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Supporting Diabetes Self-Care in Underserved Populations:

A Randomized Pilot Study Using Medical Assistant Coaches

Dr. Laurie Ruggiero, PhD, Ms. Ada Moadsiri, MPH, Dr. Paula Butler, MD, Ms. Susan M. Oros, MA, Dr. Michael L. Berbaum, PhD, Dr. Steven Whitman, PhD, and Ms. Daisy Cintron, MA

University of Illinois at Chicago, School of Public Health (Dr Ruggiero, Ms Moadsiri); Mount Sinai Medical Center (Dr Butler); the University of Illinois at Chicago, Institute for Health Research and Policy (Ms Oros, Dr Berbaum, Ms Cintron); and Sinai Urban Health Institute (Dr Whitman), Chicago, Illinois

Abstract

Purpose—The purpose of this study was to evaluate the impact of an innovative intervention that utilized a certified medical assistant with specific diabetes training to work with a multidisciplinary diabetes care team to help provide basic diabetes education and self-care support in low-income minority populations with type 2 diabetes.

Methods—Enrolled participants were randomized to either the medical assistant coaching (MAC) group (N = 25) or the treatment as usual (TAU) group (N = 25). Deidentified data was obtained on a matched no contact control (NCC) group (N = 50).

Results—Analysis of covariance (ANCOVA) comparisons revealed no significant differences between the 3 groups on A1C, but a trend was observed. A1Cs decreased across time for the MAC group, while increasing for the TAU and NCC groups. ANCOVA comparisons also indicated that the MAC group experienced significantly greater increases in perceived empowerment and a larger, although non-significant, reduction in perceived diabetes related problems than the TAU group.

Conclusions—This randomized controlled pilot study suggests that the inclusion of a medical assistant self-care coach as part of the diabetes care team holds promise in improving outcomes and should be further examined in a large-scale study.

The burden of diabetes, including prevalence and risk of complications, is greater for minorities and lower-income groups in the United States.^{1–3} A variety of models are being developed and examined to better serve these priority populations, while working to contain costs. Two examples of such models that have shown promise include nurse-managed clinics⁴ and community health workers.⁵ Another potential model is the inclusion of medical assistants in helping to support diabetes care in primary care clinics. Examination of this model is the focus of this article.

Few controlled studies have been published on diabetes self-management interventions for these underserved populations.⁶ Diabetes patients commonly receive care at primary care clinics,¹ but not all clinics have a full-time diabetes educator available to optimally support patient education and self-management. Alternative strategies are needed to support self-

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Correspondence to: Laurie Ruggiero, PhD, University of Illinois at Chicago, School of Public Health, 1747 West Roosevelt Rd (MC275), Chicago, IL 60608 (lruggier@uic.edu).

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management in such clinics where there is no availability of a diabetes educator and limited resources. Medical assistants represent an often underutilized yet readily available resource to help assist the diabetes care team provide basic education and self-management support in primary care settings. A recent study found that the total time patients spent in a primary care setting for a diabetes management visit was on average 2 hours and 26 minutes with the majority of that time spent in the check-in process and waiting to be seen.⁷ The medical assistants assisted with triage and this activity averaged 4.9 minutes, thereby underscoring the limited utilization of medical assistants in diabetes care.

Only one descriptive article was found that highlights a model, which involves an expanded role of the medical assistant in improving diabetes self-management.⁸ This model included medical assistants in a major role and included planned visits, mini group medical visits, open office group visits, and use of an integrated approach to patient-centered goal setting. The planned visits included individual appointments with a medical assistant where standing orders and laboratory tests were completed prior to the routine primary care visit, and the mini group medical visits involved the provider and medical assistant seeing groups of three patients at one time. No controlled studies have been found examining the role of a medical assistant in supporting diabetes care.

Therefore, the purpose of this randomized controlled pilot study was to evaluate the impact of an innovative intervention that utilized a certified medical assistant with specific diabetes training to work with the multidisciplinary diabetes care team to help provide basic diabetes education and self-care support in low-income minority populations with type 2 diabetes receiving care at a Federally Qualified Health Care (FQHC) clinic. The aims were to evaluate the impact of the medical assistant coaching (MAC) intervention on A1C as compared with a treatment as usual (TAU) group and a no contact control (NCC) group, and to evaluate the impact of the intervention on psychosocial mediators as compared with TAU.

