Ambulatory Care for Chronic Conditions in an Inner-City Elderly Population

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Abstract: Factors affecting the extent to which individuals aged 65 and over living in inner-city households received health care for three chronic conditions (high blood pressure, heart trouble, arthritis) are examined. These factors are age, sex, living arrangements, and the presence of more than one chronic condition. Indicators of receiving care are having seen a health care provider within the previous six months and being on medication for the condition. A more detailed scrutiny of care received for high blood pressure is undertaken as well. This analysis is part of a larger study investigating health care of groups within East Baltimore who utilize different systems of care, focusing on a hospital outpatient department and a new HMO. Data were obtained from 1455 household interviews among three sample populations: enrollees in an HMO, public housing project residents, and the general community. The findings indicate that high proportions of the elderly who report having these conditions also report receiving care for them. For people with high blood pressure, the majority are receiving care and being given self-care instructions, and high proportions report compliance with instructions. (Am. J. Public Health 66:660–666, 1976)

Care for chronic conditions is a major aspect of health services to elderly, non-institutionalized people. Data from the National Health Interview Survey indicate that 85 per cent of people aged 65 and over report at least one chronic disease or condition, and 54 per cent of this group report activity limitations attributable to such conditions.[1] Ambulatory care of such conditions is important because of its potential for maintaining independent functioning in the community and avoiding institutional care. This paper reports on factors affecting the extent to which people aged 65 and over received or sought health care for three chronic conditions: high blood pressure, heart trouble and arthritis. Indicators of care include having seen a provider for the condition in the previous six months and being on medication for the condition. Factors to be examined with seeking and receiving care include: age and sex;[2] living arrangements;[3, 4] and the presence of more than one chronic condition.[5–7] A more detailed scrutiny of aspects of management of high blood pressure is undertaken as well.

The data are drawn from a larger, multi-faceted study of health care behavior and experiences of residents of East Baltimore, a low-income, predominantly black community within the City of Baltimore. As in similar urban areas throughout the country, the major sources of ambulatory care are hospital clinics and emergency rooms as the supply of private, primary care physicians has decreased. The single most frequent provider of ambulatory care for the population studied here is The Johns Hopkins Hospital. Beginning in 1971, ambulatory care has also been provided by the East Baltimore Medical Plan, a prepaid group practice program which provides a comprehensive range of services to a population of enrollees and registrants drawn largely from the East Baltimore community. A major purpose of the study is to assess the impact of the presence of this resource by analyzing the behavior and experiences of persons using different sources of health care, with special emphasis on comparisons between EBMP users and persons using other sources.

Data for this study were collected through household interviews in three different random samples of households in 12 census tracts surrounding The Johns Hopkins Hospital which constituted the initial target area for the East Baltimore Medical Plan. These three samples, each containing approximately 600 households, were defined as follows:

a) The EBMP sample: households of registrants and enrollees drawn from the Plan's membership list including non-members within the household.
b) The housing project sample: households containing *no* EBMP members but located in four public housing projects where the majority of EBMP households are found.
c) The community sample: households in the 12-tract area not located in the public housing projects and containing no EBMP enrollees or registrants.

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TABLE 1—Selected Socio-Demographic Characteristics of Sample Populations Aged 65 and Over by Sample Group and Usual Source of Ambulatory Care.

Sample Group	Usual Source	N	Per Cent of Total Sample Group	Socio-Demographic Characteristics: Age % 65–74	Sex % Female	Race % Black	Living Arrangements % Living Alone	Median Per Capita Income (a)
Community	Total	153	10.2	73.9	51.6	95.4	30.1	$2182
	JHH	71	7.4	71.8	47.9	95.8	23.9	$1900
	Other	82	15.1	75.6	54.9	95.1	35.4	$2435
Housing Projects	Total	105	6.4	64.8	76.2	89.5	66.7	$1786
	JHH	49	5.4	61.2	67.3	98.0	55.1	$1792
	Other	56	7.8	67.9	83.9	82.1	76.8	$1782
EBMP	Total	95	5.3	64.2	66.3	98.9	46.3	$1726
	EBMP (b)	39	5.2	64.1	76.9	100.0	59.0	$1735
	Other (c)	56	5.4	64.3	58.9	98.2	37.5	$1719

(a) Based on reported annual income from all sources by all household members divided by household size.
(b) Includes almost all enrollees and a third of registrants.
(c) Includes two thirds of registrants and almost all non-members in households of members.

