Original Paper

Hypertension Management: Results of a New National Survey for the Hypertension Education Foundation: Harris Interactive

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A new national online survey by Harris Interactive of 1245 hypertensive individuals indicates that >90% were aware that elevated blood pressure (BP) is a major risk factor for cardiovascular disease. The majority discovered that they had elevated BP levels as a result of a routine examination. More than two thirds of persons identified 120/80 mm Hg as an optimal BP level; only 6.0% stated that the Internet was their primary source of information about high BP. More than 60% of respondents had a body mass index >30 kg/m^2, and >50% had other cardiovascular risk factors. More than 50% were involved in some lifestyle change to control BP, and >90% were taking medication. More than 60% reported that BP was controlled (<140/90 mm Hg) at the last visit, although approximately 50% were told that their BP was high at some time. The survey results suggest that >90% of hypertensive patients are aware of the risks of elevated BP and that a high percentage of hypertensive patients are being treated with medication. Control rates as reported by respondents were >60% based on last BP recorded; however, between 31% and 40% of patients (based on differences in ethnic groups) were continued on the same therapy despite elevated BP levels. The survey suggests a high degree of risk awareness and treatment, and what appears to be an increase in control rates among hypertensive patients.
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A national survey was undertaken in 2007 by Harris Poll Online to obtain opinions of hypertensive individuals in the United States older than 45 years regarding their knowledge of the risk and the treatment and control of hypertension. The objective of this new survey was to obtain data on the degrees of BP control in different population groups, to obtain a better understanding of the reasons for inadequate control of BP, and to obtain consumer opinions about BP management.

US HYPERTENSION FIGURES ON PREVALENCE, AWARENESS, TREATMENT, AND CONTROL

The recently published report from the National Health and Nutrition Examination Survey (NHANES) updated the level of hypertension awareness, treatment, and control in the United States from 1999 to 2004.[1] NHANES has been tracking data on the prevalence and management of hypertension since 1970. The survey included BP information from a total of more than 14,600 people aged 18 years and older surveyed over the years 1999–2000, 2001–2002, and 2003–2004. It was based on BP measurements taken 3 or 4 times, with the average used after the first measurement. Hypertension was defined as a BP of ≥140/90 mm Hg or taking antihypertensive medication.

Overall prevalence in the United States from 2003 to 2004 was reported as 29.3% (age-adjusted), with 7.3%, 32.6%, and 66% in the 18–39, 40–59, and older than 60 age groups, respectively.

Table I. Awareness, Treatment, and Control of High Blood Pressure in Adults Aged 18–74 Years With Hypertension: Unadjusted Rates %, 1976–2004

	1976–1980	1988–1991	1991–1994	1999–2000	2003–2004
Aware	51	73	68	69	76
Treated	31	55	54	58	65
Controlled (among all patients with hypertension)	10	29	27	31	37

Hypertension awareness rates (age-adjusted) were 63.0% (1999–2000) and 66.5% (2003–2004). Hypertension control rates (age-adjusted) at levels <140/90 mm Hg among those treated were 51.3% (1999–2000) and 63.9% (2003–2004). These rates had increased significantly in both sexes, non-Hispanics, blacks, and Mexican Americans compared with those previously reported. Of importance is that in the 60 years and older age group, awareness, treatment, and control rates had also increased significantly. Thus, the age-adjusted awareness, treatment, and control rates in people receiving treatment had increased significantly since 1999–2000.[2,3]

Table I summarizes unadjusted awareness, treatment, and control rates of high BP from 1976–1980 to 2003–2004. Control rates have risen from 10% in 1976–1980 to 37% in the latest NHANES survey.

