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# The Biggest Problem in Diabetes

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An assessment of the biggest problem in diabetes care from the viewpoint of 115 health care professionals and 428 diabetic patients was obtained. There was substantial agreement by health professionals and patients alike that diet and diet-related issues constituted the most difficult problem faced by persons with diabetes and by health professionals caring for those persons. These findings may be important in organizing diabetes patient education and in the selection of research efforts within the overall field of diabetes.

A recent assessment of diabetes care and education in large and small communities indicates what aspects of diabetes present the biggest problem(s) as perceived by both health professionals and their patients. The findings of this assessment may be useful in setting the direction and emphasis of diabetes education programs and they have implications for needed research in clinical diabetes care as well.

## **Method**

The Outreach Core of the Michigan Diabetes Research and Training Center asked persons with diabetes and their health care providers what they consider the three most difficult problems in managing and living with diabetes. An open-ended question format was used that asked that problems cited be listed in priority order. Four large and four small Michigan communities were randomly selected for this assessment. The designation of large versus small was based on several criteria that distinguished between communities that were referral centers for diabetes patients (large) and those that were not (small). Primary care physicians, 15 from each large and five from each small community, were randomly selected for participation. Primary care physicians were defined in this study as internists (including diabetologists if present) and family and general practitioners. Nurses and dietitians involved actively in diabetes care in the eight communities were also included.

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From the practice of each participating physician, seven persons with diabetes were randomly selected. Each patient completed a questionnaire that included his or her medical history, current diabetes management, and psychosocial adjustment to diabetes, as well as the open-ended questions concerning patients' three most difficult problems with diabetes. In addition, each patient completed a standardized diabetes knowledge test.<sup>1</sup> This test included categories on basic diabetes knowledge, carbohydrates, exchanges, insulin, and blood glucose. The study purposefully did not include patients under age 16, as the patient selection methods used would have provided very small (and thus nonrepresentative) numbers of children. The health professionals completed a questionnaire covering their diabetes practices that included the question, "What are the most difficult problems your diabetic patients have in managing their disease and their lives?"

## Results

Responses were obtained from 61 primary care physicians, 30 nurses, and 24 dietitians (total, 115) and from 428 patients (generally seven from each physician's practice). The prescribed number of physicians (15 for each large and five for each small community) was not always obtained, as two communities selected did not have the requisite number of primary care physicians. In addition, some of the randomly selected physicians declined to participate. The overall physician response rate was 81%.

Patient demographics shown in Table 1 are divided into two categories: group A (n=338)—persons who indicated they had a problem with their diabetes; and group B (n=90)—persons who stated they had no problem. Of those in group A, 62% were receiving insulin as part of their overall management compared to 41% in group B. Group B patients were slightly older and had had diabetes slightly longer than group A. Insulin-dependent patients in group A (with problems) had a higher average HbA<sub>1c</sub> level than did insulin-dependent patients in group B (no problems), the difference significant at the 0.0528 level. (Insulin-dependent patients were defined as those meeting the following criteria: (1) onset of diabetes prior to age 30; (2) receiving insulin continuously since diagnosis; and (3) less than 120% of ideal body weight. It is estimated that there is about a 10% error in separating insulin-dependent from noninsulin-dependent patients by this method.

Table 2 lists the major problems cited by patients in group A. The biggest problem cited in personal diabetes management was overwhelmingly diet. Of seven problems named, four were diet-related; the other three problems listed were long-term complications, taking insulin injections, and following a schedule. The four diet-related responses accounted for 61% of the 338 persons in group A.

Table 3 shows that of 115 health care providers, 62% stated that diet-related problems were those most difficult for persons with diabetes to face. The remaining problem areas cited were psychosocial adjustment, compliance, long-term complications, family/friend pressures, insulin administration, and the cost of supplies and food. Patients, and the health professionals caring for them, strongly agreed that understanding and adhering to the dietary component of diabetes control is by far the biggest problem in the overall management of diabetes.

