
Diabetes Patient Education in The Office Setting

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The diabetes patient education provided in randomly chosen primary care physician offices in small and large communities was compared with hospital-based patient education programs in those same communities. The office programs were usually physician-delivered, informal, and interwoven with the clinical care offered. They usually did not include a systematic needs assessment, were not recorded, used educational materials sparsely, and often lacked evaluation. The time spent on education is approximately 48 minutes per year per patient in the office setting. The study suggested several developmental activities that might improve patient education in physician offices where the majority of patients with diabetes receive most of their care.

The majority of care for persons with diabetes is provided in ambulatory care settings—physicians' offices and outpatient clinics. The extent to which that care is accompanied by diabetes patient education is not well known. It was hypothesized that physicians' offices (and similar ambulatory care sites) were an underutilized opportunity for effective patient education in diabetes.

The literature on office-based patient education is sparse. A description by Shipp¹ on treatment of diabetes mellitus in the office setting includes a content list for patient education and recommendations about format and use of educational materials in the office. Shipp's article contains suggestions for securing a written "agreement" in which patients commit themselves to perform the steps of self-care and lifelong learning; he also describes the diabetic record used in his office and his approach to office-based dietary instruction. Jamplis² has described his experience with conducting patient education in the office-setting. The primary focus was a hypertension program produced in cooperation with the American Group Practice Association, but the methods would be applicable to diabetes. The Jamplis program included pre- and posttesting, audiovisual programs reviewed by the patient and the patient's spouse, and patient interaction with a health educator in the office. Stine and Nagle³ have described their patient education program in a family medical center setting. The topics of their programs were well-child care, diabetes, and prenatal care. Clarke and co-workers⁴ presented the findings of their survey of 68 pediatric diabetes specialists from a national sample. The office education provided by these diabetologists was described. None of these reports, however, analyzed the status of patient education in primary care physicians' offices.

This study was undertaken to determine the current status of diabetes patient education in the office setting. It was con-

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ducted in randomly selected small and large communities in the state of Michigan and included a comparison of hospital-based and office-based education.

Methods

Data for this study were collected as a component of a systematic evaluation of community-based care for patients with diabetes. For the purposes of this evaluation, a representative cross section of the community health care system in the state of Michigan was sought. Criteria for two kinds of communities, large and small, were established and are shown in Table 1. The criteria for a large community defined a referral center offering specialized services that persons with diabetes might need in the course of their illness. Of 13 communities in the state of Michigan that met these criteria, six were randomly selected. The criteria for a small community defined a small, isolated, usually rural community, with a single hospital and few, if any, specialized services. Of 37 communities in the state of Michigan that met these criteria, six were randomly selected. In four of the six small communities, five primary care physicians were selected. Primary care physicians were defined as internists, general and family practitioners. Pediatricians were deliberately not included as their number would have been too small to be representative.

A structured questionnaire was designed to gather data about several aspects of diabetes patient education in the hospitals of the 12 selected communities. This questionnaire was completed by the diabetes or patient educator in each hospital, if such an individual existed. An equivalent on-site staff interview of the hospital nursing service was used if a designated diabetes or patient educator did not exist. A similar questionnaire was designed to obtain information about diabetes patient education in primary care physicians' offices. The questionnaire was introduced and explained to the office staff during the process of recruiting their participation in the study, and was completed by a member of that office staff. Following receipt of each questionnaire (from hospitals and from offices), project staff conducted a telephone follow-up with each respondent to clarify questions that existed about the information supplied and to obtain additional comments about patient education in the hospital or office setting.

Results

Completed questionnaires were obtained from the study population listed in Table 2. This included all 26 hospitals in the 12 communities (20 hospitals were in the six large communities, and one each in the small communities). Each hospital was an acute care, general hospital. In the subset of eight communities in which random selection of primary care physicians was performed, agreement to participate in the study was achieved from 61 primary care physicians. The prescribed number of physicians (15 from each large and five from each small community) was not always obtained, as two communities selected did not have the requisite number of primary care physicians, and some of the randomly selected physicians declined to participate. The overall physician participation rate was 81%. Of the 61 physicians who agreed to participate, 44 (12 from small and 32 from large communities) actually supplied completed questionnaires describing office-based patient education for an overall response rate of 59%. The data presented in this paper are a comparison of the diabetes pa-

Table 1. Community Selection Criteria

Large Community	Small Community
Has each of following:	Has:
1. Diabetologist	1. Single hospital of less than 200 beds
2. Regional perinatal center	2. Less than 8,000 hospital admissions/year
3. Retinal disease specialist	3. More than 20 miles to nearest hospital
4. Organized diabetes patient education	4. No graduate medical education
5. Dietitian	5. Less than 50 physicians
6. Social worker	6. No diabetologist
7. Accredited continuing medical education	7. Less than three secondary criteria of large communities
Has at least three of following:	
1. Urologist	
2. Nephrologist and hemodialysis	
3. Neurologist	
4. Coronary bypass surgery program	
5. Peripheral vascular surgeon	

