

Evaluation of an Activated Patient Diabetes Education Newsletter

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This study evaluated a monthly, activated patient newsletter sent to over 7000 patients in Michigan with diabetes. The newsletter provided concise and action-oriented information about diabetes care. Patients who had signed up to receive the newsletter during the first 4 months of the project (1863) were surveyed to determine how many patients found the newsletter helpful; 80% (1498) of the patients replied. Patients who found the newsletter most helpful were older, had lower incomes, and reported more complications, less understanding of diabetes, and being in poorer overall health. They also were more likely to have non-insulin-dependent diabetes mellitus (NIDDM) than insulin-dependent diabetes mellitus (IDDM). We concluded that the activated patient newsletter is a useful public health/patient education intervention for persons with diabetes. Such a newsletter should be part of a coordinated system of ongoing patient care, education, screening, and social and psychological support.

This study evaluated a monthly, activated patient newsletter sent to over 7000 patients in Michigan with diabetes. The newsletter project addressed one of the major diabetes care problems identified by the Michigan Diabetes Research and Training Center (MDRTC) outreach program. The outreach program, which was designed to improve diabetes care and education in Michigan communities, found that many persons with diabetes receive little or no diabetes patient education. These patients either are not referred for diabetes patient education or receive only a few minutes of patient education from the office nurse at each visit.^{1,2} The newsletter was intended to provide patients with readable, concise, and action-oriented diabetes care information. The activated³ patient orientation of this project came after years of trying to improve diabetes care by influencing the behavior of physicians, nurses, dietitians, and other members of the health care system.

Because professional education programs and diabetes care guidelines for health care professionals have had limited success in improving diabetes care, the MDRTC changed its focus to a more patient activation/empowerment approach³⁻⁶ to patient care and education. This approach assumes that patients have the potential to effect positive change in the health care system. The activated patient approach³ involves educating patients so that they will be better prepared to interact with their physician, nurse, or dietitian during a diabetes care visit. Patient empowerment⁴⁻⁶ is a similar but broader concept in which the patient is viewed as having both the right and the responsibility to be the primary decision maker in diabetes care. The activated patient newsletter project was seen as an expression of these orientations because it placed information directly into the hands of patients and encouraged them to be assertive consumers of diabetes care. The newsletter also was viewed as a public health intervention, eg, a low-cost method of bringing health information to a large number of patients.

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Camera ready copies of the newsletter, suitable for local use, are available from the Michigan Diabetes Research and Training Center. For more information about obtaining the newsletters, contact Betty Armbruster in care of the first author.

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The Eyes Have It!

Sometimes people are surprised to find out that diabetes can affect their eyes—especially if they find out after damage has been done! One of the major dangers of diabetic eye disease is that it can cause serious damage to the eyes before either the patient or the doctor finds out about it. The time to think about diabetes and eye disease is before problems occur.

Diabetic retinopathy is the name for the eye disease caused by diabetes. Retinopathy affects the small blood vessels in the back of the eye (retina). As time goes on, these blood vessels get weaker and may break. Diabetic retinopathy can cause vision problems and even blindness if not treated. In fact, it is the major cause of new blindness among adults in the United States. The sad thing is that much of this blindness could be prevented if the eye disease was found and treated in time. Laser therapy is used to treat retinopathy. Thin beams of light are used to seal the broken blood vessels. Laser treatment is safe and fairly painless.

You can do three important things to preserve your eyesight. First, have your eyes checked once a year by a medical doctor who specializes in eye care (an ophthalmologist). This will ensure that any eye disease is found and treated in the early stages.

Second, if you have high blood pressure (hypertension), make sure your blood pressure stays near the normal range—120/80. Take your medicine as prescribed and check your blood pressure often. High blood pressure can cause narrowing of the blood vessels in the eye. This can speed up the onset of diabetic eye disease.

Third, keep your blood sugar levels as close to normal as possible—70 to 120 mg/dL. High blood sugar is known to play a role in diabetic eye disease.

Diabetes can cause damage to the eyes, but vision loss and blindness can be prevented if found and treated early. See your ophthalmologist each year and keep your blood pressure and blood sugar in good control.