A total of 1455 household interviews were completed between March 1 and June 30, 1974. The completion rates were 86 per cent in the community sample, 90 per cent in the EBMP and 91 per cent for the housing project sample.

For analytical purposes, the EBMP sample has been dichotomized into those for whom EBMP is a main source and those for whom it is not, based on the report in the interview of the primary source of ambulatory care. The EBMP main source group aggregates the majority of enrollees and portions of the registrants into a more homogeneous group reflecting perception and use of EBMP. The group who have another main source is made up of some registrants and almost the entire group of non-affiliated persons who live in households with at least one member of EBMP. In the analysis, the community and housing project samples have been dichotomized as well into "JHH users" and "other users," also based on reported usual source of care. The "other" category includes users of private physicians, hospital outpatient departments other than Hopkins, and a few (8 per cent) who reported no usual source of care.

The Elderly Sample Population

The 352 elderly people included in this analysis constituted 7 per cent of the total sample population of the household survey. As shown in Table 1, the proportions of elderly in the sample groups ranged from 5 per cent of those in the EBMP to 10 per cent of the community. Table 1 also displays the distributions of elderly on several demographic characteristics: age, sex, race, living arrangements, and median per capita income. The people in the community group were different in several respects from those in the other groups. They were younger, fewer were women, fewer lived alone, and more of them had higher median incomes. It is not surprising to find that the EBMP group was similar to the sample of housing project residents since two thirds of the EBMP group lived in the housing projects.

Reported prevalence was obtained on eleven common chronic conditions, based on a list used in an earlier study in the East Baltimore community.[8]* When the number of chronic conditions reported by the elderly are examined, differences among the sample groups are pronounced. Only 3 per cent of the EBMP main source group had no chronic conditions, while the proportions in the other groups ranged from 10 per cent of the housing-JHH users to 31 per cent in the two community groups. Conversely, almost 80 per cent of the EBMP main source group had two or more conditions followed by the housing project-JHH users with 63 per cent. As might be anticipated, most individuals reporting one of the three conditions under consideration reported having one or more of the other ten chronic conditions.**

The three conditions most frequently reported for those aged 65 and over were arthritis, high blood pressure, and heart trouble, in that order, and these conditions are examined in detail in this report. Reported prevalence of these conditions varied considerably by specific sample and by usual source of ambulatory care. Table 2 shows that the EBMP main source group reported higher prevalence for all three conditions: 77 per cent of the EBMP main source group reported having arthritis compared to 66 percent of the housing project-other source users, 59 per cent of the housing project-JHH users, 51 per cent of the community-other source users, and 45 per cent of the EBMP-other source users. This tendency for the reported prevalence to be highest among the EBMP main source group, followed in order

*The eleven conditions were asthma, allergies, heart trouble, high blood pressure, hardening of the arteries, stomach ulcers, gallstones, cancer, kidney disease, diabetes, and arthritis.

**Data not presented in tabular form are available from the authors.

TABLE 2—Percentages of Elderly Sample Populations Reporting Chronic Conditions by Sample Group and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	Condition: High Blood Pressure	Condition: Heart Trouble	Condition: Arthritis	Total (N)
Community	Total	30.7	20.3	48.4	153
	JHH	29.6	25.4	45.1	71
	Other	31.7	15.9	51.2	82
Housing Projects	Total	57.1	36.2	62.9	105
	JHH	51.0	36.7	59.2	49
	Other	62.5	35.7	66.1	56
EBMP	Total	47.4	34.7	57.9	95
	EBMP (b)	64.1	41.0	76.9	39
	Other (c)	35.7	30.4	44.6	56

(a) Includes people who had ever had condition as well as those who reported they still had it at time of interview.
(b) Includes almost all enrollees and a third of registrants.
(c) Includes two thirds of registrants and almost all non-members in households of members.

by the housing project groups, the community groups, and then the EBMP-other source group is essentially the same for high blood pressure and heart trouble as well.