Research Design and Methodology

Enrolled participants were randomized to two groups (MAC and TAU) and deidentified data was obtained on a third NCC group (N = 50) for A1C comparisons. Assessments were completed at baseline and 6 months for MAC and TAU groups.

Participants were recruited from a primary care clinic at a FQHC clinic in Chicago. Each day a list of patients eligible to participate was provided to the research staff by the clinic staff. Research staff approached patients in the waiting room prior to their appointments, informed them of the study, and obtained informed consent from interested patients. The inclusion criteria were: (a) ethnicity of Latino or African American; (b) age ≥ 50 years; (c) last two A1Cs $\geq 7\%$; (d) diagnosis of type 2 diabetes for at least one year; and (e) prescribed diabetes medication.⁹ Research assistants recruited 82% of eligible patients approached for a total randomized sample of 50 participants.

Deidentified data were obtained for A1C on the NCC patients matched on primary inclusion criteria. The total sample was 100 (TAU = 25, MAC = 25, NCC = 50). There were no baseline differences between the two randomized groups with respect to gender (34% male), age, (M = 65.80 years, SD = 9.35), ethnicity (76% African American, 24% Latino), body mass index (BMI) (M = 32.40, SD = 6.592), or across the 3 groups for A1C (M = 8.46, SD = 1.56).

Assessment Methodology

The MAC intervention was designed to increase diabetes care knowledge and skill to empower and equip individuals to reach their diabetes care goals, to reduce diabetes related

problems, to eliminate barriers to care, and to improve health outcome as measured by A1C level. Data on A1C levels at baseline and six months were obtained from health system records. Self-report psychosocial measures included the Problem Areas in Diabetes Scale (PAID)¹⁰⁻¹² and the Diabetes Empowerment Scale (DES).¹³⁻¹⁴ Research assistants conducted assessments using Spanish versions where needed. Examination of retention showed that 76% of TAU and 84% of MAC participants completed the 6-month follow-up assessment.

Intervention Conditions

The MAC had contact only with the MAC group. Both groups received TAU and were provided with a basic diabetes education handbook developed by health system staff. The intervention included the following: was delivered over a 6-month period by a certified medical assistant with specific training in diabetes self-care and behavioral coaching; was guided by behavioral theory¹⁵; was tailored for the two subgroups; was patient-centered¹⁴; and was based on best-practice approaches (ie, five A's of counseling¹¹). The MAC was integrated into the diabetes care team and received training and supervision from members of the multidisciplinary team (eg, certified diabetes educator, physician, psychologist). The interactions were provided in a private counseling room within the same building as the clinic. MAC sessions were designed to be brief (ie, <30 minutes for face-to-face clinic contacts, <15 minutes for telephone contacts) and involved two sessions during quarterly clinic visits (baseline, 3 months) and 4 monthly telephone calls between visits (months 1, 2, 4, 5). The MAC called patients the day before each scheduled clinic visit to remind them of their visits. A telephone coaching session was delivered when a patient missed the visit. The MAC interactions were protocol driven and guided by the 5 A's of counseling.¹¹ The planned content areas included key self-care areas such as healthy eating, glucose self-testing, physical activity, foot care, smoking cessation, and medication adherence. The MAC was fluent in Spanish and English. The overall content goal over the course of the intervention was to cover all planned topics at least once while using a patient-centered collaborative approach to set the agenda for each interaction with consideration for the patient's priorities. The MAC was trained to provide basic information in each area and to suggest follow-up with the provider and/or make suggestions to the provider for a referral (eg, diabetes educator, dietitian, mental health professional) when certain topics or specific requests were raised by the patient (eg, requests for specific nutrition or physical activity advice, medication questions, interpreting glucose or other lab results).

The MAC used available free or low-cost, basic educational materials available from national diabetes organizations and the National Diabetes Education Program (NDEP) to guide the diabetes self-care content of their interactions. Based on the interactions and the patient's requests, the MAC provided language and culture-appropriate standardized educational materials, such as from the NDEP, specific to the topics discussed. If a patient needed or requested guidance or information regarding their medical care, he or she was instructed to follow-up with the primary care provider. Following each session, the MAC gave the patient's provider a form indicating the major self-care topics covered and suggestions for referrals or follow-up topics to further discuss with the patient. The MAC also reminded the patients of recommended annual visits and tests, helped arrange necessary appointments, and supported them in generating questions to discuss with the provider and setting personal self-care goals. The MAC also assisted the patient in overcoming barriers to care as needed, such as obtaining diabetes supplies.

