

The Edgecombe County (NC) High Blood Pressure Control Program: II. Barriers to the Use of Medical Care among Hypertensives

SHERMAN A. JAMES, PHD, EDWARD H. WAGNER, MD, DAVID S. STROGATZ, PHD,
SHIRLEY A.A. BERESFORD, PHD, DAVID G. KLEINBAUM, PHD, CAROLYN A. WILLIAMS, PHD,
LAWRENCE M. CUTCHIN, MD, AND MICHEL A. IBRAHIM, MD, PHD

Abstract: As the initial step in a five-year project to improve control of high blood pressure in Edgecombe County, North Carolina, a survey was conducted in 1980 to determine the prevalence of hypertension and to identify factors which might constitute barriers to the use of medical care by hypertensives. This report summarizes the findings for the 539 hypertensives identified through the baseline survey. In general, Black hypertensives reported more access problems than Whites. Within race, however, males and females differed very little on selected measures of potential access to

medical care. Among women, lower scores on potential access were strongly associated with being untreated, whereas for men, concerns about the safety of anti-hypertensive drug therapy were associated with being unaware. On a summary measure of the actual use of medical care in response to symptoms, both male and female treated hypertensives scored higher than their untreated counterparts. The implications of these and other findings for community-based blood pressure control activities are discussed. (*Am J Public Health* 1984; 74:468-472.)

Introduction

Published reports¹⁻⁵ are virtually unanimous in their conclusions that today, compared to 15 years ago, more Americans are aware of their blood pressure status and higher percentages of hypertensives are being treated and controlled. However, significant numbers of hypertensives remain unaware and untreated, a problem which may be especially serious in economically disadvantaged, inner-city areas,^{1,6} and in rural communities⁷⁻¹⁰ where the inability to pay for services, inconvenient clinic hours, lengthy waiting room stays,¹¹⁻¹⁵ misconceptions about hypertension and related drug therapy,¹⁶⁻¹⁹ and unsatisfactory relationships with providers may interfere with the receipt of care. In the Edgecombe County (North Carolina) High Blood Pressure Control Program,¹⁰ our goal is to accelerate improvements in hypertension control through clarifying and, where practical, intervening upon those factors which appear strongly associated with uncontrolled hypertension in this rural community.

In a previous report,¹⁰ we presented data describing sociodemographic and other correlates of being an aware, treated or controlled hypertensive in Edgecombe County. In this report, we examine whether hypertensives differ in their access to medical care and in their beliefs about the net benefits of anti-hypertensive drug therapy. We hypothesize that poor access to medical care, defined along several different dimensions, and skepticism about anti-hypertensive drugs, will be associated with various states of uncontrolled hypertension in the study population.

No consensus exists among researchers about what constitutes "access" to medical care. Many researchers

Address reprint requests to Sherman A. James, Department of Epidemiology, School of Public Health, University of North Carolina, Rosenau Hall 201H, Chapel Hill, NC 27514. Drs. James, Strogatz, and Williams are with the Department of Epidemiology, University of North Carolina. Dr. Wagner, formerly with the Department of Epidemiology, is Director, Center for Health Studies, Group Health Inc., Seattle, Washington; Dr. Beresford is with the Department of Epidemiology and the Health Services Research Unit, Veterans Administration Medical Center, Durham, NC; Dr. Kleinbaum is with the Department of Biostatistics at UNC; Dr. Ibrahim, formerly chairman, Department of Epidemiology at UNC, is Dean, UNC School of Public Health; Dr. Cutchin is with the Community Medicine Foundation, Tarboro, NC. This paper, submitted to the *Journal* May 18, 1983, was revised and accepted for publication November 29, 1983.

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think that access should not be equated with the simple use of medical care, since this ignores the fact that many persons could, but do not, use physician services regularly simply because they feel healthy. Use measures further obscure the multifaceted nature of the access concept, particularly its more subjective elements. For these reasons, we used two parallel approaches to studying the possible medical care access problem among hypertensives in Edgecombe County.

Since several reports^{1-3,6,16,17-19} have suggested that the beliefs hypertensives hold about the causes of their disease, and their attitudes toward anti-hypertensive drugs, may influence whether or not they seek medical care for their condition, we developed a brief scale to measure attitudes toward anti-hypertensive drugs in our study population.

Methods

The research setting, the survey methodology, and the study population were described in our initial report.¹⁰ Whereas the first paper classified the hypertensive population into seven groups, this paper classifies them into only five. Because of their limited size and their equivalence on our measures of access and beliefs, the two groups of unaware hypertensives without a recent blood pressure check (7-24 months, 25 months or more) were combined into one group. In this paper, we make no distinction between controlled and uncontrolled individuals within the larger category of treated hypertensives, since the emphasis in this paper is on clarifying factors which may impede entry into the health care system.