Patterns of Ambulatory Care

Table 3 displays the percentages of individuals with each of the three conditions who reported having seen a provider for the condition at least once within the six months preceeding the household survey. It should be noted again that the majority of persons in the EBMP-other source group identified JHH as their usual source of care, and that in both EBMP groups, most people lived in the housing projects. The data indicate that a large majority of elderly individuals reporting heart trouble or high blood pressure had seen a health provider at least once during the previous six months (at least 85 per cent in most of the groups). The percentage of persons being seen dropped sharply for those reporting arthritis, a less serious condition, in general, in terms of threat to life or serious secondary consequences, but important to the elderly with respect to comfort and mobility. The proportions of elderly who reported being seen varied by condition and sample. When reported source of care is considered, higher proportions of EBMP-main source users reported having seen a provider for each condition.

TABLE 3—Elderly Persons with Chronic Conditions Seeing a Health Provider at Least Once in Past Six Months for Each Condition by Sample Group and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	High Blood Pressure: Number with Condition (b)	High Blood Pressure: Per Cent Seeing Provider	Heart Trouble: Number with Condition	Heart Trouble: Per Cent Seeing Provider	Arthritis: Number with Condition	Arthritis: Per Cent Seeing Provider
Community	Total	36	86.1	26	88.5	67	46.3
	JHH	15	93.3	16	87.5	27	51.9
	Other	21	81.0	10	90.0	40	42.5
Housing Project	Total	50	88.0	35	85.7	62	58.1
	JHH	20	85.0	16	87.5	28	50.0
	Other	30	90.0	19	84.2	34	64.7
EBMP	Total	37	91.0	30	80.0	53	60.4
	EBMP (c)	22	95.5	13	100.0	28	67.9
	Other (d)	15	86.7	17	64.7	25	52.0

(a) Includes only people who reported they still had condition at time of interview.
(b) Includes only people for whom actual date of last visit for high blood pressure was reported.
(c) Includes almost all enrollees and a third of registrants.
(d) Includes two thirds of registrants and almost all non-members in households of members.

TABLE 4—Elderly Persons with Chronic Conditions Taking Medications by Type of Condition, Sample Group and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	High Blood Pressure		Heart Trouble		Arthritis	
		Number with Condition	Per Cent Taking Medication	Number with Condition	Per Cent Taking Medications	Number with Condition	Per Cent Taking Medications
Community	Total	46	73.9	25	88.0	66	60.6
	JHH	20	65.0	16	81.3	27	51.9
	Other	26	80.8	9	100.0	39	66.7
Housing Projects	Total	58	75.9	35	85.7	63	71.4
	JHH	24	70.8	16	87.5	28	60.7
	Other	34	79.4	19	84.2	35	80.0
EBMP	Total	44	65.9	29	93.1	52	69.2
	EBMP (b)	24	79.2	13	100.0	28	75.0
	Other (c)	20	50.0	16	87.5	24	62.5

(a) Includes only people who reported they still had conditions at time of interview.
(b) Includes almost all enrollees and a third of registrants.
(c) Includes two-thirds of registrants and almost all non-members in households of members.

When reported drug regimens for these conditions are examined, the pattern is less regular and varies among the conditions (Table 4). For high blood pressure, 50 per cent or more of any group reported being on medication, 81 per cent or more reported medication for heart trouble, and 52 per cent or more reported medication for arthritis. The different levels of medication reported, particularly for high blood pressure, may reflect differences in compliance as well as different prescribing patterns. Although this study was not designed to answer that question, it raises an issue for future consideration.

