used in prior investigations by Baker.[20,21] The questionnaire used in the present study could be completed in approximately 10 minutes.

Demographic Information

All data were self-reported including age, gender, marital status, and income. Although age was collected as a continuous variable, it was also categorized based on 10-year spans (e.g. 30-39, 40-49, 50-59, 60-69, and > 69). Data pertaining to demographic information included ethnicity, medical specialty, and type and location of practice.

Marital status was categorized as married, separated, divorced, widowed, or single/never married. Due to the limited number of physicians selecting options other than married, these other categories were grouped into one category and labeled "Other."

Income for the 1997 calendar year consisted of 12 income ranges. Based upon the endorsement frequencies, these intervals were combined to form only five large ranges <$100,000, $100,000–$149,000, $150,000–$199,000, $200,000–$249,000, and >$249,000.

Occupational, Physiological, and Psychological

Specific data collected on medical education included medical school name, year of medical school graduation, completion of fellowship training, and completion of specialty boards.

Twelve specialties, which included a write-in "Other" option, were enumerated. The responses were categorized using the Graduate Medical Education Directory—1998–1999[22] and recategorized into four major groups. These four categories were projected to have increasing levels of job-related stress: 1) "Other" (medical genetics, neurology, ophthalmology, pediatrics, psychiatry, radiology, and radiation oncology); 2) Medicine (i.e., family medicine, general medicine, internal medicine; 3) Obstetrics and Gynecology; and 4) Surgery and Emergency Medicine (i.e., anesthesiology, emergency medicine, general surgery, surgical subspecialties).

"Type of practice" was defined based upon 11

Table 4. Comparison of Caucasian Versus African-American Physicians in Blood-Pressure Measures Using Covariates and Multiple Regression Analyses

	Blood-Pressure Measures								
	Systolic			Diastolic			Systolic + Diastolic		
	Continuous	High Normal	Mild (Stage-1) Hypertension	Continuous	High Normal	Mild (Stage-1) Hypertension	High Normal	Mild (Stage-1) Hypertension
Predictor Variable	*F* *p*	*F* *p*	*F* *p*	*F* *p*	*F* *p*	*F* *p*	*F* *p*	*F* *p*
Model = 3 Predictors (N=134)								
Gender	8.54**	1.34	2.08	11.64***	6.67*	3.47	4.40*	3.54
Age	17.77****	5.12*	0.97	3.88	2.22	1.28	4.77*	1.47
BMI	18.65****	12.44***	16.16****	9.92**	10.21**	9.35**	15.01***	17.15****
Overall F (3, 130)	14.99****	6.30***	6.40***	8.48****	6.37***	4.70**	8.06****	7.39****
R^2	25.7%	12.7%	12.9%	16.4%	12.8%	9.8%	15.7%	14.6%
Model = 4 Predictors (N=134)								
Gender	8.78**	1.36	2.18	12.25***	7.44**	3.71	4.73*	3.82
Age	18.27****	5.22*	1.02	4.08*	2.47	1.37	5.13*	1.59
BMI	19.17****	12.69***	16.93****	10.45**	11.37**	9.99**	16.14****	18.52****
Ethnicity	4.65*	3.57 (.06)	7.15**	7.88**	15.83****	9.90**	10.83**	11.32**
Overall F (4, 129)	12.72****	5.71***	6.82****	8.67****	9.28****	6.24****	9.21****	8.81****
R^2	28.3%	15.0%	17.4%	21.2%	22.3%	16.2%	22.2%	21.5%
Increase in R^2	2.6%	2.4%	4.6%	4.8%	9.5%	6.4%	6.5%	6.9%

Note: *$p<0.05$; **$p<0.01$; ***$p<0.001$; ****$p<0.0001$.
F values are based on unique prediction.

choices (including a write-in "Other" option. The choices were categorized into five groups: solo practice, group practice, university, retired, and "Other." The latter category included physicians who indicated more than one type of practice.

The determination of whether the responding physicians exercised or not was based on "Yes" responses from three different items: 1) "Do you have a preventive health program involving diet and exercise that you follow?" If the physician answered, "Yes," then the physician was asked to "describe" the program; 2) Physicians who responded "Yes," to the question, "Do you have any physical limitations?" were asked, "How do you cope with these limitations?" Selection of the choice, "Keep active with exercise" indicated exercising; 3) "Which of the following people and activities are sources of psychological support for you?" Choosing the option of "exercise," "gardening," or "Write-In" in an open-ended response reflective of an exercise or semi-exercise activity (i.e., outdoor activities, such as boating, cycling, flying, golfing, hiking, playing tennis, scuba diving, and skiing) indicated exercising. An affirmative response to any of these three above items was defined as the physician engaging in exercise.