These data are encouraging but suggest that further efforts are indicated to improve awareness and especially control of hypertension. The percentage of treated hypertensives who were at goal levels had risen from 50% in 2000 to 57% in 2004. If, however, goal BP is adjusted to reflect recent recommendations of <130/80 mm Hg for individuals with diabetes and chronic kidney disease (glomerular filtration rate <60 mL/min), overall control rates among treated hypertensives were 52.9% (unadjusted for age), when weighted to the US population in the NHANES 2003–2004 population.[4]

THE HARRIS SURVEY METHODOLOGY

Respondents were recruited from the Harris Poll Online. Invitations, sent by e-mail, contained a link to the online survey instrument. Interviews were conducted among 1245 respondents aged 45 and older who had been diagnosed with hypertension. Online interviews were conducted from January 4–17, 2007. A fully structured, self-administered questionnaire, developed in collaboration with the Hypertension Education Foundation, averaged 15 minutes in length.

Data were weighted to be representative of US adults, aged 45 years and older, who had been diagnosed with hypertension. Weighting variables included education, age, sex, race/ethnicity, region, and income. Propensity score weighting was also used to adjust for respondents' propensity to be online. Statistical significance was tested at the 95% confidence level. Given the pure probability sample of 1245 adults, there is a 95% probability that the overall results had a sampling error of ±3 percentage points. Sampling error for data based on subsamples would be higher and vary; however, that does not take other sources of error into account. This online survey is not based on a probability sample and, therefore, no theoretic sampling error can be calculated.

Of the respondents, 56% were women, 67% were 55 years of age and older, 78% were Caucasian, 13% were African American, and 9% were Hispanic. Forty-three percent had incomes between $25,000 and $75,000, and 56% had finished high school and attended college.

RESULTS

Knowledge About Hypertension and Its Consequences

More than 90% of respondents correctly associated high BP with heart attacks and strokes; more than 3 of 5 correctly associated high BP with kidney failure, hardening of the arteries, or an enlarged heart (Table II). Approximately 70% of respondents correctly identified 120/80 mm Hg as an optimal BP level. Sixty-five percent identified their general practitioner as the primary source of information about hypertension; only 6% stated that the Internet was a primary source of information.

More than 60% of hypertensive respondents were obese, defined as a body mass index of >30 kg/m^2 (waist circumferences were not requested): 48% of men who were shorter than 5′11″ weighed >200 lb (ideal weight, 166±10 lb); 75% of women shorter than 5′6″ weighed >200 lb (ideal weight, 125±10 lb); and only 25% of women weighed <150 lb.

These data extend observations on the increasing percentage of obese patients in the United States. Fifty-seven percent of respondents had a family history of diabetes, 8% coronary heart disease, 37% diabetes, 29% still smoked, and 54% reported elevated cholesterol levels.

In answer to the question, "High blood pressure is not as much of a problem for older

