

The Family and Hypertension in Family Practice

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The influence of the family in the care of family practice patients has not been studied extensively. This study uses hypertension as an index condition to characterize the extent of involvement of family around family practice center (FPC) patients and to examine whether the presence of family members influences patient outcomes. Records of 366 hypertensive patients were reviewed for information about blood pressures, demographic characteristics, associated medical conditions, and treatment. Three hundred forty-three of these patients responded to questions about family members, including their use of the FPC and whether they also had hypertension. Twenty percent of patients lived alone. Of the rest, two thirds had some, and one half had all family members enrolled in the FPC. Seventy-three listed family with hypertension, and 42 said these relatives were treated at the FPC. At the time of the first visit to the FPC for hypertension, the mean diastolic blood pressure was 93 mmHg. At their most recent visit, the mean was 83 mmHg, and 69 percent were below 90 mmHg. There was no association between blood pressure control and family enrollment in the FPC.

Since the establishment of family medicine as a discipline, there has been much discussion about how to characterize and study the role of the family in this field. One question asked is how often does the family unit receive care by the same physician or group of physicians. A second question relevant to family medicine is whether family in-

volvement contributes to the well-being of patients beyond the value of therapy for the individual. Both questions are relevant to the care of patients and to the training of residents and students for careers in which they will be taking care of families.

There are several studies that look at family enrollment in family practices. Fujikawa et al¹ studied a private practice in California and found that in 28 percent of families (excluding single-person households), all members were seen by the same physician. Fifty-four percent of families had some members in the practice and 18 percent had only one member seen. A neighborhood health

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center² provided care to all members of 27 percent of families, some in 32 percent of families, and only one member in 41 percent of families. A study from a university family medicine center³ showed that 58 percent of families have all their members registered at the facility. Another university-affiliated practice had 54 percent of families in which all members were seen.⁴ A survey of 82 Duke-Watts Family Medicine Center patients indicated that 35 percent of their family members used the center as their usual source of care.⁵ In contrast, data from four physicians in solo practice in Canada indicated that 86 percent of families in their practices had all their members seen by these physicians.⁶ Overall, there is no consistent picture of family care.

The second question, how care of more than one individual in the family contributes to the well-being of these individuals, has been less well studied. In theory, it is expected that knowledge of family members and dynamics can help direct diagnosis and treatment. Social support should be related to compliance with appointments and therapeutic plans. In his review of the family unit, Schmidt⁷ discusses improvement in physical rehabilitation, stabilization of alcoholics, and better drug compliance associated with family involvement in the care process. In general, however, there has been little documentation of the relationship of outcomes to the care of patients who do or do not have additional family members receiving care from the same source.

The current study uses hypertension to examine both the extent of family utilization of the Family Practice Center (FPC) and its relation to outcome. The first part is descriptive, showing family enrollment in the FPC of family members seen in patients with hypertension. The second part tests the hypothesis: when a family member is seen at the center and has other members enrolled, control of blood pressure is better than if only the individual is seen. Hypertension would appear to be an appropriate condition because it requires long-term therapy and presumably support for control. Compliance issues are important; medicine-taking and other behaviors such as diet and weight control are relevant both to the family and to control of the disease. At the same time, however, blood pressure control may be related to other factors including the initial level of blood

pressure and possibly other medical conditions. These factors will be included in this analysis.

Methods

A computerized listing was obtained of patients with blood pressure problems who made visits to the FPC (part of the residency training program at the Bowman Gray School of Medicine) during a five-month period in 1983. From this list, records were reviewed to ascertain whether the patient actually had a documented diagnosis of hypertension, was seen primarily at the FPC (several patients in the computer listing were seen at satellite facilities), and had been enrolled in the center for long enough to have had at least one initial and follow-up visit by the end of 1983. Data were collected on demographic characteristics including age, race, and sex; number of years in the practice and whether the patient was primarily seen by a resident or a faculty physician; coexisting cardiovascular, cerebrovascular, and renal disease; and initial and final diastolic blood pressures as described below.