BMI was calculated using the values of height and weight (as self-reported by the physicians) and the standard BMI formula: weight in kilograms divided by height in meters.[2, 23] The outcome was a continuous variable of BMI. This measure was also categorized to create a dichotomous variable as follows: low to normal—27 for males, <26 for females versus high BMI—>27 for males, >26 for females.[23]

Psychological support was based on the response to the question, "Which of the following

Table 5. Adjusted Mean Differences Between Caucasian and African-American Physicians on Blood-Pressure Measures

		Caucasian (N=93)		African-American (N=46)						
Type of Blood Pressure	**Scale**	**Mean**	***(SE)***	**Mean**	***(SE)***	**Mean Difference**	**Odds Ratio**	***t***	***df***	***p***
Systolic	Continuous	125.92	(1.08)	130.52	(1.70)	-4.60		-2.16	137	0.0330
	High-normal (≥130)	0.28	(0.05)	0.46	(0.08)	-0.18	2.19	-1.89	137	0.0610
	Mild (stage-1) hypertension (≥140)	0.17	(0.04)	0.40	(0.07)	-0.23	3.25	-2.67	137	0.0085
Diastolic	Continuous	76.76	(0.82)	81.29	(1.28)	-4.53		-2.81	137	0.0058
	High-normal (≥85)	0.12	(0.04)	0.44	(0.06)	-0.32	5.78	-3.98	137	<0.0001
	Mild (stage-1) hypertension ≥90)	0.07	(0.03)	0.28	(0.05)	-0.21	5.19	-3.15	137	0.0021
Systolic + Diastolic	High-normal	0.40	(0.08)	0.90	(0.12)	-0.50		-3.29	137	0.0013
	Mild (stage-1) hypertension	0.23	(0.07)	0.68	(0.10)	-0.45		-3.36	137	0.0010

Note: Odds ratios are not applicable for blood-pressure measures that are not dichotomous.

people and activities are sources of psychological support for you? (Circle all categories that apply.)" Choices involving "exercise" (see above) were not categorized under psychological support. The remaining 14 options (including three open-ended, write-in "Other" choices) were grouped into six categories (possible range in parentheses): social relations (0–6), e.g., spouse or partner; spiritual (0–2), e.g., church; creative (0–5), e.g., singing; medication (0–1); nonactive (0–5), e.g., playing card or board games; and "Other" (0–7), e.g., travel. The total score for psychological support was the sum of these six values.

Blood Pressure

In order to determine if different results would be obtained as a function of the levels of self-reported systolic blood pressure (SBP) and diastolic blood pressure (DBP), eight indicators of blood pressure (BP) were utilized and contrasted based upon the Sixth Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure criteria:[24]

1) Continuous SBP;
2) High-normal SBP (SBP=≥130 mmHg;
3) mild (stage-1) SBP hypertension (SBP ≥140 mmHg;
4) Continuous DBP;
5) high-normal DBP (DBP ≥85 mmHg;
6) mild (stage-1) diastolic hypertension (DBP ≥90 mmHg;
7) High-normal BP combining SBP and DBP (SBP of ≥130 mmHg and DBP of ≥85 mmHg); and
8) mild (stage-1) hypertension combining SBP and DBP (SBP of ≥140 mmHg and DBP of ≥90 mmHg).

Ethics

This study was exempted by the Institutional Review Board of the Indiana University School of Medicine by obtaining written informed consent,

because of the nature and procedures of the study. Physicians could choose to complete and mail the questionnaire back and become a study participant. By choosing not to return the survey or—as requested in the cover letter—returning it unanswered, the physician indicated that he or she did not want to participate in the study.

RESULTS

Physicians who provided completed data on gender and blood pressure were included in this present study. These criteria resulted in 93 (50% of 187) usable questionnaires from Indianapolis AMA chapter members and 46 (54% of 85) usable questionnaires from Indianapolis NMA members, a total of 139 physicians.

