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Improving the Health of Diabetic Patients Through Resident-initiated Group Visits

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Background and Objectives: *Group visits have the potential to benefit patients with chronic illnesses. Our objective was to implement resident-run diabetic group visits that would improve patient education and help patients become more involved in their care. **Methods:** We developed systems to promote, coordinate, and lead the visits. Residents' responsibilities were delegated through a preparation checklist. A standardized progress note was developed to encourage patient goal setting and to track relevant laboratory test results. To evaluate our program, we conducted surveys to determine patients' behavioral changes and satisfaction levels and assessed the effect on group visit participants' glycated hemoglobin (HbA1c) and low-density lipoprotein (LDL) levels. **Results:** Group visit patient survey results showed that 72% of the patients in the group visit cohort reported making a lifestyle change; 88% felt that the group visit helped them achieve better control of their diabetes, and 100% stated that they would come to a group visit again. However, no significant changes were noted in HbA1c or LDL levels. **Conclusions:** Residents can overcome challenges and implement, organize, and run effective group visits that increase patients' self-reported self-management abilities, but we could demonstrate no statistically significant improvement on measurable biochemical parameters of glucose or lipid control.*

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Group visits for chronic illness have been used in primary care for 30 years, but the process of establishing visits and the structuring of their content has not been clearly described.¹ The group visit model has emerged as a solution to some of the difficulties of caring for patients with chronic illness, who often require complex and ongoing interventions that are difficult to achieve with standard office visits. With a complex disease, such as diabetes, the group visit can offer advantages to patients and providers because of increased health education and through a unique combination of encouraging increased self-management²⁻⁴ and use of peer support.⁵

Group visits have been used for a variety of medical issues, including diabetes, asthma, and prenatal care. Numerous outcomes have been tracked from health care utilization measures such as emergency department visits and medical costs, to clinical measures such as

weight loss and peak-flow scores.^{6,7} While evidence continues to emerge about the benefits of group visits,^{1,5} what has not been discussed is the process of initiating and sustaining resident-run group visits and evaluating their effects.

This paper attempts to address those issues for a resident-run diabetic group visit by providing a guide on how to establish and run such visits and sharing lessons learned. We also anticipated that the group visit model would give patients a deeper understanding of the disease process and that this increased knowledge would lead to lifestyle changes and greater adherence to treatment regimens. To evaluate the initial response to this intervention we followed glycated hemoglobin (HbA1c) and low-density lipoprotein (LDL) values and conducted surveys to assess patients' lifestyle changes.

Methods

Setting

The group visits began as a resident practice improvement project at the Hahnemann Family Health Center in Worcester, Mass. The center is an urban community-based residency site with a diverse patient population. There are 12 residents and 11 faculty.

From the Te Korowai Health Center, Thames, New Zealand (Dr Wheelock); Department of Family Medicine and Community Health (Dr Savageau) and Family Medicine Residency (Dr Silk), University of Massachusetts; and Durham, NC (Dr Lee).

Visit Design

We wanted to integrate several tenants of the new model of family medicine as outlined by the Future of Family Medicine Project, including group visits, chronic disease management, a team approach, and outcome analysis.⁸ A group of six, including residents, faculty, and nurses, reviewed what components of group and individual visits would benefit diabetics and integrated them into a comprehensive group visit. The visits were designed to educate patients about their illness; work with them to set meaningful, achievable individual goals; and provide support infrastructure through behavioral strategies for change, peer interactions, and physician follow-up.

Sample

Through our laboratory database, all clinic patients over 18 years of age who had ever had an HbA1c drawn and given a diagnosis of diabetes were identified and invited to participate in group visits. As initial response was low, we engaged providers to invite their patients to increase participation. Verbal and e-mail reminders were sent to faculty and staff, and invitations were placed on the chart of diabetics so that providers could invite patients during office visits. Resident group visit coordinators called all invited patients. As a practice improvement project, this evaluation was reviewed and granted an exemption from formal review by the University's Institutional Review Board for the Protection of Human Subjects.

Enrolling Providers

Other resident-run practice improvement projects had faltered when the championing resident graduated, and we wanted to motivate our residents to adopt the group care concept to ensure it was integrated into the culture of the health center. This would improve sustainability by making group visits a health center-wide initiative. So, first- and second-year residents were involved to increase continuity. A diabetes nurse was identified who took part in all group visits. Additional providers included one to two faculty members and two to three residents at each visit to see patients individually and participate in group discussions.