Access to Medical Care

We first examined realized access to medical care via a need-based measure of use—the Symptoms-Response Ratio (SRR).²⁰ The SRR compares physician use in response to a set of 15 symptoms with standards established by a panel of physicians.* As used by Aday, *et al*,²⁰ the SRR is a group measure, where A and E represent the actual and expected

$$* \text{SRR} = \frac{A-E}{E} \times (100)$$

Where: A = the number of visits actually made to a physician in response to the specific symptoms. B = the expected number of visits, based upon symptom-specific physician estimates of the proportion of symptomatic individuals who should see a doctor.

use of a group. However, in order to facilitate eventual adjustment for covariance and hypothesis testing, an alternative approach was employed in the current study. An SRR was computed for each hypertensive individual, using that individual's total number of visits and the aggregate probability (based on a group's experience) of visits being indicated for the same individual's symptoms. Persons who reported having experienced none of the 15 symptoms (13 per cent of all hypertensives, 21 per cent of unaware hypertensives) were excluded. The means of these individual measures were then computed for each of the five hypertensive groups.**

We also attempted to capture the multidimensional nature of the access issue embedded in the framework developed by Pechansky and Thomas.²¹ These investigators regarded medical care access as the degree of fit between the patient's needs and selected organizational features of the health care system. Of the five medical care access dimensions identified by Pechansky and Thomas,²¹ four are relevant to the current study:***

- *Accessibility*, or the location of health services vis-a-vis the location of clients;
- *Accommodation*, or the relative ease in getting appointments with providers;
- *Affordability*, or cost of medical care and perceived worth of care in relationship to cost; and
- *Acceptability*, or how well clients get along with their providers and the provider's support staff.

Beliefs about Anti-Hypertensive Drugs

Beliefs about the benefits and risks of pharmacologic therapy for hypertension were measured by responses to four questions.† Each question was answered by a true, true sometimes, or not true response. Responses which indicated the highest level of confidence in medically supervised, pharmacologic therapy for hypertension were given a score of three; responses which indicated mixed or no confidence were given a score of two or one, respectively. The Cronbach alpha coefficient for this four item Beliefs Scale was .64.

Data Analysis

Comparisons among the five hypertensive groups were conducted separately for males and females. Group differences in need-based use of medical care (the SRR), potential access to medical care, and beliefs about anti-hypertensive drug therapy which could be explained by variations in age, or race were removed by adjusting for age, race, and their interaction via analysis of covariance. The statistical significance criterion for contrasts and interaction terms was $p =$

**One way to assess the correspondence between the individual-oriented approach and the original group-based concept of realized access would be to compare these estimates with an analogous set of SRRs computed in the conventional manner. (Aday L: personal communication.) These calculations were performed and they yielded SRRs of similar magnitude and rank-ordering for the five groups of hypertensives.

***Potential access to medical care was defined by data obtained from respondents concerning barriers they were likely to encounter when seeking professional medical care. Structural Access components, and the summed responses to questions on which they were based, are described in the Appendix.

†1) If a person has high blood pressure (HBP), taking HBP pills might do his body more harm than good; 2) Taking HBP pills too long might give you blood pressure which is too low for your own good; 3) High blood pressure, like many other health problems, can be cured completely if a person knows the right people to go to for help; and 4) Most HBP pills are so powerful that they can change a person's nature to the point that he/she won't be able to do the things he/she used to do quite easily.

.05; nevertheless, p values approximating this level are also reported.

Results

The race-sex specific mean scores for the access measures and beliefs about anti-hypertensive medication are summarized in Table 1. The racial differences in access are more striking than the differences by sex. Compared to Whites, Blacks reported less frequent need-based use of medical care, more general difficulties getting into the health care system, and greater dissatisfaction with medical care services. However, the four groups were comparable on Psychological Affordability, which measured dissatisfaction with the cost of medical care. It should also be noted that Black males expressed lower confidence than any other group in the net benefits of anti-hypertensive drugs.

Table 2 summarizes selected group comparisons for the SRR. The tendency to use medical care in response to symptoms generally increased with awareness, and increased still further with treatment. This gradient was somewhat stronger for men than for women. For both sexes, however, aware hypertensives exhibited significantly greater need-based use of medical care than those unaware of their hypertension (I vs II and III). Among the aware, treated hypertensives reported significantly greater need-based use of medical care than the untreated (II vs III).