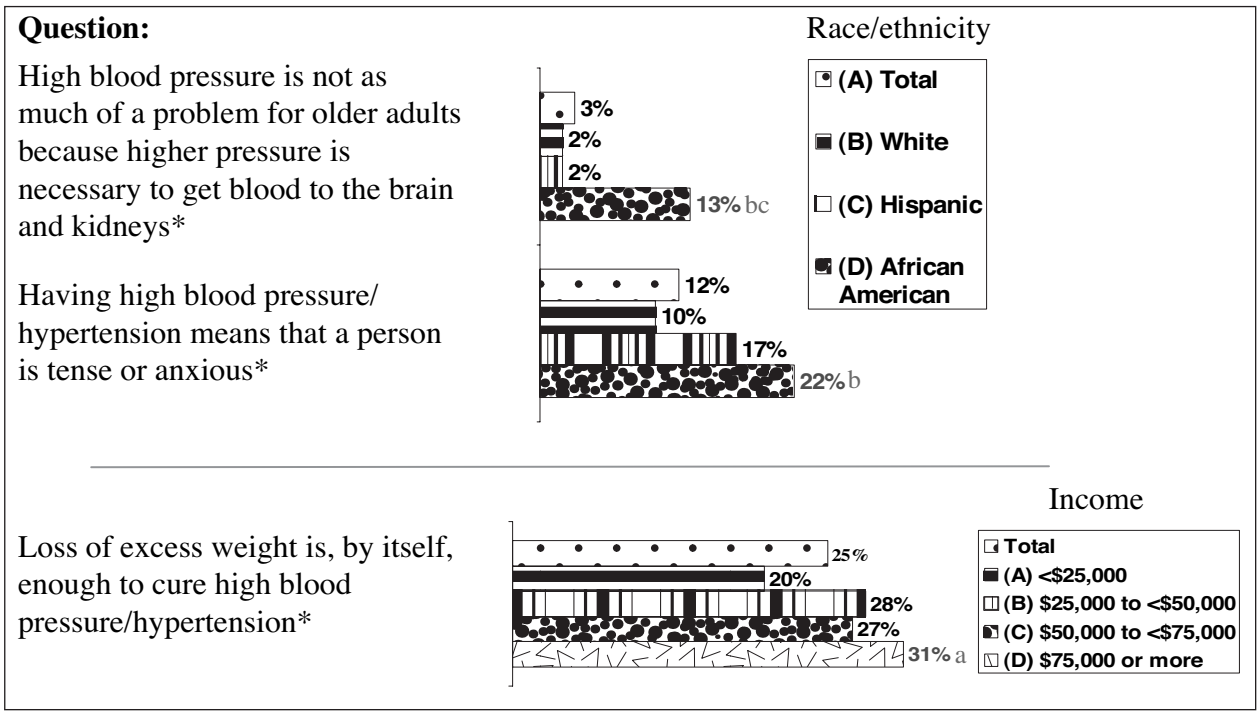

*Figure. Knowledge of hypertension. Agree somewhat or strongly, %. *Indicates that the statements are false; a, b, and c indicate a statistically significant difference between groups.*

adults because higher BP is necessary to get blood to the brain and kidneys," 13% of African Americans but only 2% to 3% of other ethnic groups seemed to agree with this statement. In answer to the question, "Having high blood pressure means that a person is tense or anxious," about 22% of African Americans and 10% to 17% of other ethnic groups answered in the affirmative (Figure). Loss of excess weight was considered by 31% of patients in the higher socioeconomic groups (>$75,000 per year income) and 20% to 28% of people in lower economic groups to be enough to cure high BP or hypertension.

DIAGNOSIS AND TREATMENT APPROACHES

High BP or hypertension was discovered in the majority of all respondents as an incidental finding on a routine physical examination. More Caucasian than Hispanic or African American patients reported that BP elevation was discovered during a routine examination (Table III).

More than 90% of persons who had elevated BP were presently taking medication; more than half were following what they considered to be a healthy diet; and more than 60% reported that they were limiting their salt intake (Table IV). Statistically significantly more patients in the higher economic groups (≥$50,000) compared with those with lower economic status (<$50,000) were exercising, limiting alcohol intake, following a diet, and performing relaxation techniques. There were no statistically significant differences, however, among different socioeconomic groups with regard to the number of patients who reported taking medication.

With regard to nonpharmacologic methods of treatment, more than one fourth of respondents reported that they did not have to exercise to reduce BP because they were taking medication (Table V). Of interest, 40% cited a joint condition as the reason for not exercising regularly. Varying numbers of people reported that they were too busy to exercise, they couldn't stick with it, or they didn't know what kind of exercise to do.

Survey results reported that only slightly more than one third of patients on treatment stated that their BP was above 140/90 mm Hg the last time it was checked; between 47% and 59%, however, reported that they were told by their health care provider that their BP was still too high at some time during the treatment period.

In answer to the question, "The last time you were told your blood pressure was too high, what did your health provider do?" 39% of patients said that additional medication was added to their present therapy, 36% were told to increase the dose, 31% were told to change their prescription to a different medication, and others were advised to change their diet, told about the importance of

Table II. Awareness of Hypertension Risk

Question: As far as you know, are any of the following risks associated with high blood pressure/hypertension?	Total, %	White, %	Hispanic, %	African American, %
Base: All respondents	1245	971	107	167
Heart attack	94	94	94	93
Stroke	93	95*	83	91
Atherosclerosis (hardening of the arteries)	65	65	75	62
Enlarged heart	61	62	60	57
Failure of the kidneys to function properly	61	62*	46	69*
Gum disease†	14	12	17	20
Ulcers†	13	11	19	21‡
Enlarged spleen†	11	12	10	6
Chronic back pain†	11	9	16	20‡