QUESTION TO ASK YOUR DOCTOR:

1. Can you refer me to an eye doctor (ophthalmologist) who can check my eyes each year for diabetic eye disease?

* * * * *

Fig 1. Sample newsletter.

The following questions were examined in this study.

1. What were the characteristics of the patients who signed up to receive the newsletters?
2. Did patients receive and read most of the newsletters?
3. Did patients who received and read most of the newsletters find them helpful?
4. Were certain patients more likely than others to find the newsletter helpful?
5. Were certain topics (eg, the recommendation for a yearly eye examination) more likely to stimulate a behavioral response from patients than other topics?

Methods and Materials

Subjects This project involved over 7000 patients in Michigan with diabetes who receive a monthly, activated patient newsletter from the Michigan Diabetes Research and Training Center (MDRTC). Patients were recruited from physician offices, pharmacies, clinic waiting rooms, and diabetes patient education programs in nine Michigan commu-

nities. Patients were invited to complete and return a postage-paid postcard to the MDRTC if they wished to receive a free monthly newsletter about diabetes.

Intervention Each activated patient newsletter, which was approximately one page long, focused on a single topic and recommended specific, related actions for patients to take (see Figure 1). The newsletters were intended to help patients with diabetes become more informed and assertive consumers of health care. To help foster an activist approach to diabetes self-care, each newsletter concluded with one or more questions that patients were encouraged to ask their physician, nurse, and/or dietitian. For example, in a newsletter concerning the importance of having a yearly eye exam, a suggestion was made that patients ask, "Can you refer me to an eye doctor (ophthalmologist) who can check my eyes each year for diabetic eye disease?"

The project was evaluated after 2 years and 21 newsletters. All of the patients (1863) who had signed up to receive

Table 1. Characteristics of Newsletter Recipients by Type of Diabetes*

Characteristics	% IDDM (n=355)	% NIDDM Using Insulin (n=475)	% NIDDM Not Using Insulin (n=409)
Female	56	64	62
Caucasian	94	91	93
Married	56	68	70
Some college or more	51	37	40
Income ≤ \$20 000	41	41	61
Attended diabetes mellitus program	73	73	55
	Mean	Mean	Mean
Age (y)	34.2	64.1	63.5
Duration of diabetes (y)	16.30	12.40	9.30
No. of complications	0.65	1.10	0.58
	Self-Report Rating†	Self-Report Rating†	Self-Report Rating†
Understanding of diabetes mellitus	3.86	3.27	3.12
Overall health	3.41	2.60	2.86

*Ninety-seven patients could not be classified according to type of diabetes.

†Range: 1=poor to 5=excellent.

the newsletter during the first 4 months of the project were sent evaluation questionnaires that requested information concerning demographics, diabetes history, diabetes self-care, overall response to the newsletters, and specific reactions to individual issues of the newsletter.

Statistical Methods The analysis for this study was based on 1336 usable questionnaires. Means and frequencies were calculated for the demographic data for the entire sample to describe the newsletter recipients. Analyses that concerned the helpfulness of the newsletters included only patients who reported receiving and reading Most or All of the newsletters. To determine whether the helpfulness of the newsletters differed by type and treatment of diabetes, a Chi-square analysis was performed. Differences between patients who rated the newsletters as More Helpful and the patients who rated the newsletters as Less Helpful were determined by Chi-square tests (for nominal data) and by *t*-tests (for interval data).