Since no physician visits in the presence of symptoms yields an SRR of 100, the results in Table 2 indicate that untreated hypertensives in Edgecombe County reported few physician visits when they experienced symptoms. Hence, the large negative SRR values indicate significant underutilization of professional medical care—especially among unaware hypertensives—in this southern rural community.

As shown in Table 3, aware and unaware hypertensive women (I vs II and III) did not differ significantly on any of the potential access measures, or on beliefs about drug therapy for hypertension. However, aware but not currently treated women scored significantly worse than their treated counterparts (II vs III) on almost all of the measures of interest. Particularly striking differences were observed for beliefs about anti-hypertensive medication, and ability to pay for medical care. The data also suggest that unaware women without a recent blood pressure check can afford

TABLE 1—Race-Sex Specific Means* for Medical Care Access Measures, and Beliefs about Anti-Hypertensive Drugs

Measures**	Males		Females		p value‡
	Black	White	Black	White	
Symptom-Response Ratio	-67.8	-42.7	-58.8	-29.2	≤.001
Structural Access					
Accessibility	10.8	11.7	10.8	11.7	≤.001
Accommodation	7.5	7.6	7.2	7.9	≤.031
Affordability	5.6	8.6	5.8	7.7	≤.001
Psychological Access					
Acceptability	.46	.33	.41	.22	≤.010
Accommodation	.54	.28	.49	.25	≤.001
Affordability	.78	.74	.71	.74	≤.919
Beliefs	1.8	2.3	2.1	2.6	≤.001

*Adjusted for age.

**See text for definitions.

‡The p values refer to an overall test of the equivalence of means under the null hypothesis.

TABLE 2—Summary* of Sex-Specific Realized Access to Medical Care (SRR), by Hypertension Control Status

Hypertensives	Symptom-Response Ratios			
	N	Male	N	Female
I. Unaware				
a. >6 months since last BP check	67	-92.6	21	-89.5
b. 0-6 months since last BP check	32	-79.8	20	-85.5
II. Aware, not currently treated				
a. never treated	27	-65.3	17	-59.8
b. formerly treated	14	-60.0	28	-60.8
III. Aware, currently treated	102	-23.4	211	-37.2
Specific Comparisons				
I vs II and III		.0001		.003
II vs III		.002		.04
Ia vs Ib		—		—
IIa vs IIb		—		—

*Adjusted for age, race, and age × race.

medical care less easily than unaware women with a more recent check (Ia vs Ib).

As summarized in Table 4, the only variable that distinguished unaware hypertensive men from their aware counterparts (I vs II and III) was beliefs about drug therapy for hypertension. This effect was largely due to the low Beliefs Scale score achieved by the relatively large group of unaware men without a recent blood pressure check. Aware but currently untreated men reported significantly more problems getting to see the doctor (i.e., Structural Accessibility) than treated hypertensives (II vs III). Aware but untreated men also expressed somewhat less confidence in anti-hypertensive drugs than did treated men.

Discussion

The research design of this study has several obvious advantages and disadvantages. Advantages include the community representativeness of the hypertensives studied and the related opportunity to identify, at the community level, some of the potential barriers which may confront hypertensives in this rural community when they attempt to use the health care system. Disadvantages include the cross-sectional nature of the study design and the resulting inability to

determine whether variations between groups of hypertensives on our study variables lead to, rather than follow from, differences in the use of medical care. This is an important limitation, and it should be respected when interpreting the study's findings.

This study documents that Black hypertensives in Edgecombe County face more barriers than their White counterparts in obtaining medical care. We have not evaluated directly the role such racial differences in medical care access might play in the higher prevalences of untreated hypertension previously noted among Blacks in Edgecombe County,¹⁰ but we suspect that reduced access to medical care among Blacks is a major contributor to this problem.

How much of the observed racial differences in use of professional medical care by hypertensives in Edgecombe County can be attributed to "cultural" factors, and how much to economic and related psychosocial disadvantages, cannot be determined from the available data. While Black hypertensives were clearly worse off than White hypertensives on nearly all of our access measures, the SRRs for both racial groups were strongly negative in comparison to reports based on national samples of noninstitutionalized adults.²² Furthermore, when race-sex specific SRRs were computed for the normotensive population in Edgecombe County (data not shown), these were found to be nearly as negative as the values reported for hypertensives. These latter findings held whether individual or group-based SRR measures were used. Thus, the consistency of the large, negative SRRs in our study population suggest that cultural factors, in addition to the noted economic and psychosocial barriers, also adversely influence the appropriate use of medical care in this rural community.