*Statistically significant difference compared with Hispanic persons. †Incorrect response. ‡Statistically significant difference compared with whites.

taking medication, or asked whether they were taking medication correctly. Of importance, 31% of patients were told to continue taking the same medication despite BP recordings that were too high. Of these, 40% of African Americans compared with 28% of whites were advised to continue taking their current medication (Table VI).

Virtually all patients who were being treated (98%) reported that their health care provider checked BP at each visit. Slightly more than half of patients reported that their physician had recommended that they use a home BP monitor; 3 of 5 patients had a BP monitor at home. More than half of patients with home BP monitors find them helpful/very helpful/extremely helpful in controlling BP, but there was a significant trend toward patients older than 50 believing that using a home BP monitor had been less helpful than among patients younger than 50 years. Whites were the most likely to own a home BP monitor. More than one third check BPs at least weekly. Individuals with multiple health problems are more likely than others to use the monitor daily.

The major reason for nonadherence to prescribed medication according to the respondents was "forgetting;" 13% believed that they did not have to take medicine so often, and 11% noted that medication was too expensive or wasn't covered by insurance. People with 2 or more comorbidities (ie, dyslipidemia, diabetes) were likely to be taking medication, following a diet, or limiting salt intake (79%, 76%, and >65%, respectively). Between 43% and 54% of respondents believed that dieting was not necessary because medication controlled BP, between 21% and 36% of respondents reported that they could not afford a "healthy diet," and 23% reported that they could not really stick to a "healthy diet."

DISCUSSION

Major findings of the Harris Survey are summarized in Table VII. More than 90% of the persons in the Harris Survey correctly associated high BP with heart attacks and strokes. In addition, >60% correctly associated it with kidney failure, atherosclerosis, or heart enlargement. These numbers indicate a high degree of awareness of the risk of hypertension among hypertensive patients. More than two thirds of adult Americans in this survey correctly identified 120/80 mm Hg as an optimal BP level; whites were apparently more aware of optimal ranges than African Americans or Hispanics. While younger adults, aged 45 to 59 years, were less likely to see physicians as frequently as guidelines suggest, approximately three fourths of the adults with hypertension in the survey see a health care provider at least every 6 months to monitor their BP. Seventy percent of patients were being treated by family practitioners, and 90% had been prescribed antihypertensive medication. These data suggest that awareness of BP and its cardiovascular risks are high and that knowledge base appears to have improved over the years. The need for treatment is being stressed primarily by general practitioners.

Some misconceptions persist; for example; about 25% of hypertensives surveyed believed that successful weight reduction can cure hypertension.

PATIENT CHARACTERISTICS

Some highlights of the characteristics of patients in this survey included the following: >60% of the hypertensive patients were obese, defined by a body mass index of >30 kg/m^2. These numbers are consistent with national statistics indicating a distinct increase in the percent of obese people in the United States. More than half of the patients

Table III. Discovery of Elevated Blood Pressure

Question: Please think back to when you were first diagnosed with high blood pressure/hypertension. What was the main reason that prompted you to make an appointment with a health care provider?

Reason for making appointment with a health care provider	Total, %	White, %	Hispanic, %	African American, %
Base: All respondents	1245	971	107	167
It was time for a routine health care visit with my health care provider	54	58*†	39	43
I wasn't feeling well	14	12	23‡	18
I had my blood pressure taken somewhere and it was high	11	12	7	9
I went to the emergency department for medical care for something other than high blood pressure	9	7	14	15‡
I wanted to lose weight	1	1	2	–
I didn't have an appointment; I was in the hospital for a nonemergency	–	–	–	2‡
Some other reason	11	10	15	13

*Statistically significant difference compared with Hispanic persons. †Statistically significant difference compared with African Americans. ‡Statistically significant difference compared with whites.