Patients were directed to speak with their primary care providers when questions or concerns arose about medical care and/or to clarify diabetes care recommendations. The MAC supported the patients in setting and achieving personal self-care goals (eg, daily foot care)

based on provider recommendations/practice guidelines, overcoming barriers to care (eg, obtaining diabetes supplies), and arranging appointments.

Adherence to MAC intervention protocol was examined through random observations of the MAC by the research staff as well as through review of the checklists completed by the MAC for each planned participant interaction. In general, 85% of planned monthly telephone interactions were completed. The observations and checklist reviews demonstrated good adherence to the protocol. For example, the MAC completed an average of 92% of the primary MAC intervention activities across telephone and clinic-based interactions based on checklist review. In addition, the length of the MAC telephone interactions was consistent with the planned length of up to 15 minutes with an average length of 13.5 minutes (range 8–30).

Results

Baseline measures of the DES and the PAID were available only for the MAC and TAU participants. No baseline differences between groups were observed on these measures. Analysis of covariance (ANCOVA) was used to test for differences at 6-month follow-up between the two randomized groups for DES and PAID scores and between the three groups for A1C values. The interaction between the covariate (baseline value) and treatment condition was nonsignificant for all three measures, indicating the slope of the within group regression line is approximately the same for all conditions. (See Table 1 for group means.)

After controlling for baseline A1C values, ANCOVA comparisons revealed no significant differences between the 3 groups on A1C values at follow-up ($F[2, 88] = 0.888$, ns). However, a trend was observed over time, such that A1C values decreased from baseline to follow-up for the MAC group, while increasing across time for the TAU and NCC groups.

ANCOVA comparisons between groups controlling for baseline DES levels indicated that DES scores significantly increased for the MAC group as compared with the virtually unchanged results for the TAU group ($F[1, 37] = 9.025$, $P < .01$). ANCOVA comparisons controlling for baseline PAID scale scores did not significantly differ between the MAC and TAU groups at follow-up ($F[1, 37] = 2.177$, ns)

Conclusions

Although not statistically significant, only the MAC group experienced improvements in A1C. This group also experienced significantly greater increases in perceived empowerment and a larger, although nonsignificant, reduction in perceived diabetes related problems than the TAU group. This randomized controlled pilot study suggests that the inclusion of a medical assistant with advanced training and ongoing supervision to serve as a self-care coach within a multidisciplinary diabetes care team holds promise in improving outcomes and should be further examined in a large-scale study. It also has the potential to be easily implemented and sustainable in primary care clinics.

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Table 1

Means and Standard Deviations for A1C, DES, and PAID Measures Across Time

Measures	MAC	TAU	NCC
	Mean (SD), (SE) ^a N	Mean (SD), (SE) ^a N	Mean (SD), (SE) ^a N
A1C			
Baseline	8.90 (1.59), 25	8.45 (1.71), 25	8.24 (1.44), 50
6-month	8.73 (1.74), 24	8.50 (2.25), 18	8.61 (1.65), 50
Adjusted 6-month ^b	8.31 (.28) ^a	8.66 (.31) ^a	8.76 (.19) ^a
DES			
Baseline	4.00 (0.79), 25	4.21 (0.59), 25	—
6-month	4.61 (0.34), 21	4.17 (0.64), 19	—
Adjusted 6-month ^b	4.63 (.11) ^a	4.15 (.11) ^a	—
PAID			
Baseline	18.90 (15.73), 25	24.40 (22.12), 25	—
6-month	9.41 (9.49), 21	16.12 (13.64), 19	—
Adjusted 6-month ^b	10.25 (2.29) ^a	15.19 (2.41) ^a	—

Abbreviations: DES, Diabetes Empowerment Scale; PAID, Problem Areas in Diabetes Scale; MAC, medical assistant coaching; TAU, treatment as usual; NCC, no contact control; SD, standard deviation; SE, standard error.

^aStandard Error (SE).

^b6-month value or score adjusted for baseline for each measure.