

Resident-Driven Group Medical Visits for Diabetes Mellitus in an Ethnically Diverse Clinic Population

Catherine J.S. Tsang MD; Damon F. Lee MD; Ravi Reddy MD; and Gregory G. Maskarinec PhD

Abstract

Group medical visits benefit both patients and providers. In this study, a family medicine resident physician initiated group medical visits for diabetes mellitus at a family medicine residency clinic with the cooperative health care clinic format. Patients were ethnically diverse; mostly of Asian or Pacific Islander ancestry. A registered dietician was present at most group visits, and topics discussed were patient driven. Thirteen patients participated over a nine-month period but data from only the seven patients who attended more than once was used for analysis to show changes over time. Data for all pre- and post-participation surveys collected were used (thirteen and nine, respectively). Non-laboratory measures, such as increased whole grain consumption, were more greatly affected than laboratory measures, such as hemoglobin A1C. Pre- and post-participation surveys revealed that most patients were concerned about general diabetes knowledge, diet and exercise, and group medical visits helped them increase knowledge of these topics. Major challenges of resident initiated group medical visits were scheduling and low patient attendance despite reminder systems.

Background and Objectives

Imagine medical visits where patients spend more time with providers while learning from and supporting each other, where education is delivered to many patients simultaneously, where more patients can be seen per unit of time, and where patients and providers are more satisfied. This is the power of group medical visits.

Group medical visits are ancient. Traditional healing techniques, such as Native Hawaiian ho'oponopono and Native American sweat lodges, have been performed in groups for hundreds of years.^{1,2} The first recorded group visits in modern times were well child group visits lead by Marie Feldman at San Francisco Kaiser Permanente in 1974.³

Current group medical visit models include cooperative health care clinics (CHCC's), drop-in group medical appointments (DIGMA's) and physicals shared medical appointments (PSMA's). CHCC's are lead by providers with support staff and focus on a specific health topic.^{4,6} DIGMA's are co-led by a provider and behavioral health professional, and open to patients with any condition.^{4,6,7} PSMA's group physical exams by gender and age, such as prenatal visits.⁵

Group medical visits have many benefits for both patients and providers, including increased patient and physician satisfaction, improved timeliness of secondary prevention measures, increased problem solving abilities and use of health knowledge, and decreased emergency department and specialist visits.⁸⁻¹³ Some studies also showed more patients seen per unit of time and cost savings per patient.^{5,14} Group medical visits are a key component of the new model of family medicine proposed by the Future of Family Medicine Project.¹⁵

In this study, we initiated group medical visits for diabetes mellitus at a family medicine residency clinic with the CHCC format. Diabetes mellitus was chosen because it has been widely studied for CHCC's and also because many patients in the clinic have diabetes. Additionally, because most people in Hawai'i are from group ori-

ented cultures, it seemed that group medical visits would provide a more culturally receptive way for patients to learn about diabetes. The hypothesis was that participation in group visits would help patients on both subjective and objective measures for diabetes, and that patients would find them beneficial.

Methods

The clinic for this study, Physician Center at Mililani, is affiliated with Wahiawa General Hospital and the University of Hawai'i Family Medicine Residency Program. It serves many rural communities in north O'ahu, such as Wahiawa and Waialua, Schofield Barracks and suburban regions of central Oahu, such as Mililani and Waipio. The clinic population is thus ethnically, financially and culturally diverse.

In planning group visits, an extensive literature review about group medical visits was performed, and advice was received from the creator of the CHCC model. The primary author also observed group medical visits for diabetes mellitus at Kokua Kalihi Valley Community Health Center in Honolulu, Hawai'i. Institutional review board approval was obtained. A needs assessment survey was given to all patients with diabetes who had clinic visits during one month, and consisted of a letter explaining group medical visits with areas to mark interest in participation, contact information, and preferred days and times to participate in group visits. Seventeen patients responded yes to the survey and twelve responded no. Based on these results, there was adequate interest in initiating group medical visits for diabetes mellitus.

Research participation was solicited from the first to eighth visit to allow changes over time to be evident. Patients were reminded about confidentiality at each visit. Prior to each visit, chart reviews and lab orders were done for all patients. The family medicine resident also prepared healthy diabetic snacks that were served at each group visit. A registered dietician was present at most group visits. Patients were also encouraged to meet with their primary care providers in clinic at least three times per year. All visits were held in the conference room. A standard progress note was created and used for all visits, and was formatted into the electronic health record in November 2008.

Our initial group visits included a Powerpoint® based group education session, then one-on-one meetings with physicians that alternated with a dietary group lead by the dietician. To facilitate active participation of the patients, we revised the format to supportive and informative open group discussion rather than Powerpoint® as shown in Table 1. During open group discussion, patients were encouraged to ask questions to providers or each other regarding diabetes, and then providers facilitated a group discussion based on patients' concerns. Patients seemed to participate and learn much more than had been demonstrated with the initial format.