had a family history of diabetes or coronary heart disease, 30% had diabetes, 20% still smoked, and >50% had abnormal lipid levels. It is of interest that about 20% said that salt restriction was not necessary because they believed they were protected by antihypertensive medication. More than 25% of patients also believed that they do not have to exercise regularly because they are taking medication; 40% report that they were not exercising regularly because of joint problems. The study suggested that there was a strong socioeconomic influence on lifestyle changes. Individuals whose incomes were >$50,000 per year were more likely to follow a diet, exercise regularly, and limit their alcohol intake. While 11% were told that 1 drink a day was acceptable, 13% believed that medication controlled BP and that they did not have to be concerned about alcohol intake.

It is apparent from the survey that a significant percentage of patients placed reliance on antihypertensive therapy alone while frequently neglecting some of the lifestyle changes such as diet, exercise, weight reduction, and moderation of alcohol intake, that have been shown to impact BP lowering. This is especially important in the presence of multiple risk factors, as noted in the survey, and the probable presence of the metabolic syndrome in a large number of these patients.

PATIENT MANAGEMENT PROBLEMS

About 50% of patients were told to monitor BP at home, and about 45% were given a treatment goal. Although 50% were told that their BP was too high at some time during their treatment, suggesting they were not at goal; only one third of patients (37%), however, reported that their BP was still high (above the presently accepted goal of 140/90 mm Hg) at their last visit to a health care provider (a possible reported overall control rate of >60%). These data are somewhat inconsistent with the recent NHANES statistics (2003–2004) which suggest that <40% of all hypertensive patients are at goal (<60% of people who are being treated have achieved goal BP). The Harris Survey results cannot, however, be directly compared with NHANES because they represent a patient's understanding of outcome rather than the direct measurement of BPs. These new data, however, suggest that the trend of improvement noted over the past 15 to 20 years may be continuing and that the percentage of patients on treatment who have been controlled may be increasing.

About one third of patients did not have their dosage increased or medication changed when their BP was high, consistent with other data on clinical inertia. This aspect of treatment has been repeatedly emphasized.[5] Until recent years, patients' lack of adherence had been considered the main reason for lack of achievement of goal BPs. It is apparent, as suggested by the present study, that health care provider failure to change or add to therapy continues to be an important reason for poor outcome in a considerable number of patients.

Among patients receiving medication, it was significant that only 56% were taking a diuretic either as a single agent (33%) or in combination with other medications (23%), in spite of the fact that national guidelines suggesting the use of a diuretic as initial therapy in almost all patients have been available for more than 5 years.[3] Only 6% of

Table IV. Hypertension Treatment

Question: What are you doing to treat your hypertension?				
Actions taken to treat hypertension	Total, %	White, %	Hispanic, %	African American, %
Base: All respondents	1245	971	104	167
Taking medication	91	91	86	93
Following a healthy diet	62	61	64	69
Limiting dietary salt intake	62	59	60	74*
Exercising regularly	42	40	38	54*
Limiting daily alcohol intake	32	32	30	31
Relaxation techniques	25	22	28	40*
Other	4	4	4	3
Taking medication only	15	16	17	8
Taking medication, eating a healthy diet, limiting salt and alcohol, and relaxation techniques	6	4	6	12*
Methods for controlling hypertension according to income	<$25,000, %	$25,000–<$50,000, %	$50,000–<$75,000, %	≥$75,000, %
Base	386	342	192	213
Taking medication	91	94†	91	87
Following a healthy diet	56	59	72*‡	72*‡
Exercising regularly	34	36	53*‡	57*‡
Limiting daily alcohol intake	29	26	42*‡	38*
Relaxation techniques	23	22	35*‡	27

*Statistically significant difference compared with whites. †Statistically significant difference compared with African Americans. ‡Statistically significant difference compared with all respondents.