Unaware hypertensive women in Edgecombe County did not differ from their aware counterparts on our measures of potential access to medical care and beliefs about anti-hypertensive drug therapy. This is probably due to the fact that unaware women with a recent blood pressure check were very similar to the two groups of aware women on most of the study variables, thereby minimizing overall differences between the aware and unaware women. However, unaware women without a recent blood pressure check reported more difficulties than other unaware women in paying for medical care services and in getting to their usual source of care. Thus, it may be incorrect to conclude that

TABLE 3—Summary* of Females Potential Access to Medical Care and Beliefs about Anti-Hypertensive Drugs

Hypertensives	N	Structural			Psychological			Beliefs
		Access-ability	Accom-modation	Afford-ability	Accept-ability	Accom-modation	Afford-ability	
I. Unaware								
a. >6 months since last BP check	21	10.4	7.4	4.7	.35	.46	1.05	2.0
b. 0-6 months since last BP check	20	11.5	7.4	7.7	.27	.32	.59	2.3
II. Aware, not currently treated								
a. never treated	17	10.6	6.7	5.7	.60	.75	1.18	1.9
b. formerly treated	28	10.4	7.5	4.9	.55	.58	.77	1.9
III. Aware, currently treated	211	11.3	7.6	6.7	.29	.36	.68	2.3
Specific Comparisons								
I vs II and III		—	—	—	—	—	—	—
II vs III		.008	—	.0004	.002	.01	.06	.0001
Ia vs Ib		.06	—	.0001	—	—	—	—
IIa vs IIb		—	—	—	—	—	—	—

*Adjusted for age, race, and age × race.
—p > .10.

TABLE 4—Summary* of Males Potential Access to Medical Care and Beliefs about Anti-Hypertensive Drugs

Hypertensives	N	Structural			Psychological			Beliefs
		Access- ibility	Accom- modation	Afford- ability	Accept- ability	Accom- modation	Afford- ability	
I. Unaware								
a. >6 months since last BP check	67	11.3	7.0	7.6	.46	.42	.63	1.8
b. 0–6 months since last BP check	32	11.1	7.6	6.9	.31	.40	.99	2.0
II. Aware, not currently treated								
a. never treated	27	10.6	7.4	7.5	.68	.46	.62	2.0
b. formerly treated	14	10.7	7.9	7.0	.26	.29	1.09	2.1
III. Aware, currently treated	102	11.6	7.8	7.1	.35	.40	.74	2.2
Specific Comparisons								
I vs II and III		—	—		—	—	—	.006
II vs III		.004	—		—	—	—	.09
Ia vs Ib		—	—		—	—	.06	—
IIa vs IIb		—	—		.06	—	—	—

*Adjusted for age, race, and age × race.

—p > .10.

awareness of hypertension among women was wholly unrelated to access to medical care. The findings suggest that unaware women without a recent blood pressure check had economic and transportation problems which set them apart from other hypertensive women; on average, these women had not visited their usual source of medical care in over three years (data not shown).

Since the overwhelming majority of hypertensive women in Edgecombe County were aware of their condition, the major challenge with women is not to improve detection but to increase the percentage of aware women who enter and remain in medical treatment for their hypertension. Not only did the aware but untreated women report more economic and transportation problems, they also reported higher levels of dissatisfaction with several important aspects of medical care, including provider-patient relationships, and they also expressed considerably less confidence in anti-hypertensive drugs. Regarding the latter issue, Syme²³ has emphasized that health providers must be responsive to the psychosocial needs of their hypertensive patients if patients are to remain in treatment. How to respond more effectively to the psychosocial needs of the aware but untreated hypertensive women in Edgecombe County represents a major clinical and public health challenge.

For hypertensive males, confidence in the efficacy and safety of anti-hypertensive medication steadily increased with awareness and treatment. We found, in our initial study,¹⁰ that unaware men who had not had a recent blood pressure check reported the best overall subjective health scores. In the current study, we observed that these same men, on average, had not had any contact with their usual source of medical care in over three years (data not shown). Thus, it seems likely that these men are able to hold negative beliefs about anti-hypertensive drugs as long as they feel healthy and do not require ongoing medical care for other health problems. We are inclined to attribute the observed differences in beliefs about anti-hypertensive medication among men to underlying differences between groups in physical health status and associated encounters with health providers. If the above interpretation is correct, the absence of a strong preventive health orientation among the healthier male hypertensives in Edgecombe County probably contributes significantly to their poor levels of hypertension control.

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ACKNOWLEDGMENTS

This study was supported by NHLBI Grant No. HL24003. Dr. James is supported by an NHLBI Research Career Development Award, Grant No. 5K04 HL01011. We are indebted to Jeanne Warner, Sue Hartnett, Jo Heiss, Victor Rhodes, Gary Lewis, Kathy Brown, Randy Horton, and Susan Spain for their assistance with data collection and analysis efforts.