Recipes for healthy diabetes snacks were borrowed from group medical visits at Kokua Kalihi Valley Community Health Center and from diabetes cookbooks.¹⁶⁻²¹ The focus was on recipes that

Time	Content
30 minutes	Vital signs and history taking
10 minutes	Introductions and announcements
70 minutes	Open group discussion with both doctors and dietician present.
20 minutes	Healthy diabetic snack served, providers explained how it can be integrated into diabetic diet, then continued open dietary discussion.
5 minutes	Closing session
10 minutes to 1 hour	Meeting with physician one-on-one

Parameter	Data
Gender	Men = 5 Women = 8
Age	43 to 78 years (average age 64 years)
Ethnicity	Native Hawaiian = 3 Marshallese = 3 Filipino = 3 Samoan = 1 Chuukese = 1 Spanish-Native American = 1 Filipino-Spanish-Chinese = 1

patients would not expect in a diabetic diet, or were healthier versions of foods that they enjoyed. Additionally, most providers for diabetes in Hawai'i urge people to eat brown rice instead of white rice, but since many patients do not like brown rice, dishes were also included that made brown rice more appetizing. Examples include low-fat bean dip with baked tortilla chips, whole-wheat chocolate chip pumpkin bars, and stir-fried brown rice.

Outcomes measured included those commonly used to assess patients' control of diabetes and factors that may be modifiable in controlling one's blood glucose and lipids. Dietary measures included a diet high in fruits and vegetables, high in whole grains, low in saturated fat and choosing lean protein sources. Exercise measures quantified duration and frequency of exercise amongst participants. Other parameters included monitoring of blood glucose, average blood glucose, number of hypoglycemic episodes, whether patients had high medication adherence, tobacco use, diabetic foot ulcers, and status of eye exam, foot exam and influenza vaccine within the past year. Laboratory parameters included BMI, HgbA1C, total cholesterol, LDL, urine microalbumin, creatinine and GFR.

Results

Sixty-two patients were called or informed regarding group visits for diabetes mellitus. Seventeen participated but two did not want to be included in the study and two joined too late to be included in the study. See Table 2 for demographic information of the thirteen participants whose data was included in the study.

Seven patients attended group visits more than once. One patient attended twice, five attended three times and one attended four times. In order to show changes over time, data from only these seven patients was used for analysis of subjective and objective measures. Since the data sample was small, standard deviations were unable to be calculated, so percent changes for outcomes studied were used. Participants had diabetes for an average of 10.5 years with a range of 1-20 years. Eleven of them rated their diabetes control as good or fair, but only six of them had hemoglobin A1C <7% prior to participating. Three patients who attended more than once had an initial hemoglobin A1C of <7%. Their average BMI was 32 with a range of 24-47, and four of them had an initial BMI of >30. Their average total cholesterol was 172 with a range of 127-211, with only one patient having a total cholesterol >200. Their average LDL was 98 with a range of 32-119; five patients had an initial LDL of >100.

All participants who attended more than once monitored their blood glucose at least daily, had no hypoglycemic episodes, were adherent to medications, did not have current tobacco use, and did

not have foot ulcers. All seven patients included in data analysis were adherent to a diet high in fruits and vegetables, and the remainder increased their intake of whole grains while decreasing fat content. The patient who attended twice was eating lean meats but high fat, and the patient who attended four times was already eating a low fat diet with lean meats. Most patients increased their amount of exercise per week. Additionally, they generally improved in preventative health measures. Small changes were seen for average blood glucose, BMI and hemoglobin A1C. There was a trend in reduction of total cholesterol. All patients who attended three or four times had an increased LDL. Patients who attended three times also had an overall 72% increase in their urine microalbumin. All patients' serum creatinines remained relatively stable.

Results of pre- and post-participation surveys showed that most patients perceived learning to control one's diabetes and improving diet and exercise as benefits of attending group visits. About one third of them also liked the food served and recipes, and about one fourth of them enjoyed learning from others' experiences. Most patients did not perceive any weaknesses. Both pre- and post-participation, they would like to learn about general diabetes knowledge, diet, avoiding complications and new diabetes knowledge at future visits. Please see Table 3 for further details.

Discussion

Non-laboratory measures were much greater affected than laboratory measures, as discussed in the results section. Data collection for only nine months could account for this; some measures might take longer to improve. Also, because patients only participated in at most four group visits, perhaps they could receive more benefits by further participation. Increased LDL is unclear, unless patients were not reporting their fat intake accurately. However, there is no diabetes registry in the clinic available to compare group visit participants versus other patients with diabetes.