Table 2. Community Diabetes Education Study Population

12 Communities
6 large (referral centers)
6 small (isolated and rural)
26 Hospitals (all general, acute care)
6 from small communities (92-174 beds; average 121)
20 from large communities (105-561 beds; average 345)
44 Primary Physicians' Offices
12 from 4 small communities
32 from 4 large communities

Table 3. Level of Development of Diabetes Educational Program

Program Development Level*	Small Communities		Large Communities		All	
	Hospital (n=6)	Office (n=12)	Hospital (n=20)	Office (n=32)	Hospital (n=26)	Office (n=44)
1. Not formalized	1(17%)	9(75%)	2(10%)	21(66%)	3(12%)	30(68%)
2. Topic list only	3(50%)	1(8%)	2(10%)	5(16%)	5(19%)	6(14%)
3. Formalized	2(33%)	2(17%)	16(80%)	6(19%)	18(69%)	8(18%)

*See text for definitions of three levels.

tient education in 26 community hospitals with that in 44 primary care physicians' offices.

Every hospital and office indicated that it did provide some kind of diabetes patient education. The reported level of development of programs offered, however, varied greatly, as did the staffing, educational characteristics, sources and use of educational materials, and the amount of time spent in patient education. Table 3 shows the level of development of diabetes patient education programs in hospitals and offices in small and large communities. Three levels of development were defined: (1) not formalized—a program with no organization, definition, or planning; (2) topic list only—a program that had only a written list of subjects to be covered; (3) formalized—a program with stated objectives, a written curriculum, integrated teaching materials, and a planned methodology. There was a statistically significant ($\chi^2 = 19.4$, $p < .0001$) difference in the level of development in all hospitals compared with all offices, with the hospitals reporting more fully developed programs. The apparent higher level of development reported in hospital programs in large communities as compared with hospital programs in small communities, however, was not statistically significant ($\chi^2 = 5.47$, $p < .06$). There were no differences in degree of program formalization attributable to community size for office-based programs.

The involvement of various health care professions in teaching diabetes is shown in Table 4. Physicians are involved in the delivery of hospital-based diabetes patient education about half the time in small hospitals and a quarter of the time in large hospitals; designated diabetes nurse educators were commonly involved in large hospital programs and less so in small. A general duty staff nurse is involved in diabetes education in half of the small hospitals and almost three-quarters of the large hospital programs. In contrast, physicians report that they deliver most of the diabetes patient education in the office setting, with some assistance from their office nurses. Diabetes nurse educators are not available in primary care physicians' offices. Dietitians participate in the patient education programs quite regularly in hospital-based programs and, through referrals, in nearly two-thirds of office-based programs. Pharmacists and social workers are occasional participants in hospital-based programs, but never in the offices that constituted this series.

Reported educational characteristics of hospital and office programs are shown in Table 5. Four characteristics were assessed: (1) the performance of an educational needs assessment, (2) the format of the educational program, (3) the completion of a written record of the education provided, and (4) the conduct of an evaluation. It is apparent that a systematic needs assessment is performed in approximately one-half of hospital-based programs but rarely, if ever, in offices, where even an informal judgment of the patient's needs is rendered in a minority of cases. Diabetes education is delivered through organized classes in approximately two-thirds of hospital programs and on an individual, or one-on-one, basis in most offices.

The kinds and sources of educational materials used in hospitals and office programs were determined and the findings are shown in Table 6. There were no differences between small and large communities. Instructional materials in print format were used by 21 (81%) hospitals and 25 (57%) offices.

Table 4. Involvement of Various Health Professions in Diabetes Teaching

Profession	Small Communities		Large Communities		All	
	Hospital (n=6)	Office (n=12)	Hospital (n=20)	Office (n=32)	Hospital (n=26)	Office (n=44)
Physician	3(50%)	11(92%)	4(20%)	32(100%)	7(27%)	43(98%)
Dietitian	6(100%)	7(58%)	18(90%)	20(63%)	24(92%)	27(61%)
Nurse educator	3(50%)	0	15(75%)	0	17(65%)	0
Staff Nurse	3(50%)	8(67%)	14(70%)	17(53%)	17(65%)	25(57%)
Pharmacist	2(33%)	0	5(25%)	0	7(27%)	0
Social worker	0	0	8(40%)	0	8(31%)	0

Note: Units are number of institutions (hospitals or offices) in which the professions indicated are involved in patient diabetes teaching.