Hispanic persons, 38% of African Americans, and 34% of whites were taking a diuretic (33% of the total); 8% and 15% were on an angiotensin-converting enzyme inhibitor/diuretic or angiotensin receptor blocker/diuretic combination, respectively. One third of subjects were receiving a β-blocker. These data suggest that physicians were still not adhering to established guidelines for therapy.[6] The failure to prescribe diuretics may also account for the numbers of patients still not under control.[7] Thus, there is evidence that physician behavior may still be an important factor in not achieving goal pressure in many patients.

It is also apparent that physicians may not be providing enough direction for lifestyle modification or supplying hypertensive individuals with educational materials to help guide appropriate therapy. Recent data have suggested that physician encouragement and the use of educational materials increase response rates.[8]

SUMMARY AND CONCLUSIONS

Some misconceptions related to hypertension persist in all levels of society. Some individuals still believe that hypertension is associated with tension or anxiety or that weight loss alone will cure hypertension. These beliefs and the failure on the part of some providers to supply specific educational material may have an impact on how patients respond to treatment recommendations. While two thirds of respondents reported that their provider increased the dose of medication or added an additional one when their BP was elevated, about one third of patients did not have their medication changed.

Survey results suggest that awareness of the risks of hypertension is high. It would appear that, based on this patient survey, treatment is being given in a high percentage of patients but that factors such as obesity continue to be a major problem. Overall, the survey indicates an apparent improvement in knowledge of hypertension, awareness of the risk of untreated hypertension, and possibly an improving trend in the treatment of hypertension. The good news about treatment outcome, however, is balanced by the number of patients who should be controlled with available effective and relatively safe medications and lifestyle changes, but are not.

LIMITATIONS OF THE SURVEY

Survey results were based on respondents' answers to specific questions; BPs were not taken and patients were not examined. While the results cannot be directly compared to the NHANES data they appear to be consistent with the trend

Table V. Nonpharmacologic Approaches—Exercise

Question: Which of the following describes why you are not exercising regularly? Reason given for not exercising regularly	Total, %	White, %	Hispanic, %	African American, %
Base: Not exercising regularly or none of these	726	582	67	77
Has a chronic joint condition	40	41	27	41
Taking medication that controls my blood pressure	27	26	34	24
Injured	19	18	34*	16
Was exercising regularly but couldn't stick with it	16	16	16	17
Too busy	14	15	11	11
Doesn't have access to exercise facilities	10	10	8	12

*Statistically significant difference compared with whites.

Table VI. Health Care Provider Responses to Elevated Blood Pressure

Question: The last time you were told your blood pressure was too high, what did your health care provider do? Actions taken by provider when blood pressure was too high	Total, %	White, %	Hispanic, %	African American,%
Base	571	435	44	92
Added an additional medication to the one already taking	39	38	44	43
Increased the dosage of current medication	36	36	32	41
Told me to continue taking current medication	31	28	39	40
Advised respondent to exercise	31	27	44	44*
Changed prescription to a different medication	31	33	24	26
Advised on dietary matters	24	20	28	38*
Asked if respondent was taking medication correctly	20	18	7	33*
Advised of importance of taking medication correctly	14	13	8	21
Did something else	7	7	6	3

*Statistically significant difference compared with whites.

Table VII. Major Findings of the 2007 Harris Survey

- Obesity (body mass index >30 kg/m^2) is present in >60% of hypertensive individuals
- >90% of hypertensives are aware of the risks of high blood pressure (BP)
- Only 50%–60% are involved in some form of lifestyle change to control BP
- >90% of hypertensives are taking medication
- About 60% reported controlled BP (<140/90 mm Hg) at their last visit; 50% reported, however, that they were told that their BP was high at some time by a health care provider
- Approximately one third of patients who reported elevated BP were told to continue present treatment

established by NHANES in the 1970s to 2004, with a continuation in improvement in outcome. These results should be viewed as encouraging statistics but more needs to be done, especially in terms of provider efforts. One of the possible problems with a survey of this type is that, just as physicians may overestimate the percentage of their patients at goal BP levels, some patients may overestimate how well they are following recommendations for lifestyle change and the degree of BP control.

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