Effect of Age, Sex, Living Arrangements and Multiple Conditions

It was anticipated that measures of care received in each group would vary by age, sex and living arrangements. However, the differences were not consistent between the young-old (defined here as ages 65 to 74 and age 75 and over), between males and females, and between people living alone and living with others and, in some cases, were not in the expected directions. For example, except for arthritis, females were no more likely than males to have seen a provider or to report taking medicines. This inconsistent pattern held for the effect of age and living arrangements as well. These data suggest, therefore, that, for this group of people aged 65 and over the differences noted previously among the samples in receiving care and being on medication are not the result of socio-demographic characteristics often associated with utilization. An attempt was made to examine the possible effect of multiple conditions on the likelihood of receiving care; however, the very small numbers of persons who reported having only one condition precluded such analysis.

High Blood Pressure in the Elderly

More detailed information on the perception of the process of care was obtained for those who reported having high blood pressure. This condition, particularly among the elderly, is of interest because of its high prevalence[9] and because of the concerted efforts to place patients on therapy for secondary prevention purposes.[10] A previous study of the management of elderly hypertensives highlighted variations among ambulatory settings in modes of treatment and control of elevated blood pressure levels.[11]

The role of the patient in the management of this condition is of great importance, and an analysis of the process of care as reported by patients offers an opportunity for additional insights. Whether individuals were under "ongoing regular care" during the year prior to the interview and whether the individual saw the same provider in the same setting for most visits were factors addressed. Closer examination of indicators of continuity of care was undertaken for those who reported receiving regular care for high blood pressure. This included future appointments for care, regimens for care at home including drugs prescribed, and compliance with these regimens.

Proportions of persons with high blood pressure in each sample source group who reported being under regular care for their high blood pressure ranged from 78 per cent among the EBMP main source group to 63 per cent of those in the community sample who used JHH (Table 5). However, among the elderly reporting high blood pressure, the proportions who reported both being under regular care and seeing the same provider at each visit were considerably lower. For all groups excluding the EBMP main source group, the range was from 51 per cent to 66 per cent. Seventy-four per cent of those in the EBMP main source group were both receiving regular care and seeing the same provider. The proportions

TABLE 5—Elderly Persons With High Blood Pressure Receiving Regular Care by Sample Group and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	Number Reporting High Blood Pressure	Per Cent Reporting Regular Care	Per Cent Reporting Regular Care and Seeing Same Provider
Community	Total	42	69.0	54.7
	JHH	19	63.2	52.6
	Other	23	73.9	56.5
Housing Projects	Total	55	72.7	61.8
	JHH	23	73.9	56.7
	Other	32	71.9	65.6
EBMP	Total	40	77.5	64.6
	EBMP (b)	23	78.3	73.9
	Other (c)	17	76.5	51.0

(a) Includes only people who reported they still had condition at time of interview.
(b) Includes almost all enrollees and a third of registrants.
(c) Includes two thirds of registrants and almost all non-members in households of members.

not reporting regular care from the same provider (between 26 per cent and 49 per cent) are not trivial and may indicate a failure in continuity of care or in compliance.

In analyzing only those reporting regular care, it can be seen from Table 6 that a large majority were receiving care at the same place and from the same provider. Because of the nature of the structure of the OPD at JHH, a large teaching hospital, it might have been anticipated that individuals receiving care in such a setting would tend to see a variety of health providers. Since it is the policy of the OPD to assign patients to specific house staff, and since data were gathered toward the end of the house staff year (during the spring and before July 1st) and covered the year preceding the date of the interview, the probability was high that JHH users would have seen a specific provider for most visits. Individuals with EBMP as their usual source of care had the highest proportions seeing the same person and among the highest going to the same place. Differences are particularly noticeable for provider seen where proportions seeing the same person ranged from 67 per cent of the EBMP other source group to 94 per cent among those for whom EBMP was the main source of care. The overall impression from these two measures is that a high degree of continuity of care for high blood pressure, regardless of sample or source of care, exists for those who do report regular care.