Seventy-five percent (70 of 93) of AMA members, compared to 43% (20 of 46) of NMA members, completed their medical education at the Indiana University School of Medicine, a statistically significant difference ($\chi^2[1]=13.63$, $p=0.0002$). In contrast, 20% (9 of 46) of NMA members, compared to none of the AMA members, graduated from Howard University School of Medicine and the Meharry Medical College, historically black institutions. Although a larger percentage (37%; 17 of 46) of NMA members, compared to AMA members (25%; 23 of 93), completed their medical education in medical schools throughout the United States, the difference was not statistically significant ($\chi^2[1]=2.24$, $p=0.1341$). Between AMA and NMA members, 25% (23 of 92) and 53% (17 of 32), respectively, completed fellowship training, a statistically significant difference ($\chi^2[1]=8.59$, $p=0.0030$). Eighty-one percent (74 of 91) of AMA members compared to 85% (39 of 46) of NMA members completed specialty board training. This difference was not statistically significant ($\chi^2[1]=0.25$, $p=0.6145$).

As shown in Table 1, there was a statistically significant greater proportion of AMA (caucasian physicians) than NMA (African-American) members ($p<0.001$), more males than females ($p<0.001$), more physicians 50–69 years of age (as opposed to less than 50 and greater than 69 ($p<0.001$), and more married than nonmarried physicians in this sample ($p<0.001$). There was no statistically significant difference in income levels between AMA and NMA members. As compared to AMA physicians, NMA members had significantly higher proportion of females, those in the younger age levels, and those who were not married.

AMA and NMA members were also compared on age, BMI, and psychological supports. The means (*sds*) for age (in years), BMI, overall psychological support, and six measures of psychological support (i.e., social relations, spiritual, creative, medication, nonactive, and other) were as follows for the caucasians (n=92–93): 60.62 (8.36), 26.68 (4.21), 4.57 (1.97), 2.90 (1.06), 0.88 (0.88), 0.49 (0.67), 0.05 (0.23), 0.01 (0.10), 0.12 (0.32). The following were the figures for the African Americans (n=43-46): 49.60 (12.24), 27.67 (5.65), 4.70 (2.06), 2.67 (1.10), 1.07 (0.90), 0.59 (0.58), 0.04 (0.21), 0.04 (0.21), 0.13 (0.34). Only age was statistically significant between the two groups ($t[136]=6.20$, $p<0.0001$), with NMA members being younger.

Both groups were contrasted on medical specialty, practice type, BMI (low or normal versus high), exercise (no versus yes), and psychological supports (no versus yes). caucasian and African-American physicians differed significantly only on medical specialty, practice type, and exercise. More NMA members compared to AMA members were involved in medical practices that were not Medicine or Obstetrics and Gynecology (OBGYN) ($\chi^2[3]=66.8$, $p<0.001$): for NMA—30.4% Other, 28.3% Medicine, 10.9% OBGYN, 30.4% Surgery/Emergency; for AMA—1.1% Other, 68.8% Medicine, 30.1% OBGYN, 0.0% Surgery/Emergency. NMA members had a higher percentage of solo and "Other" types of practices, while AMA members had a higher proportion in group practice ($\chi^2[4]=11.0$, $p=0.027$): for NMA—39.5% Solo, 14.0% Group, 14.0% University, 4.7% Retired, 27.9% other; for AMA—21.7% Solo, 40.2% Group, 15.2% University, 4.3% Retired, 18.5% Other. NMA members (73.9%) reported exercising significantly less than AMA physicians (89.2%) ($\chi^2[1]=5.4$, $p=0.020$).

Four measures of blood pressure were examined: 1) systolic (continuous variable); 2) diastolic (continuous variable); 3) systolic + diastolic, high-normal: 0 coded when systolic <130 and diastolic <85, 1 coded when systolic >130 or diastolic >85, and 2 coded when systolic >130 and diastolic >85); and 4) systolic + diastolic, mild (stage-1) hypertension: 0 coded when systolic <140 and diastolic <90, 1 coded when systolic >140 or diastolic >90, and 2 coded when systolic >140 and diastolic >90). The means (*sds*) for caucasians (n=93) were: 127.52 (10.80), 77.90 (7.40), 0.49 (0.73), 0.29 (0.60); and

for African Americans (n=46) were: 126.65 (12.92), 78.59 (10.02), 0.70 (0.89), 0.54 (0.81). As compared to caucasians, African Americans had significantly higher levels of systolic + diastolic (mild [stage-1] hypertension) (t[137]=2.08, p=0.0396).

Table 2 summarizes the proportional differences between NMA and AMA physicians on blood pressure measures. There was a trend for more NMA members (32.6%) than AMA members (18.3%) to have diastolic blood pressures in the high-normal range (p=0.059). More NMA members (21.7%) compared to AMA members (9.7%) reported diastolic blood pressure in the mild (stage-1) hypertensive range (p=0.051).