APPENDIX

Measures of Structural Access Components

- *Structural Accessibility*—1) How long does it take you to get to your usual source of care? (1 = 1 hour . . . 5 = 0-14 minutes); 2) Do you have trouble getting there? (1 = Almost Always . . . 4 = Never); and 3) Do you or the person who drives you have to miss work for you to go there? (1 = Both miss work . . . 4 = no one misses).
- *Structural Accommodation*—1) When you call for an appointment, how many days do you usually have to wait to see the doctor? (1 = 14 days . . . 5 = same day); and 2) When you have an appointment, how long do you have to wait to see the doctor once you get there? (1 = 1 hour . . . 5 = 0-14 minutes).
- *Structural Affordability*—1) range of insurance coverage for medical expenses (all, some, or none); and 2) financial status, as determined by family income and a three-point measure of how hard the respondent said it was to

pay for basics (food, shelter, medical care). A respondent's score on *Structural Affordability* equaled the sum of the financial status score, multiplied by two, and the medical coverage score.

For all of the Structural variables, high scores represent greater potential access to medical care.

Measures of Psychological Access Components

The Psychological Access measures were based on questions answered with either a yes, no, or don't know response. Responses indicating dissatisfaction were scored one, while those indicating satisfaction received a zero. A "don't know" response was scored in one of two ways: if the respondent had no prior experience with a specific service, "don't know" was scored zero. However, if he or she had prior experience but was uncertain if the service was adequate or handled fairly by the provider, "don't know" was scored 0.5 to indicate mild dissatisfaction.

● *Psychological Affordability*—Respondents were asked if they felt they had to pay too much for laboratory tests, X-rays, etc., at their usual source of care, and if their doctor charged too much for the care they received.

● *Psychological Accommodation*—Respondents were asked two questions which inquired about 1) satisfaction with office waiting time, and 2) time actually spent with the doctor.

● *Psychological Acceptability*—Respondents were asked if they felt their doctor treats rich patients better than poor patients; if the doctor takes a personal interest in them; and if the clinic staff makes them feel welcome during office visits.

High scores on the three Psychological Access dimensions indicate patient dissatisfaction rather than satisfaction with medical care.

Two Test Dates Offered for Nursing Certification in 1984

The American Nurses' Association (ANA) will administer certification examinations for 17 areas of professional nursing practice and administration on two separate dates in 1984. The first test date is June 22, during ANA's biennial convention in New Orleans, Louisiana; the second test date is September 29 in 67 cities nationwide. Test sites for the second examination are located in each of the 50 states, Washington, DC, Guam, and the Virgin Islands.

The 17 ANA certification programs for registered nurses are:

- Community Health Nurse
- Adult Nurse Practitioner
- Family Nurse Practitioner
- School Nurse Practitioner
- Gerontological Nurse
- Gerontological Nurse Practitioner
- Maternal and Child Health Nurse
- High-Risk Perinatal Nurse
- Child and Adolescent Nurse
- Pediatric Nurse Practitioner
- Medical-Surgical Nurse
- Psychiatric and Mental Health Nurse
- Clinical Specialist in Medical-Surgical Nursing
- Clinical Specialist in Adult Psychiatric and Mental Health Nursing
- Clinical Specialist in Child and Adolescent Psychiatric and Mental Health Nursing
- Nursing Administration
- Nursing Administration, Advanced

As of January 1984, an anticipated 20,000 nurses will have been certified through ANA since its certification program inception in 1974. As a voluntary program for registered nurses, certification through the American Nurses' Association offers affirmative evidence and formal recognition of advanced knowledge and skill in specialty areas of nursing. Credentials acquired through certification verify commitment to professional standards and command the respect of other health care professionals, administrators, and the public. In addition, in some employment settings, certified nurses enjoy the advantage of a salary differential over non-certified nurses, as well as enhanced opportunities for professional progression. Administered through a peer review system and written examinations, ANA certification measures each applicant's expertise in current nursing knowledge, and in the consideration of and initiation of new alternatives and strategies in nursing practice and administration. Specific education and/or practice criteria are prerequisite for each specialized program offered.

Nurses interested in pursuing certification should request eligibility information in order to allow time to prepare application materials. For complete information and application forms, call toll-free (800) 821-5834, Monday-Friday, 8:30 am-4:30 pm central time, or write Marketing, American Nurses' Association, 2420 Pershing Road, Kansas City, MO 61408.