TABLE 6—Elderly Persons Receiving Regular Care for High Blood Pressure from Same Source and Provider by Sample Group and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	Number Receiving Regular Care	Per Cent Going to Same Place	Per Cent Seeing Same Person
Community	Total	29	96.6	79.3
	JHH	12	100.0	83.3
	Other	17	94.1	76.5
Housing Projects	Total	40	97.5	85.0
	JHH	17	100.0	76.5
	Other	23	95.7	91.3
EBMP	Total	30	96.7	83.3
	EBMP (b)	18	100.0	94.4
	Other (c)	12	91.7	66.7

(a) Includes only people who reported they still had condition at time of interview.
(b) Includes almost all enrollees and a third of registrants.
(c) Includes two thirds of registrants and almost all non-members in households of members.

Among all individuals with reported high blood pressure, whether or not they received care regularly, there were differences noted in the proportions who reported being on some type of treatment and having a future appointment to see a provider. With the exception of the other source users in the EBMP sample, most people were currently receiving treatment and also had a future appointment. The EBMP main source group had the highest proportion of people with a future appointment and among the highest currently receiving treatment. Among those who reported not receiving treatment, the majority gave vague reasons ("can't be bothered" was the most frequent) that appeared related to individual motivation. There were small numbers who felt treatment did no good, but from information in the survey there was little evidence that difficulty in getting appointments, costs, or other constraints to care were perceived by the elderly.

In response to questions on specific instructions such as special diets, exercise, smoking or drinking, there seemed little consistency among the different groups in proportions reporting directions with the exception of diet instruction which was reported by the majority of all groups. Of interest here is the observation which was noted in a previous study of elderly ambulatory populations[3] that, although there were

differences among patient populations in the proportions who reported receiving directions, a large majority of those who reported receiving instructions reported complying.

As might be anticipated, greater proportions of all sample populations were on a drug regimen than were on other modes of management (Table 7). The tendency for the majority of those reporting instructions to report compliance is noted here also, although more reported taking the drugs prescribed than taking them in the quantities recommended. The lowest percentages of people reporting compliance in taking both the specific drug and in the prescribed amounts were found among the EBMP sample who reported sources other than EBMP as the place they received care. This group also had the highest proportion of individuals who felt that the drugs were not helpful, 20 per cent compared to 5 per cent among the EBMP sample using EBMP as a main source and 5 per cent among the general community sample who used sources other than JHH. In the general community sample, individuals who reported JHH as their main source and in the housing project sample regardless of source of care there were no individuals who felt drugs were not helpful for their conditions.

Discussion and Summary

This report on aspects of the process of ambulatory care for selected chronic conditions among a sample of the elderly in an inner-city population derives from a larger study of the health behavior and experiences of a sample of the total population of this area. Comparisons were made between those receiving care through a newly organized HMO and those receiving care through more traditional sources. The findings indicate that a very high proportion of individuals aged 65 and over who reported having the more serious conditions of high blood pressure and heart trouble also reported being seen by a health provider and being on medication for these conditions. The proportions are not as high for those with arthritis. For all three conditions, the range in the proportions receiving care was relatively narrow across the usual sources of care. However, within this narrow range, somewhat higher proportions of individuals who received care through the East Baltimore Medical Plan had seen a provider in the previous six months. This association between EBMP as a main source of ambulatory care and receiving care did not appear to be explained by differences in patient characteristics such as age, sex, or living arrangements.

Care for high blood pressure was examined more intensively, and the findings indicate that while most elderly people with high blood pressure reported receiving regular care for this condition, the percentages who also saw the same provider at each visit were lower. However, those for whom EBMP was the main source of care had higher percentages of individuals who reported seeing the same provider each time they went for care. This difference between those getting care through EBMP and those getting care through other sources was evidenced also by higher proportions in the EBMP main source group with future appointments. For all the sample groups, reported compliance with a variety of medical recommendations, including drug regimens, was very high. Drugs and diet were the most frequently reported instructions. Other types of recommendations varied widely among the sample source groups, but showed high rates of compliance overall.