Table 5. Characteristics of Patient Education Programs in Hospitals and Offices

Characteristic		Hospitals (n=26)	Offices (n=44)
Needs assessment	Systematic and recorded	11(42%)	0
	Systematic, not recorded	6(23%)	0
	Informal judgment	9(35%)	8(18%)
	Not done	0	35(80%)
Format	Individual instruction (one-on-one)	8(31%)	43(98%)
	Organized classes	18(69%)	0
	Referral to other program	0	39(89%)
Evaluation	Knowledge and/or skills assessment	16(62%)	6(14%)
	Informal judgment	Not determined	27(61%)
	Specific form used	12(26%)	0
	No evaluation	2(8%)	10(23%)
Written record of education	Yes	20(77%)	9(20%)
	No	6(23%)	34(77%)

Table 6. Sources of Educational Materials Used in Hospital and Office Settings*

	Do Not Use Any	PRINT			
		Commercially Available	Free from Drug Company	Free from ADA	Developed Own
Hospitals (n=26)	5(19%)	10(38%)	17(65%)	8(31%)	9(35%)
Offices (n=44)	19(43%)	19(43%)	29(66%)	8(18%)	6(14%)
		AUDIOVISUAL			
Hospitals (n=26)	13(50%)	15(50%)	4(15%)	0	1(4%)
Offices (n=44)	38(86%)	4(9%)	0	0	0

*There were no differences between small and large communities. Many institutions used materials from more than one source.

Approximately one-third of the hospitals purchased printed materials from commercial sources; two-thirds utilized free materials distributed by pharmaceutical companies. The experience in offices was similar. Hospitals also utilize materials from the American Diabetes Association or developed their own in approximately one-third of cases; offices did so to a lesser extent. Patient educational materials in audiovisual format were used much less frequently than those in print format. Half of the hospitals reported using audiovisual (AV) programs that they had purchased; usage of AV programs in offices was very small (9%).

The time devoted to diabetes patient education in the office setting was analyzed and the data are shown in Table 7. The mean frequency of office visits per year of the typical patient in all communities was four. During these visits, the mean reported time spent on patient education was approximately 12 minutes. The average yearly amount of diabetes patient education in the office setting is therefore approximately 48 minutes. The duration of hospital-based patient education was not assessed.

The frequency with which patient educational materials in printed format were used by offices to present various topics was determined, with the following findings: basic disease process—61% of offices; insulin administration—69%; diet—97%; monitoring—59%; personal hygiene—66%; acute complications of diabetes—48%; exercise—58%; long-term complications—67%; community resources—63%; and psychosocial adjustment—44%.

Of the 44 offices providing data to this study, 39 (88%) indicated they advise their patients to enroll in diabetes education offered by one or more external agencies. The number of offices referring patients to various community agencies for patient education is shown in Table 8.

Discussion

The purpose of this study was to assess diabetes patient education as currently conducted in typical mid-American communities. Communities with intensified medical services, which we defined as large communities, and those with basic services characteristic of the small American community were included. Primary care physicians were randomly selected to increase the degree to which the results represent the system that is providing most of the care to persons with diabetes. Although these data represent a sampling from the state of Michigan, it is not unreasonable to project that they also describe the care received by diabetic patients in many other parts of the country.

The focus of this study was diabetes patient education as delivered in the primary care physician's office. Hospital data were included for comparison. The findings of this study permit the construction of a summary description of diabetes patient education in the primary care physician office. This education is largely physician-delivered in small increments spread over time and interwoven with the diabetes care those offices are providing. The education is usually one-on-one and informal, and lacks most of the technical features of planned education programs, such as needs assessment, use of adjunctive educational materials, and evaluation. It could be easily argued that there is nothing wrong with patient education that is individually delivered by the physician responsible for a patient's care and given when it is clinically relevant to the pa-

Table 7. Time Spent on Patient Education In Offices

Community Size	Usual Frequency of Typical Office Visit (per year)			Time Spent on Patient Education in Typical Visit (minutes)		
	Range	Mean	Median	Range	Mean	Median
Small (n=12)	0-9	4.6	4.0	5-20	12.6	13
Large (n=32)	0-12	4.0	4.0	0-75	11.8	10

Table 8. Agencies to Which Offices Referred Patients for Diabetes Education*

Agency	Offices Referring (n=44)
Local hospital	30(68%)
Health department	10(23%)
Visiting Nurse Association	15(34%)
Local ADA chapter	2(5%)
Do not refer	5(11%)

*Many offices referred patients to more than one agency.

tient (sometimes called the "teachable moment"). The authors of this paper would enthusiastically support patient education that had these characteristics.

We would propose at the same time, however, that the data suggest several ways that diabetes patient education in the office setting could be improved. We further offer the opinion that these improvements are achievable at realistic costs and that they may be justified by subsequent improvements in patient outcomes. The data were derived from self-reports on a structured questionnaire. As is the case with self-reports generally, these data may be overstatements of the actual situation. If this is true, the room for improvement in office-based diabetes patient education may be even greater.