Process

Six group visits were conducted from June 2006 to June 2007. Visits occurred every 2 months in the evening. Patients could attend as many visits as they desired but were encouraged to attend them all. Group visits lasted 2 hours and included a 30-minute presentation on a diabetes topic followed by a question and answer session and group discussion. This was followed by individual physician visits. Informal group discussions continued during the patients' individual visits, and these discussions covered a range of issues such as adhering to a diet, handling the stress of coping

with diabetes, and sharing exercise ideas. Discussion was facilitated by residents asking patients to relate personal experiences and by questions asked of an expert speaker. A local health food restaurant donated a nutritious meal for each visit.

Presentation topics were selected based on patient need and American Diabetes Association (ADA) standards of care⁹ and included exercise, nutrition, foot care, eye care, medications, and behavioral interventions. Expert speakers included an ophthalmologist, a podiatrist, a sports medicine family doctor, a pharmacist, a psychologist, a diabetic nurse educator, and a nutritionist. We encouraged speakers to provide practical information that patients could directly implement. For example, the podiatrist addressed when and how to examine the feet, how to cut nails, and appropriate footwear for people who have diabetes.

The physician one-on-one interaction was done privately and centered around patient-selected goals, such as diet or exercise modification. Goals were reviewed, and a new measurable goal was made at each visit, such as losing 5 pounds or receiving a diabetic eye exam. The goal was often triggered by the presentation or discussion. Medications and lab results were reviewed. An HbA1c graph was discussed so patients could track their progress. Participants were asked about ophthalmology screening, podiatric screening, and nutrition counseling. This process was facilitated by a diabetes progress note we developed in accordance with ADA standards of care.⁹ The note was co-signed by the patient to stress the importance of co-management.

In addition to peer support, participants had access to other forms of support integrated into the visit. For example, many patients were uncertain about how to use a glucose meter. To address this, we invited a local diabetic supply company representative to provide testing supplies and instructions on their use at the visits. He then followed up with patients to ensure they were testing at the suggested frequency. Prior to this, it was found that many patients were not testing at all or were testing less often than suggested.

Transition

The leadership transition to a new resident group was started early so residents in the new leadership group had time to observe and gradually take over some functions with the support of the outgoing leadership team. A series of "how to" documents, including a timeline delegating responsibilities to prepare for the visit, were generated for use in future years. This served to systematize the program so that its sustainability would not be dependent on a particular individual.

Outcome Measures

HbA1c measurements were taken at baseline and every 3 months, and LDL measurements were taken at the beginning and end of the year. All patients who

attended at least one group visit were included in our analysis. We compared, in aggregate, participants' changes in HbA1c and LDL data with a randomly selected and matched (by age and gender) comparison group of diabetic patients seen in our clinic over the same 12-month period who had not attended group visits and had completed all recommended laboratory tests.

In addition, self-administered surveys were collected from patients at the end of 1 year. Patients answered yes/no and short-answer questions pertaining to what they liked or disliked about the visits and commented on personal changes they made as a result of these visits.

Data Analysis

The data were entered into an Excel spreadsheet and transferred to SPSS V15.0 for analysis. Frequency counts, percentages, and means were calculated for all appropriate variables. Bivariate statistics were computed using *t* tests to compare the change in HbA1c and LDL values between the first and last group visit dates for group visit patients compared to the comparison group. Because of the small samples, non-parametric Mann-Whitney U tests were also calculated comparing mean ranks of the two outcome values (HbA1c and LDL levels) between the intervention and comparison groups.

Results

The program was initiated and led by residents with faculty collaboration. Patients and providers were committed to this model of care as indicated by consistent faculty and patient participation.

Of the 143 patients invited, seven initially responded. Reasons given for not attending included visits being held at a time when the patient could not attend, group visits being too long, aversion to groups, and difficulty hearing or seeing that precluded participation. Some patients from the original invitation list could not be reached due to outdated contact information. Additional enrollment strategies, as outlined in the methods section, increased participation to a total of 25 patients out of the 143 initially invited patients.

Patient ages ranged from 34 to 70, with a mean age of 60. Females made up 52% of the visit population (Table 1). We averaged 15 patients per visit, and participating patients on average attended 75% of the visits.

All participating patients completed a survey. Results showed that 72% of the patients reported making a lifestyle change as a result of attending visits. Eighty-eight percent reported that the visits helped them achieve better control of their diabetes. When asked what they liked most, 40% stated that the visit provided a support group. Fifty-two percent participated because they were asked to by their primary care doctor. All respondents stated they would come to a group visit again. On average, 68% of patients at any given group visit were repeat visitors.