In evaluating these findings, several considerations are in order. The data are derived from a household survey and all of the familiar limitations of self-reporting are applicable. Self selection of the group who receive care through EBMP has been considered and will be addressed in the full study report. Bice's findings[8] that age, high rates of utilization, and numbers of reported conditions and symptoms were not associated with enrollment in EBMP are most relevant for those aged 65 and over in suggesting that selectivity was not a factor for this age group. As part of the larger study, an analysis is underway of data collected through medical record reviews of several conditions, hypertension among them. Such data will augment information on the process of care and will serve to test the validity of the data obtained from patients. There are indications from a previous study of elderly hypertensives that, in the aggregate, the elderly report the presence or absence of this disease with a relatively high degree of validity.[11] The suggestion of possible differences among the aged in the validity of reported compliance has been referred to above although rigorous testing of this hypothesis has yet to be undertaken.

Past reports of process of care for chronic conditions tend to give a much less sanguine view than the findings reported here. Several studies which relate process to factors in the system of care, as well as the patient population, suggest lower proportions being successfully followed and treated.[12, 13] This observation holds true for reports of drug compliance also.[14] Most of these studies, however, have included people of all ages; it is possible that there are other forces in operation for those aged 65 and over. For one thing, the health problems of this group are usually of long standing

TABLE 7—Elderly Persons on Medications for High Blood Pressure Reporting Compliance With Instructions by Sample and Usual Source of Ambulatory Care (a)

Sample Group	Usual Source	Number on Medications	Per Cent Following on Amounts	Per Cent Instructions on Amounts
Community	Total	32	94.1	87.5
	JHH	12	92.3	83.3
	Other	20	95.2	90.0
Housing Projects	Total	43	100.0	100.0
	JHH	16	100.0	100.0
	Other	27	100.0	100.0
EBMP	Total	27	93.1	88.9
	EBMP (c)	18	100.0	94.4
	Other (d)	9	80.0	77.8

(a) Includes only people who reported they still had condition at time of interview.

(b) Includes two thirds of registrants and almost all non-members in households of members.

(c) Includes almost all enrollees and a third of registrants.

so that reported prevalence is likely to be more accurate. Secondly, chronic ailments among the elderly are more likely to be symptomatic. While this may not be the case consistently, the symptomless hypertensive found in middle adulthood is less likely to be found among those aged 65 and over. The elderly focus more attention on their health for good reason, and this greater concern may result in increased compliance with a wide variety of regimens.

In conclusion, in this group of inner-city elderly people, a large majority appeared to be seeking and securing care for their chronic conditions, and, as they saw it, were complying with instructions and supervision given them. This held whether the usual source of care reported was a prepaid group practice, the OPD of a teaching hospital, or other providers. Such findings suggest that areas of health care delivery to the elderly to which attention needs to be directed are evaluations of care received and the impact and outcome of that care to elderly patients with chronic diseases. Not to be overlooked in these investigations would be the relatively small but consequential group that reports not receiving regular care for chronic conditions.

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Abstracts Sought for Epidemiological Exchange

Abstracts are being sought for the Epidemiological Exchange to be held during the Annual Meeting of the American Public Health Association's 104th Annual Meeting in Miami Beach in October. The session, sponsored by the Epidemiology Section of the Association, is an annual forum for presentation of investigations, studies, methods, etc., which have been conceived, conducted and/or concluded within the past 6–12 months—too recent to meet abstract submission deadlines for other Epidemiology Section sessions. Papers presented at this session are intended to provide the most current update possible on epidemiology topics. The session will be held Wednesday afternoon, October 20, 1976.

Abstracts should be limited to 200 words. No special abstract form is required. The deadline for submission of abstracts for the Exchange is September 17, 1976. Send abstracts to: John A. Bryan, Deputy Director, Viral Diseases Division, Bureau of Epidemiology, Center for Disease Control, Atlanta, GA 30333.