Aside from ethnicity (Table 3), three variables were significantly associated with at least four measures of blood pressure: gender (males with higher blood pressure), age (older physicians with higher blood pressure), and BMI (those with higher BMIs with higher blood pressure). In separate analyses, type of practice was not a significant predictor of all eight blood-pressure measures.

Given that gender, age, and BMI were significantly associated with blood pressure, these variables were used as covariates prior to testing the effect of ethnicity (i.e., caucasian versus African-American). By using these three variables as covariates, the NMA and AMA physician groups were statistically equated on these measures. Table 4 presents the results of the three-variable model (R^2 range=9.8–25.7%), followed by the four-variable model (which included ethnicity; R^2 range=15.0–28.3%). Ethnicity added significantly to the prediction of all of the blood-pressure measures, with the additional variance accounted for (χR^2) ranging from 2.4% to 9.5%. This meant that the NMA and AMA groups differed significantly on all of the blood-pressure measures after statistically controlling for gender, age, and BMI.

Table 5 displays the adjusted mean differences between NMA and AMA physicians with gender, age, and BMI used as covariates. NMA physicians had significantly higher levels of all eight blood-pressure measures (p=0.06 for high-normal systolic blood pressure; all other p values <0.05). As indicated by the odds ratio (ORs) for the dichotomous blood-pressure measures, NMA members had over twice the risk for high-normal systolic blood pressure (OR=2.19), over three times the risk for mild (stage-1) hypertensive systolic blood pressure (OR=3.25), over five times the risk for high-normal diastolic blood pressure (OR=5.78), and mild (stage-1) hypertensive diastolic blood pressure (OR=5.19), when statistically controlling for the variables of gender, age, and BMI.

DISCUSSION

These data are limited by the self-report of the responding physicians. Based upon prior studies of physician retirement[25-28] and the information reported by responding physicians, extensive, selective, self-reporting bias was not found. All data were confidentially obtained, and there were no demand characteristics resulting in response bias relating to blood pressure.

The authors acknowledge an age discrepancy between the two samples. The original study design was to survey all members of the AMA and NMA chapters ages 50 years and over. Because of the sample size of the NMA chapter membership (N=85), a decision was made to sample the total NMA membership in order to make meaningful statistical statements. A history of smoking was not included in the questionnaire. No comment can be made concerning the number of AMA and NMA physicians who are past or current smokers.

It is possible to question whether the younger age of the NMA sample biased the comparison of the risk for health factors, particularly hypertension. This was not observed. A statistically significant difference in systolic and diastolic blood pressure consistent with high-normal (p=0.0013) and mild (stage-1) hypertension (p=0.0010) was found related to African-American ethnicity—holding age, gender, and BMI constant. Even without controlling for age, gender, and BMI, African-American physicians were found to have SBP and DBP consistent with stage-1 hypertension although an average of 11 years *younger* than caucasian physicians.

The significantly increased risk for high-normal systolic blood pressure (OR=2.19), mild (stage-1) hypertensive systolic blood pressure (OR=3.25), high-normal diastolic blood pressure (OR=5.78) and mild (stage-1) hypertensive diastolic blood pressure (OR=5.19) among this sample of younger, African-American physicians is of concern. With elevated blood pressure in their 30s and 40s and a pattern of less exercise, these Indianapolis, African-American physicians are at increased risk to develop the complications of hypertensive cardiovascular disease—including stroke, congestive heart failure, and renal disease—in their later years.

Although lower socioeconomic status and variable access to medical care have been identified as contributing to the poor health status of African Americans, these were not issues in this physician sample. These data are consistent with the suggestion that there may be a genetic component to hypertension in African Americans. The need to carefully monitor middle-class African Americans for the development of hypertension, particularly those working in professions associated with high stress, is indicated. Further research in this area is needed, particularly with respect to physiologic mechanisms of hypertension in African Americans.[29]

African-American physicians tend to be the major health care providers for African-American populations, and as a result, their potential increased risk for an earlier death from hypertensive, cardiovascular disease could decrease the number of physicians available and interested in providing care to this underserved population. As African-American physicians, in general, enjoy a higher socioeconomic status than many black Americans and have knowledge of the importance of preventive medical care, their need for an ongoing, aggressive monitoring of blood pressure and the practice of preventive health measures is suggested by these data.

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