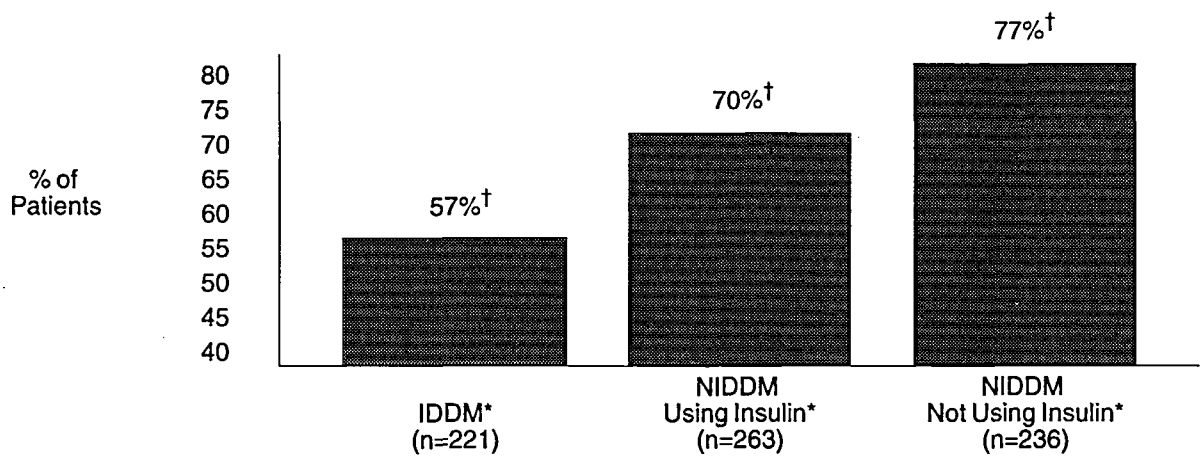
Results

The demographic characteristics of the patients who received the newsletter are presented in Table 1, grouped according to type of diabetes. There was a nearly equal distribution of patients with insulin-dependent diabetes mellitus (IDDM), patients with non-insulin dependent diabetes mellitus (NIDDM) using insulin, and NIDDM patients not using insulin. Because many patients do not know their type of diabetes, the determination of whether patients had NIDDM or IDDM was made using a formula developed by Davis et al⁷ that classifies patients based on age of diagnosis, weight, and insulin use. This formula is 93% accurate when compared with the method of classifying patients using a stimulated C-peptide assay. As might be expected, the

IDDM patients were significantly younger than the NIDDM patients. Also, patients with IDDM were overrepresented among newsletter recipients compared with the distribution of patients with IDDM in the population of persons with diabetes (5% to 10%).

Eight hundred eighty-five patients reported receiving Most or All of the newsletters. Of these patients, 785 reported reading Most or All of the newsletters. The perceived helpfulness of the newsletter differed by type of diabetes. NIDDM patients not using insulin were most likely to rate the newsletter as More Helpful (77%), while 70% of NIDDM patients using insulin and 57% of IDDM patients rated the newsletter as More Helpful (see Figure 2). A comparison of the patients who rated the newsletter More Helpful with patients who found the newsletter Less Helpful is shown in Table 2. The patients who found the newsletter More Helpful were older, had more complications, lower incomes, less understanding of diabetes, and reported being in poorer overall health.

For each of the 21 issues of the newsletter, patients were asked if they had discussed the newsletter with their family or friends, a doctor, a nurse, or a dietitian. They also were asked, for each issue, if they had changed their diabetes care as a result of the information contained in that issue of the newsletter. The 21 newsletter topics are presented in Table 3, along with the percentage of patients who indicated that they had discussed the issue with others and the percentage who reported that they had changed their diabetes care. Patients were most likely to discuss specific topics with family or friends. The most frequently discussed topic (54.1%) was the importance of diabetes patient education, and the least discussed topic (23.9%) was the use of a reminder sticker for recommended tests and exams. The most frequently discussed newsletter topic with a doctor (36.3%) was the im-



*Includes only patients who reported having received and read Most or All of the newsletters, rated their helpfulness, and could be classified by diabetes type and treatment.

†Differences significant at 0.01 level.

Fig 2. Helpfulness of newsletters (Helpful or Very Helpful) by diabetes type and treatment (n=720).

Table 2. Characteristics of Newsletter Recipients by Helpfulness of Newsletters*

Characteristics	% Total Sample (n=767)	% Who Rated Newsletters Less Helpful† (n=239)	% Who Rated Newsletters More Helpful‡ (n=528)	P Value§
Female	63	62	63	0.83
Caucasian	94	93	94	0.43
Married	68	71	67	0.18
Some college or more	45	47	43	0.30
Income ≤ \$20 000	54	46	58	<0.01¶
Attended diabetes mellitus program	71	74	70	0.32
		Mean	Mean	
Age (y)	54.90	50.00	57.10	<0.01¶
Duration of diabetes (y)	12.40	12.30	12.50	0.74
No. of complications	0.81	0.68	0.88	0.03¶
		Self-Report Rating¶	Self-Report Rating¶	
Understanding of diabetes mellitus	3.50	3.60	3.45	0.04¶
Overall health	2.96	3.13	2.88	<0.01¶

*Includes only patients who reported having received and read Most or All of the newsletters and answered the question regarding helpfulness.