One improvement would be to establish goals and objectives for diabetes patient education in the ambulatory setting for wide distribution to primary care physicians and their co-workers. *Guidelines for Diabetes Care*,⁵ published jointly by the American Diabetes Association and the American Association of Diabetes Educators in 1981, contains an extensive specification of end point patient behaviors. By inference, these are statements of objectives of diabetes patient education. The ADA/ADE guidelines have not, however, been widely distributed to primary care physicians who are providing the majority of diabetes patient care. Furthermore, educational objectives for diabetes patients should be subdivided for different types of diabetic patients. The educational needs of younger persons with insulin-dependent diabetes are different from those of the middle-aged adult who is not receiving insulin, etc. There are probably four or five different sets of objectives that would be needed.

A second modification of office-based diabetes patient education that may be helpful is the increased involvement of the other members of the physician's office staff. A majority of diabetes care is rendered in the ambulatory care setting, and nurses are effective in providing care and education to patients with chronic illnesses. The office nurse is in a unique position to provide diabetes patient education but is

probably more removed from ongoing professional continuing education than any health professional. A supplemental program is therefore needed to update the office nurses' diabetes-related knowledge and skills.

Inexpensive, but effective, print materials designed to supplement the education provided by health professionals should also be developed. Educational brochures and instruction sheets are currently not used extensively in offices. It is reasonable to predict that wider availability of print materials with extensive coverage of diabetes-related topics would enhance office-based patient education. Two apparent problems are suggested by this study: (1) lack of office awareness of available patient education materials and/or (2) their cost. In an effort to address the first problem, the University of Michigan Diabetes Research and Training Center (MDRTC) has developed a recommended list* of educational materials in print and audiovisual format.⁶

Another area of potential improvement in office-based patient education is needs assessment. Substantial progress has been made with the development of the Diabetes Education Profile and its derivative, the Diabetes Care Profile (DCP). This self-administered questionnaire is based on concepts identified in the Health Belief Model⁷ and is specific to the problems faced by patients with diabetes. The DCP elicits information needed to plan educational and behavioral interventions that will assist the patient to both adhere to the diabetes regimen and make personal adjustments to having diabetes. The output of the instrument is a "profile" of patient beliefs, attitudes, and adjustment to diabetes. The profile allows direct visual comparison of the patient's scores with those of a "norming" group of patients with the same diagnosis and treatment program.⁸

Although the DCP was originally designed to allow easy hand scoring, experience has demonstrated the utility of machine scoring to increase clinical efficiency. Therefore, a computerized entry and scoring system has been developed for clinical and research applications of the instrument. † Unfortunately, there is no direct correspondence between scores on the DCP profiles and appropriate interventions. The judgment of health care professionals is still needed to interpret the results in light of clinical experience and to apply the appropriate intervention.

An additional component of an office-based education program should be periodic review of material (even frank repetition) to address the deterioration with time of diabetic patients' knowledge and management skills, a phenomenon measured by Lawrence and Cheely⁹ in their follow-up study of diabetes outpatients. Page et al¹⁰ noted a similar deterioration that would suggest that repetition is necessary. They noted that patient recall of self-care recommendations showed very substantial loss immediately following an outpatient clinic visit.

The amount of time spent on patient education in the office setting represents an area where substantial change could probably be made. In the primary care physicians' offices assessed

during this study, the average time reportedly spent on patient education was 12 minutes per visit, and the average frequency of patient visits to the office was four per year. This means that each patient receives approximately 48 minutes per year of education in the office. Pichert and colleagues¹¹ had similar findings in their systematic assessment of how patients spent their time in a multidisciplinary diabetes clinic. Only 20% of that time, or 12 to 15 minutes, was spent instructing patients, and in only four of those minutes were the patients actively involved in the instruction. These authors pointed out that much of a patient's time in a clinic visit was spent in clinical assessment, and that use of more efficient assessment techniques could reduce this time and permit reassignment of it to education. They also noted that a great deal of "untapped patient time was spent in waiting rooms," a statement which no experienced clinician could contest. Pichert's suggestion that waiting time could be converted to education time seems quite reasonable, but much developmental work is needed to create the curriculum, the materials, and the methods for expanding diabetes patient education in the office setting.

In summary, education for the diabetic patient occurs in primary care physicians' offices in association with the care delivered there. Since the majority of diabetes care occurs in office and ambulatory settings, it seems reasonable to develop methods and materials to improve the concurrent education. Several realistic opportunities to accomplish improvement exist.

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*This brochure may be purchased through Media Library, The University of Michigan Medical Center, R4440 Kresge III, Ann Arbor, MI 48109-1518.

†Information regarding the DCP and computer program are available from: W.K. Davis, G1111 Towsley Center, University of Michigan Medical Center, Ann Arbor, MI 48109-0201.