Although participants were ethnically diverse, they found common issues that they shared with each other, such as dietary concerns. Most participants were Asians or Pacific Islanders, so a group oriented format seemed to be a more conducive learning environment. The results of the pre- and post-participation surveys reflected that most patients felt that their concerns about diabetes, diet and exercise, were well addressed during the visits. They also thought that recipes served were helpful, which may be partially due to the food-oriented nature of most cultures in Hawai'i. As is often true in Hawai'i, many people also shared customs from their heritage with each other. Most patients did not perceive weaknesses from attending group visits, and their comments revealed that overall it was a very positive experience.

Table 3.— Pre- and post-participation survey results. (Please note that some patients had more than one response.)		
Measure	Pre-participation survey percent of patients who responded “yes”	Post-participation survey percent of patients who responded “yes”
Perceived benefits:		
General diabetes knowledge	62%	56%
Dietary concerns/knowledge	38%	78%
Exercise concerns	15%	33%
Food served at visit/recipes	0%	33%
Learning from other’s experiences and concerns/group support	0%	22%
Prevent complications	8%	11%
New treatments for diabetes	8%	11%
Types of diabetes	0%	11%
Unsure	8%	0%
Perceived weaknesses:		
None	69%	78%
Location	15%	0%
Others’ concerns not applicable to own concerns	8%	0%
Not enough participants	0%	11%
Seeing others’ suffering	0%	11%
Unsure	8%	0%
What patients would like to learn:		
How to control diabetes	54%	44%
Diet	15%	44%
Avoiding complications of diabetes	15%	11%
New treatments	15%	11%
Exercise	0%	11%
How to control blood sugar	8%	0%
How patients get diabetes	8%	0%
How others feel about and manage their diabetes	8%	0%
Weight loss	8%	0%
How to change habits	8%	0%
Diabetes medications	0%	11%
Blood and urine tests for diabetes	0%	11%
Unsure	0%	0%

The resident who initiated the project faced many challenges in coordinating and organizing group visits. All visits had a >40% no-show rate. Attrition of patients was usually due to other life issues that took priority over diabetes, such as deaths in the family or problems with other medical conditions. However, many patients stated that they forgot despite reminder calls that were done a few days prior to each visit. Later, written reminders were given, which seemed to help participation rates improve somewhat. Initiating written reminders was more difficult to do earlier because the group visit schedule had not been planned out in advance due to the resident’s scheduling issues. Financial issues affected staffing resulting in increased workload on the resident, such as chart reviews, vital signs, and most reminder calls.

Another problem area included scheduling issues. Not only coordinating group visits with the resident’s busy schedule was challenging, but they also had to account for the clinic schedule, conference room schedule, preceptor schedule and dietician’s schedule. Thus, group

visits were mostly done on Saturday mornings to ease facilitation.

Finding patients to contact was also difficult because there was no diabetes registry in the clinic. A list was generated of all patients with diabetes mellitus who had been seen recently, but other providers in clinic were also asked for recommendations.

Improvements on the process of group visits in our clinic include forming a list of patients with diabetes and mailing invitations to all of them, which might be easier now that there is an electronic medical record system. As the electronic health record becomes fully functional, providers may develop the ability to have better identification and tracking of diabetics. Another area of improvement would be scheduling visits further in advance so written reminders could be given to patients. Now that there is a cohort of patients who have been actively involved in group visits for many months, perhaps it will be easier to continue group visits at the clinic.

Strengths of the study include a medical visit format that was enjoyed by both patients and providers, increased patient knowl-

edge regarding common diabetes education topics, the ability for patients to support each other during their experience in the group and the novel idea to incorporate group visits into the resident's training. Weaknesses of the study include a small data sample, high no-show rate, and little improvement in laboratory measures (e.g., HgbA1C).

Conclusions

This study shows that resident initiated group medical visits for diabetes mellitus can be accomplished with success, although there are some inherent challenges present. Group medical visits for diabetes mellitus can also be successful with an ethnically diverse population of patients who are willing to share their traditions with each other. Non-laboratory measures were affected more greatly than laboratory measures, but there was a low participation rate. Our clinic is planning to continue group medical visits. Now that the group is more established, perhaps there will continue to be a way for patients to learn about diabetes that is more enjoyable and beneficial for them and their providers.

Disclosures

The study design, data gathering, data analysis, and writing of this paper were done primarily by Catherine Tsang MD, with assistance from Damon Lee MD, Ravi Reddy MD, and Gregory Maskarinec PhD. Assistance with data analysis was also provided by Shu Ki Tsang MS. The authors have no financial affiliation/interest (e.g., employment, stock holdings, consultantships, honoraria) in the subject matter, materials, or products mentioned in this manuscript.