The percentage of insulin-using persons receiving a diet prescription from their physicians was similar for groups A

**Table 1. Demographic Characteristics of Patient Population Group A (n=338)**

Type of Diabetes	Patients		Age (Yrs)		Duration of Diabetes (Yrs)		HbA <sub>1c</sub> (%)	
	n	(%)	Range	(av)	Range	(av)	Range	(av)
IDDM	47	(14)	16-61	(33)	2-54	(18)	7.8-17.3	(11.2)*
NIDDM								
on Insulin	163	(48)	24-84	(58)	1-47	(13)	6.1-16.4	(10.3)
NIDDM								
not on insulin	128	(38)	31-80	(60)	1-34	(8)	5.5-14.9	(8.9)
<b>Group B (n=90)</b>								
No problems with diabetes								
(Men 45 [50%]; women 45 [50%])								
IDDM	9	(10)	31-68	(45)	3-46	(27)	6.4-11.7	(9.6)*
NIDDM								
on insulin	28	(31)	34-83	(61)	1-46	(14)	7.3-17.9	(10.6)
NIDDM								
not on insulin	53	(59)	36-86	(67)	1-22	(9)	6.0-12.2	(8.4)

\*Difference in mean HbA<sub>1c</sub> levels of IDDMs in groups A and B is significant at 0.0528 level.

**Table 2. Greatest Problem Cited by Group A (N=338)**

Problem	Respondents	
	N	(%)
Diet	125	37
Eating: will-power	62	18
Long-term complications	21	6
Insulin injections	17	5
Eating out	11	3
Following a schedule	10	3
Weight control	9	3
(Misc. other)	83	25

**Table 3. Greatest Problem Cited by Health Care Providers (N=115)**

Problem	Respondents	
	N	(%)
Diet	58	50
Psychosocial adjustment	13	11
Weight control	9	9
Compliance	7	6
Long-term complications	4	3
Family/friend pressures	4	3
Eating out	3	3
Cost of supplies/food	3	3
Insulin administration	3	3
(Misc. other)	11	9

**Table 4. Diet-Related Characteristics of Patient Population****Group A**

Problems with diabetes

(Men 127 [38%]; women 211 [62%])

	Diet Prescription from Physician	Persons Above Ideal Weight	Persons Receiving Education Ever	Range (Average) in Yrs Since Last Instruction	Proficiency on Knowledge Test Carbohydrates	Proficiency on Knowledge Test Exchanges
IDDM	43 of 47 (91%)	24* (51%)	42 (89%)	1-35 (5)	22 (47%)	9 (19%)
NIDDM on insulin	154 of 163 (94%)	154 (94%)	139 (85%)	1-28 (4)	60 (37%)	21 (13%)
NIDDM not on insulin	115 of 128 (90%)	118 (92%)	71 (55%)	1-17 (3)	41 (32%)	10 (8%)

**Group B**

No problems with diabetes

(Men 45 [50%]; women 45 [50%])

IDDM	8 of 9 (89%)	6* (67%)	2 (22%)	1-3 (2)	3 (33%)	1 (11%)
NIDDM on insulin	25 of 28 (89%)	24 (86%)	20 (71%)	1-29 (6)	5 (18%)	1 (4%)
NIDDM not on insulin	36 of 53 (68%)	46 (87%)	25 (47%)	1-21 (7)	15 (28%)	2 (4%)

\*Patients with body weight between 100% and 120% of ideal. Criteria for definition of insulin-dependence: <120% of ideal body weight, onset of diabetes prior to age 30, and continuous use of insulin since diagnosis.

and B (Table 4). However, for those not on insulin, 90% in group A received a diet prescription compared to 68% in group B. (This may partly explain why diet was not a problem for them.) Of persons in group A, 70% reported having ever received formal diabetes education, compared to 54% in group B. Except for insulin-dependent patients, persons in group A had a slightly shorter average period of time since last education.

On the standardized knowledge test administered to each patient, performance on carbohydrate and exchange system-related questions was analyzed. A proficient score was arbitrarily defined as a correct answer to more than 80% of the cluster of diet-related questions. Patient knowledge of diet was generally low: the best performance was registered by the insulin-dependent patients in group A, 22 of whom (47%) achieved proficiency on carbohydrate-related questions (see Table 4).