Table 1

Patient Characteristics

Variable	Group Visit Participants	Comparison Group Participants
Number of patients	25	25
Gender (% female)	52	52
Age (mean years)	60	60
Age range (years)	34–70	34–70
Insurance (%)		
Private	36	40
Medicaid	16	28
Medicare only	16	4
Medicare/supplemental	28	28
Self pay	4	0

HbA1c results were missing for two of the 25 patients, and LDL results were missing on four patients due to the patients not having their blood drawn as instructed. Group visit patients demonstrated an HbA1c reduction of 0.90% compared to a decrease of 0.03% for the control group. This difference, however, was not statistically significant ($P=.11$). The LDL reduction was 4.71 mg/dl for the group visit patients compared to an increase of 3.50 mg/dl for the control group, also not a significant difference ($P=.35$) (Table 2).

Discussion

One of the most important findings of our study was that our resident-directed group visit program could be implemented and sustained, despite anticipated challenges. Some of these challenges included recruiting patients and providers, finding time to organize and sustain the visits, making visits cost-effective, and establishing criteria to evaluate the success of these visits.

The group visits led to the residents taking an increased leadership role in the health center and increasing their disease-specific knowledge. The visits created a structure around an illness so that disease management steps were not missed. It stimulated team building by bringing residents and office staff together to work toward a common goal.

Jaber et al state in their review of group visit research that future reports could benefit from clearly defining the structure, process of care, content of visits, and appropriate outcome measures.¹ In reviewing our implementation process, we hope to stimulate further thought and discussion on these issues as they apply to group visits being integrated into a residency-based practice.

However, despite both patients and clinicians having a positive experience with the group visits, and despite patients reporting that they made lifestyle changes,

Table 2

Baseline and 1-year Follow-up HbA1c and LDL Scores for Group Visit Patients and Age- and Gender-matched Comparison Group Patients (n=25 per group)

	Group Visit Patients	Comparison Group Patients	t Test _(df) *	P Value
Baseline HbA1c	8.23%	7.85%	0.69 ₍₄₇₎	0.49
Follow-up HbA1c	7.34%	7.82%	-1.18 ₍₄₆₎	0.24
Delta HbA1c	0.90%	0.03%	1.63 ₍₄₆₎	0.11
Baseline LDL values (mg/dl)	100.75	86.44	1.35 ₍₄₇₎	0.18
Follow-up LDL values (mg/dl)	90.86	85.60	0.65 ₍₃₉₎	0.52
Change in LDL values (mg/dl)	4.71	-3.50	0.94 ₍₃₉₎	0.35

* Degrees of freedom (df) may not total to the full n because of sporadic missing data.

we were unable to demonstrate statistically significant changes in HbA1c or LDL levels. The lack of significant change in these parameters may have been due to our small sample size and lack of sufficient statistical power, insufficient length of follow-up, or it may have represented a true lack of benefit of the group visits on measurable diabetes outcomes. Further study with a larger group of patients over a longer period of time will be required to determine if resident-run group visits can result in improvement in diabetic control or LDL levels.

Limitations

In addition to the small sample size, an additional limitation of our study methods is the possibility of selection bias. Only 25 patients chose to participate from a pool of 143 eligible patients, and these 25 individuals may not have been representative of the population of patients with diabetes at our health center as a whole. Further, the comparison group consisted of patients who chose not to come to group visits rather than being randomly sampled from all health center patients and assigned to this group, further raising the possibility that our participants may have been more motivated and not typical of our overall patient population.

Finally, much of our data relies on patients' self-reporting and is thus subject to self-report biases. And, since this project was conducted at one residency training site in Massachusetts, the results may not be generalizable to other residency practices or to non-residency sites.

Conclusions

Residents successfully overcame challenges and implemented a group visit program for patients with diabetes. Patients reported making lifestyle changes as a result of participation, but we were unable to demonstrate significant changes in objectively measured parameters (HbA1c and LDL levels). Thus, the long-term benefit of resident-run group visits for patients

with diabetes is uncertain. Outcome data could be strengthened by a formal intervention study in which patients are randomly assigned, upon recruitment, to standard care or group visit model and then followed more rigorously over time. Additional areas for study include assessing patient and physician satisfaction with the group visit model, as well as following other clinical outcomes such as blood pressure and weight changes.

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