The diagnosis of hypertension was accepted if the patient was receiving antihypertensive medications at the time he or she made the first visit to this practice, or if at least two diastolic blood pressure readings of 90 mmHg or greater were obtained at this facility. The initial diastolic blood pressure was the reading obtained at the first visit if the patient was already on medications or at the time that the diagnosis of hypertension was first established. The final pressure was that obtained at the visit nearest the end of 1983, at least four months after the initial visit. If more than one level was noted during a visit, the physician's reading with the patient in the sitting position or the mean of two or more such readings was used. Record reviews were conducted by the investigator and by a trained research assistant, whose work was periodically reviewed by the investigator.

Information on family relationships was not uniformly available from the patients' charts, so a survey of study patients was undertaken. First, letters were sent requesting the names and relationships of household members, whether they were also seen at the FPC, whether they had high

Table 1. Family Relationships Among Family Practice Center Patients With Hypertension

Living Arrangement	No. (%)	Family Members		
		In FPC	With Hypertension	In FPC and Hypertension
Live alone	68 (20)	—	—	—
Live with 1 other	156 (45)	90	41	23
Live with 2 others	52 (15)	38	15	9
Live with 3 others	37 (11)	31	9	5
Live with 4 to 7 others	30 (9)	25	8	5
Total	343 (100)	184 (66%*)	73 (27%*)	42 (15%*)

*Percentage of 275 patients with family

blood pressure, and whether that hypertension was treated at the FPC. The letters contained an explanation of the study and a statement that a voluntary response would give consent to participate. Nonrespondents were sent a second letter; further lack of response was followed up by telephoning the patient's home.

The relationships between the outcome of interest, final diastolic blood pressure, and other individual study variables were first assessed by one-way analyses of variance. The interrelationships among these variables and their association with the blood pressure outcome were studied with a stepwise multiple regression analysis. Because of the multiple comparisons inherent in regression analyses, statistical significance was considered at the $P < .05/15$, or $.003$, level to account for the 15 independent variables in the model.⁸

Results

The computer printout showed 505 patients who had blood pressure problems coded for visits during the previous five months. Of these, 50 were seen primarily in satellite facilities, and six were deceased. Forty-five did not have hypertension. Twenty-five did not have a final blood pressure obtained during the study period. Thirteen records

were not available for review. Three hundred sixty-six patients were thus available for analysis. Two mailings brought household information for 239 patients and follow-up telephone calls provided additional data for 104. Twenty-two patients could not be reached, and one patient refused to respond.

The patients ranged in age from 21 to 91 years with a mean and median age of 59 years. Sixty-six percent were female and 70 percent were white, both consistent with the overall age and race distribution in the practice. Approximately equal numbers of patients had been in the practice one year or less, or seven years or more (about 20 percent each). The mean length of enrollment was four years. Because 211, or 58 percent of patients, were already on medication at the time of diagnosis, the length of time with known hypertension was not usually available. Twenty-one percent had coexisting cardiovascular disease, 10 percent had cerebrovascular disease, and 11 percent had renal disease (defined as a serum creatinine level above 1.5 mg/dL). The patients were nearly evenly divided between resident and faculty care.

Table 1 displays the distribution of family relationships among the 343 hypertensives who responded to the household questionnaire.* Sixty-

*The questionnaire requested information on "people who live with you." Almost all responses listed relatives, thus, "family member" is used as the term for other household occupants.

Table 2. Regression Analysis of Final Diastolic Blood Pressure and Study Variables (%)*

Independent Variable	Final Diastolic Blood Pressure			
	Adjusted R ²	Coefficient	F Value	P Value
Initial diastolic blood pressure	.097	0.26	34.0	<.001
Age	.030	-0.15	15.2	<.001
On medication at first visit	.015	-3.32	7.6	.006
Family members in FPC with hypertension	.012	-3.77	5.8	.02

*See text for other variables in the analysis

eight, or about 20 percent, lived alone (included six living in rooms or apartments in care facilities), nearly one half lived with only one other family member, and the rest had between two and seven additional family in the household. Of the 275 patients with family members, nearly two thirds (184) had at least one additional family member coming to the FPC and one half (138) had all their family enrolled. Seventy-three (27 percent) stated that other family members had high blood pressure. Of these 73, 42 (58 percent) said that their family members were being treated at the FPC.