### Discussion

Few people would argue that diet management is the cornerstone of any treatment program of persons with diabetes. However, clinicians caring for patients with diabetes observe that patients frequently have major problems in selecting the foods appropriate for their diet prescription. A study by Wood and Bierman<sup>2</sup> showed that only 13% of persons with diabetes who received their diet instruction from their physician, and only 25% of those who received diet instruction from a dietitian, showed adequate knowledge of their diet regimen. Diet knowledge deficits have also been recently reported by Lorenz et al.<sup>3</sup> Holland,<sup>4</sup> reporting in the Diabetes Supplement of the National Health Survey, stated that it was safe to believe that half of the diabetic population is making no attempt to follow a diet. The classic analysis by West<sup>5</sup> in 1973 of diet-related therapeutic failures is still relevant today.

The present study supports the observations of these other

investigators. More than half of the persons with diabetes surveyed felt that their diet, and related aspects, was the most difficult problem they faced. Furthermore, 62% of 115 health care providers surveyed agreed with their patients that the diet component of diabetes control was the biggest problem.

Despite apparent recognition of the importance of diet by both patients and health professionals, emphasis on diet education and follow-up is often lacking. Diet education frequently consists of handing the patient a prepared diet sheet with little or no explanation and no assessment of patients' likes, lifestyle, or economic status.<sup>6</sup> Our data also indicated that older patients or ones with "milder" diabetes receive little diet instruction. In addition, their health professionals have tended to minimize the impact of the diagnosis by minimizing the seriousness of diabetes. One respondent in our survey stated that the greatest fear in her life was that she might develop "real" diabetes.

*Guidelines for Diabetes Care* states that the meal plan should be reviewed with the patient a minimum of once a year and that this review should include adaptation to lifestyle changes.<sup>7</sup> To further emphasize this point, *Current Therapy* states: "Single encounters between a dietitian and the patient are useless. Lifelong habits cannot be altered in one session."<sup>8</sup> The findings reported here show the need for following such guidelines. Patient performance on standardized questions about carbohydrates and the diet-exchange system was uniformly low. At the very least, improved patient comprehension of diet mechanics through regular reviews and explanation by a dietitian should be accomplished in ongoing diabetes care. Achievement of the next step—application of diet knowledge by the patient—is much harder and, as this report points out, is the biggest (and largely unsolved) problem in diabetes care.

The results of this survey offer strong support for developmental efforts aimed at improving the diet management component of diabetes care: the persons surveyed have

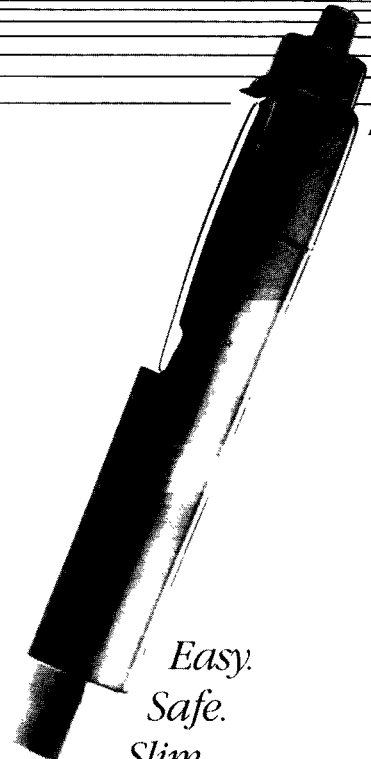
participated in a serious "needs assessment" for this type of research. Since the patients, their physicians, and the communities in which they reside were all randomly selected, it is not unreasonable to believe that the results could be generalized outside of Michigan.

Perhaps it is good that our patients see diet as a major problem. It may be that those who felt they had no problems actually had an inadequate understanding of diabetes. In this regard, it is interesting that patients reporting no problem with their diabetes had a lower incidence of diet prescription as part of their care program and a much lower incidence of having received diabetes education. Part of the solution to a problem is recognition that it exists.

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