†Recipients checked Not Helpful or Somewhat Helpful on survey questionnaire.

‡Recipients checked Helpful or Very helpful on survey questionnaire.

§Chi-square tests performed for nominal data, *t*-tests performed for interval data.

¶Differences significant at ≤0.05 level.

¶Range: 1=poor to 5=excellent.

portance of yearly eye examinations, and the least discussed topic with a doctor (6.1%) concerned the newsletter philosophy. Patients were least likely to discuss the newsletters with a nurse or dietitian.

As expected, only a small minority of the patients reported that they had changed their diabetes care as a result of an individual newsletter. The mean percent of patients who reported a change related to any single issue of the newslet-

Table 3. Patients Who Reported Discussing Individual Newsletters and/or Changing Their Diabetes Care (n=786)*

Newsletter Topics	% Who Talked with Family or Friends	% Who Talked with Doctor	% Who Talked with Nurse or Dietitian	% Who Changed Their Diabetes Care
1. The importance of diabetes patient education.	54.1	20.5	9.0	10.2
2. The importance of testing blood sugar levels each day.	39.2	26.8	8.4	13.1
3. Exercise in the treatment of diabetes.	42.4	27.2	6.4	13.0
4. High blood pressure and diabetes.	30.8	28.6	4.8	5.3
5. Foot care.	38.0	27.9	6.1	11.7
6. The seriousness of diabetes as a disease and the importance of taking care of it.	45.3	23.0	7.3	9.4
7. Maintaining good blood sugar control.	37.7	32.7	8.1	11.3
8. Eating a balanced diet.	42.4	18.7	13.6	12.2
9. Weight loss.	33.8	26.0	8.0	10.7
10. Making large behavior changes one step at a time.	31.6	10.4	4.5	7.6
11. Definition and use of the glycosylated hemoglobin test.	25.1	22.1	4.3	4.5
12. Importance of yearly eye exams.	38.3	36.3	5.0	7.1
13. The value of multiple insulin injections.	25.6	24.3	4.8	7.3
14. Sick-day care.	34.1	24.0	8.3	6.4
15. Balancing food, exercise, and medicine.	34.4	23.8	10.4	8.7
16. Self-assessment of level of diabetes care.	30.7	20.0	5.6	3.7
17. Smoking cigarettes and diabetes.	29.6	10.9	2.5	3.6
18. Cholesterol and diabetes.	26.3	30.2	6.6	7.5
19. Keeping a record of your diabetes tests.	29.3	13.5	5.3	4.8
20. A reminder sticker of important tests and exams for diabetic patients to be given by their doctor.	23.9	17.7	2.9	3.8
21. The activated patient newsletter philosophy.	26.5	6.1	2.3	2.5

*Includes only patients who reported having received and read Most or All of the newsletters.

Table 4. Patients Who Reported Making Diabetes Care Changes by Helpfulness of Newsletters (n=417)*

Behavior Change Categories†	% Patients Who Rated Newsletters Less Helpful	% Patients Who Rated Newsletters More Helpful	P Value
Weight loss	0.8	6	.021‡
Changed diet	15.0	34	<.001‡
Exercise	9.0	17	.039‡
Blood glucose monitoring	4.0	12	.007‡
Foot care	7.0	11	.201
Became more aware of diabetes mellitus care issues	14.0	32	<.001‡

*Includes only patients who reported making at least one behavior change in response to the newsletters.

†Patient responses to open-ended questions were assigned to categories by study investigators.

‡Differences significant at $\leq .05$ level.

ter was 7.8%. The highest percent of a reported change in diabetes care (13.1%) was associated with a newsletter issue that focused on the importance of testing blood sugar levels each day. The lowest percent of change (2.5%) was associated with an issue that discussed the philosophy of the activated patient newsletter.