Acknowledgements

Dr. John Scott (creator of the CHCC model, University of Colorado Denver School of Medicine), Dr. Ritabelle Fernandes (Kokua Kalihi Valley Community Health Center), Lara Hackney, RD (Chief of Dietary Services at Wahiawa General Hospital), University of Hawai'i Family Medicine Residency Program faculty, and Physician Center at Mililani staff for their assistance. Shu Ki Tsang for help with data analysis and support.

Authors' Affiliation:

- Family Medicine Residency Program, Department of Family Medicine and Community Health, John A. Burns School of Medicine, University of Hawai'i, Honolulu, HI

Correspondence to:

Catherine J.S. Tsang, MD
Email: simonovi@hawaii.edu

References

1. Paglinawan L. *Ho'oponopono Project Number II: Development and Implementation of Ho'oponopono Practice in a Social Work Agency*. Honolulu, HI: Hawaiian Culture Committee, Queen Liliuokalani Children's Center; 1972.
2. Bucko R. *The Lakota Ritual of the Sweat Lodge: History and Contemporary Practice*. Lincoln, NE: University of Nebraska Press; 1998.
3. Feldman M. Cluster Visits. *The American Journal of Nursing*. 1974; 74: 1485-1488.
4. Houck S, Kilo C, Scott J. Group Visits 101. *Family Practice Management*. 2003; 10: 66-8.
5. Pennachio D. Should you offer group visits? *Medical Economics*. 2003; 80: 70.
6. Thompson E. The Power of Group Visits. *Modern Healthcare*. 2000;30.
7. Hospital Peer Review. DIGMA Satisfaction Rx for Doctors and Patients. Hospital Peer Review. 2001; 26: 81-2.
8. Jaber R, Braksmajer A, Trilling J. Group Visits: A Qualitative Review of Current Research. *Journal of the American Board of Family Medicine*. 2006; 19(3): 276-290.
9. Noffsinger EB. Benefits of Drop-In Group Medical Appointments (DIGMAs) to Physicians and Patients. *Group Practice Journal*. 1999; 48(3):21-28.
10. Scott JC, Conner DA, Venohr I, Gade G, McKenzie M, Kramer AM, Bryant L, Beck A. Effectiveness of a Group Outpatient Visit Model for Chronically Ill Older Health Maintenance Organization Members: A 2-Year Randomized Trial of the Cooperative Health Care Clinic. *Journal of the American Geriatrics Society*. 2004; 52: 1463-1470.
11. Wagner EH, Grothaus LC, Sandhu N, Galvin MS, McGregor M, Artz K, Coleman EA. Chronic Care Clinics for Diabetes in Primary Care. *Diabetes Care*. 2001; 25(4): 695-700.
12. Schillinger D, Clancy DE, Poston MB, Seligman H. *Conducting Group Visits for Patients With Diabetes*. San Diego, CA: American College of Physicians Internal Medicine 2007; 2007.
13. Reddy R, Shehata C, Smith G, Maskarinec GG. Characteristics of Marshallese with Type 2 Diabetes on Oahu: A pilot study to implement a community-based diabetic health improvement project. *Californian Journal of Health Promotion*. 2005; 3(4):36-47.
14. Noffsinger EB, Atkins TN. Assessing a Group Medical Appointment Program: A Case Study at Sutter Medical Foundation. *Group Practice Journal*. 2001; 48(4): 42-49.
15. Kahn, Jr. NB. The Future of Family Medicine: A Collaborative Project of the Family Medicine Community. *Annals of Family Medicine*. 2004; 2: S3-S32.
16. Personal Communication, Patsy Uyehara, RD, Kokua Kalihi Valley Community Health Center, Honolulu, HI, December 2007.
17. Diabetes Education and Counseling Center. *Diabetes Awareness, Education and Screening Project*. Honolulu, HI: University of Hawai'i at Manoa College of Tropical Agriculture and Human Resources Cooperative Extension Services; 2003.
18. Ke Anuenue Area Health Education Center. *Healthy Cooking: A Collection of Recipes by Ke Anuenue Area Health Education Center, Hilo, Hawai'i*. Kearney, NE: Morris Press Cookbooks; 2007.
19. Rawlings K, ed. *Better Homes and Gardens Diabetic Living: Healthy Snacks*. Des Moines, IA: Meredith Corp.; 2007.
20. Jones B. *The Ultimate Book of Diabetic Cooking*. London, UK: Hermes House; 2008.
21. American Diabetes Association and American Dietetic Association. *The New Family Cookbook for People With Diabetes*. New York, NY: Simon and Schuster Paperbacks; 2007.