At the first visit to the FPC for hypertension, the mean diastolic blood pressure was 93 mmHg. Twenty-eight percent of patients were in adequate control (below 90 mmHg) because they were already on medication, while 47 percent had diastolic pressures in the 95 to 130 mmHg range. At follow-up, the mean diastolic pressure was 83 mmHg; 69 percent were adequately controlled and only 13 percent had readings of 95 mmHg or higher.

There was an inverse association between age and final diastolic blood pressure; that is, older people tended to have lower final blood pressures than those in younger age groups. Women had better outcomes than men, with 73 percent in adequate control compared with 60 percent of the men. Blacks and whites showed no difference overall, but there was a tendency for black men to have relatively higher rates of intermediate or poor blood pressure control than other race-sex group-

ings. There was no relationship between outcome and whether the patient was initially seen on or off antihypertensive medications (mean final diastolic blood pressures 82.7 and 84.0 mmHg, $P > .05$). There was no difference in blood pressure control among patients seen primarily by faculty members or residents.

come blood pressures among patients living alone, living with others, or those who did or did not have living with others, or those who did or did not have nonhypertensive family members enrolled in the FPC. There was a statistically significant improvement in outcome of patients who had a hypertensive family member in the FPC compared with patients without such relatives (final diastolic pressures 80.3 and 83.7 mmHg, respectively, $P = .01$). The regression analysis (Table 2) indicated that initial diastolic blood pressure was the best single predictor of outcome, explaining 10 percent of the variance. Age was also a significant (inverse) predictor of outcome, adding 3 percent to the variance. The next variables, whether the patient was on medication when first seen at the FPC, and number of family members with hypertension treated at the FPC, each explained about 1 percent of the variance, but neither was significant at the requisite $P = .003$ level. No other demographic (sex, race), clinical (provider, years in the FPC, presence of hypertensive complications), or family (number of family members, family in the FPC, or with hypertension) factors were associated with outcome. A separate regression analysis

forcing in the family variables did not substantially change these results.

Discussion

These results indicate that a majority of FPC patients treated for hypertension who have other family members, have these members enrolled in the practice. One half of these patients have their entire household enrolled. This extensive use of the FPC by patients' families is consistent with data obtained from other university family practices, as previously noted. It is difficult to extrapolate the findings from these hypertensive patients to the rest of the practice because it is possible that they have a more intense exposure to the FPC than other enrollees. It is not clear, but open to further study, whether individuals with no chronic problems have similar family usage of the practice.

The blood pressure data indicate that the majority of patients are under good control. It is recognized that the values were obtained from many different providers, using different equipment, and were, thus, not standardized. The rationale for the use of the various blood pressure readings is that they are clinically relevant to the patients. They are the values used to make decisions about treatment and represent the best estimate of hypertensive control. The only study factors clearly associated with outcome were initial blood pressure level and age. There was a tendency for patients who had family members with hypertension seen at the FPC to have better blood pressure control. Length of time in the practice, faculty or resident provider, or the coexistence of hypertension-related medical problems were not related to blood pressure control.

The hypothesis that hypertensive patients with family supports would do better was not borne out by the study. Possible reasons for this lack of association include insensitivity of the family relationship measure or problems with hypertension as a model for examining family influences. As for the former possibility, the similar outcomes among those who did or did not live alone suggests that the presence of a family member is not a relevant factor. While hypertension seemed to be a logical choice to study social influences, factors affecting

blood pressure control may elude easy definition and measurement. Earlier studies of care process in relation to hypertension outcomes⁹⁻¹¹ did not find that adherence to reasonable criteria of medical care was associated with better results. It may be that in studies of patients in a care system, such as the FPC, the provision of medication and the availability of continuing contact is the most important "process variable." Perhaps the influence of the family is felt more in the decision to enter the care process, and is less apparent as the patient remains in the system. Thus, this study should not be interpreted as showing no effect of family on the treatment of hypertension, but rather the lack of an obvious, direct effect on blood pressure in continuing patients.

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