The evaluation questionnaire contained an open-ended question asking participants to describe any change they made in their diabetes self-care in response to the newsletter. Four hundred seventeen patients (54% of those who had read most or all of the newsletters) reported making at least one

behavior change in response to the newsletters. The study investigators reviewed all of the narrative descriptions and developed a set of categories with which to classify the various changes in diabetes care. Two study investigators reached consensus on how to assign each behavior change to a particular category. The responses of the 417 patients were analyzed to determine whether patients who had rated the newsletter More Helpful were more likely to report making a behavior change than patients who had rated the newsletter Less Helpful. The results of this analysis are presented in Table 4 for the six most frequently reported behavior change

categories. Patients who found the newsletter *More Helpful* reported making more changes in five of the six categories.

Discussion

Study Limitations The subjects in this study were asked to complete a questionnaire recalling their reactions to 21 newsletters that had been received over a period of 2 years. Such recollections and self-reports of behavior typically lack precision and are subject to bias. Therefore, the absolute values reported in this study should be viewed as rough estimates. These limitations are partially offset by the study design, which involved a large number of subjects and focused on differences between groups of patients and/or particular newsletters rather than the absolute values. For example, the finding that patients with NIDDM consistently rated the newsletters more helpful than patients with IDDM is less subject to concerns about reliability than the data regarding the actual number of patients who reported discussing a particular issue or changing their behavior. Therefore, we feel that the conclusions drawn from the relationships among the values in the study are reasonable.

Conclusions

The population of patients who chose to receive the newsletters differed from a random sample of patients with diabetes who were under the care of community physicians in these same communities⁸ who were studied separately. For example, the newsletter group included many more patients with IDDM than the general population of persons with diabetes. Also, NIDDM patients using insulin were overrepresented in this study. These findings are not surprising because patients who use insulin are more likely to feel that diabetes interferes with their life and makes it more difficult than patients who do not use insulin. NIDDM patients who use insulin would be expected to engage in information-seeking behavior more frequently than patients who view diabetes as less of a problem. Also, the patients who rated the newsletter *More Helpful* tended to be older, had more complications, were more likely to have incomes under \$20 000, had less understanding of diabetes, and perceived themselves to be in poorer health than patients who rated the newsletter *Less Helpful*. Again, we feel that these differences are reasonable. The newsletter was basic and probably did not meet the needs of IDDM patients (who are more likely to have had diabetes patient education) compared with NIDDM patients.⁸ Also, since NIDDM patients comprise over 90% of persons with diabetes, a significant number of the newsletters were targeted at this group. Patients who have more complications, report less understanding of diabetes, and perceive themselves to be in poorer health would be more likely to be receptive to patient education in any form. Also, patients who had incomes under \$20 000 are less likely to have comprehensive health insurance and/or the financial means to acquire comprehensive diabetes education through either programs or written materials.

The data also suggest that newsletter recipients chose appropriate topics to discuss with their physicians. For example, the three topics most frequently discussed with physicians were yearly eye exams, cholesterol and diabetes, and maintaining good blood sugar control. It also makes sense that diet would be the topic most frequently discussed with a

nurse or dietitian.⁹ In another study conducted in the same communities, diet was the most frequent topic of diabetes patient education provided by office nurses.² The fact that patients discussed the newsletters with their physicians more often than with nurses and dietitians probably is a function of the fact that patients interact with their physicians regularly. In addition, the fact that patients were most likely to discuss the need for yearly eye exams with their physicians and most likely to discuss eating a balanced diet with either a dietitian or a nurse suggests that patients answered these questions in a thoughtful way. It is difficult to ascertain exactly what patients defined as "changing their diabetes care" in response to an open-ended question about behavior changes. These data were difficult to interpret because patients typically provided such general answers such as "Changed my diet."

Overall, we feel that the activated patient newsletter is a useful public health/patient education intervention for persons with diabetes. The newsletter allows health care organizations to develop a mailing list of patients with diabetes, who then can be informed of the availability of local screening clinics, diabetes patient education programs, and other diabetes care services. More importantly, for about 25 cents per person per month, it is possible to place important diabetes care information in the hands of patients who need it. Although most patients valued the newsletter, it is not clear from our study whether sustained behavior change resulted from the project. As an independent behavioral/educational intervention, this newsletter is not likely to be a very effective mechanism for behavior change. However, we think that the newsletter could be a useful component of a comprehensive public health approach to diabetes care and education. Such an approach would require a coordinated system that also would include ongoing patient care, education, screening, and social and psychological support.

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