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Putting Theory Into Practice: A Case Study of Diabetes-Related Behavioral Change Interventions on Chicago's South Side

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Abstract

Diabetes self-management is central to diabetes care overall, and much of self-management entails individual behavior change, particularly around dietary patterns and physical activity. Yet individual-level behavior change remains a challenge for many persons with diabetes, particularly for racial/ethnic minorities who disproportionately face barriers to diabetes-related behavioral changes. Through the South Side Diabetes Project, officially known as “Improving Diabetes Care and Outcomes on the South Side of Chicago,” our team sought to improve health outcomes and reduce disparities among residents in the largely working-class African American communities that comprise Chicago's South Side. In this article, we describe several aspects of the South Side Diabetes Project that are directly linked to patient behavioral change, and discuss the theoretical frameworks we used to design and implement our programs. We also briefly discuss more downstream program elements (e.g., health systems change) that provide additional support for patient-level behavioral change.

Keywords

diabetes; disparities; behavioral change; minority health; intervention

Introduction

Diabetes self-management is central to diabetes care overall, and much of self-management entails individual behavior change, particularly around dietary patterns and physical activity. In a recent review of behavior change, Fisher et al. (2011) found that behavior changes are associated with multiple aspects of diabetes, including the onset of disease and disease prevention (e.g., dietary intake and obesity are risk factors for the development of diabetes; lifestyle changes can prevent diabetes in high-risk individuals; Diabetes Prevention Research Group, 2002; Eyre, Kahn, & Robertson, 2004; Tuomilehto et al., 2001), disease management (e.g., diabetes self-management programs can improve disease management, improve metabolic control, and prevent complications; The Diabetes Control and Complications Trial Research Group, 1993; Norris, Engelgau, & Narayan, 2001; Norris,

Lau, Smith, Schmid, & Engelgau, 2002), and quality of life (e.g., behavior changes can reduce distress and depressive symptoms, increase emotional and social function, reduce anxiety, and improve general quality of life among persons with diabetes; Blumenthal et al., 2005; Cochran & Conn, 2008; Vale et al., 2003).

Despite the strong evidence base and the growing public health need for implementation, individual-level behavior change remains a challenge for many persons with diabetes. Racial/ethnic minorities disproportionately face barriers to diabetes-related changes, including access to healthy food, safe places for physical activity, diabetes education, and other self-management resources. Through the South Side Diabetes Project, officially known as “Improving Diabetes Care and Outcomes on the South Side of Chicago,” our team sought to improve health outcomes and reduce disparities among residents in the largely working-class African American communities that comprise Chicago's South Side (Chin, Ferguson, Goddu, Maltby, & Peek, in press; (Peek, Wilkes, et al., 2012). A key part of this strategy involves the promotion of individual behavior change among persons with diabetes—changes in healthy behaviors (e.g., nutrition, physical activity), treatment adherence (e.g., medication adherence), self-care activities (e.g., self-foot examinations), and active involvement in treatment decisions with their health care providers (i.e., shared decision making [SDM]).

In this article, we describe several aspects of the South Side Diabetes Project that are directly linked to patient behavioral change, and discuss the theoretical frameworks we used to design and implement our programs. We also briefly discuss more *macro-level* program elements (e.g., health systems change) that provide additional support for patient-level behavioral change.

Program Components that Support Diabetes-Related Behavior Change

Patient Education Classes

We have developed a patient empowerment curriculum that provides culturally tailored, evidence-based diabetes education with skills training in patient-provider communication and SDM. This educational program has been described in detail elsewhere (Peek, Harmon, et al., 2012), but it has been summarized here. The classes met once weekly for 2 to 3 hours for 10 consecutive weeks. The first 6 weeks consisted of culturally tailored diabetes education, which modified the evidence-based BASICS curriculum developed by the International Diabetes Center and covered basic diabetes knowledge and management skills (Peek, Harmon, et al., 2012). The curriculum was adapted to meet the literacy, adult-learning, and cultural needs of the population. The following 3 weeks addressed patient-provider communication and SDM; patients were taught skills and strategies to become more actively involved in discussions and decisions about their diabetes treatment plans (Peek, Harmon, et al., 2012). The SDM curriculum addressed identified barriers, cultural norms, and beliefs among low-income African Americans with diabetes that we had previously identified about SDM (Peek et al., 2008; Peek et al., 2009; Peek et al., 2010). The classes were interactive and used role-play, testimonials, games, film, and hands-on skills training to help teach key educational components and support behavior change skills. Each cohort was led by a multidisciplinary team of certified diabetes educators, nurses, dietitians,

and physicians. Family and friends were invited to the classes to help support patients in developing and sustaining diabetes-related behavioral changes. Statistically significant improvements were seen in diabetes self-care behaviors, including following a “healthful eating plan,” self-glucose monitoring, exercise, and self-foot care, as well as glucose control (i.e., HbA1c [glycated haemoglobin] values; (Peek, Harmon, et al., 2012).

“Prescriptions” for Food and Exercise

Our team has worked collaboratively with Walgreens and the 61st Street Farmer's Market to provide “Food Rx” for fresh fruits and vegetables. Our Food Rx program has been described in detail elsewhere (Goddu, Roberson, Raffel, Chin, & Peek, in press), but it is briefly summarized here. Nine Walgreens stores were selected based on their “food desert” designation (i.e., are located within a food desert and provide expanded healthy food options) and location within the catchment area of one of our six participating health centers. The Farmer's Market was selected based on its proximity to the University of Chicago and its commitment to providing skills-based education (e.g., cooking demonstrations) and serving low-income communities. For example, this Farmer's Market is the first and largest market participant in Illinois' food stamp (LINK) program, where the value of the LINK card purchase is doubled by the Farmer's Market (Experimental Station, 2009). Physicians and mid-level providers (i.e., physician assistants and nurse practitioners) sign the Food Rx, which are distributed in the clinic to interested patients. The Food Rx combine the power of physician recommendations regarding lifestyle changes with patient educational information (the Food Rx are attached to a one-page low-literacy nutritional sheet that highlights examples of food recommendations), financial incentives (on the back of the Food Rx is a \$5 coupon for Walgreens or a \$9 voucher for the Farmer's Market), and information about local community resources.

Similar to the Food Rx, we have promoted an Exercise Rx where high-risk obese patients (i.e., those with diabetes, hypertension, cardiovascular disease, and/or asthma) can receive prescriptions redeemable for 6 months of free services at any of the 64 Chicago Park District locations, which offer a variety of fitness classes and services.

Food Shopping Tours

Each month at the Save-A-Lot (SAL) grocery, a low-cost grocery chain prevalent on Chicago's South Side, we conduct a grocery store tour called “Shop Smart, Save a Lot, and Be Healthy.” The tours are conducted three Saturdays a month at three different store locations on Chicago's South Side. Participants are taken around the perimeters of the store (where fresh/frozen items are showcased) and taught how to read food labels, shop healthy on a budget, and make healthy food choices. At the end of the tour, participants receive a \$25 gift card, donated by SAL, to purchase healthy food items. Initially led by a registered dietician/certified diabetes educator, our team has trained over 30 community members (e.g., fitness instructors, diabetes patients, nutritionists, public health students), who also lead the tours. Since January 2012, over 500 people have participated in the SAL tours, some of whom were referred from one of our participating health centers and 15 of whom had participated in our patient education classes.

We have adapted the food shopping script for the 61st Street Farmer's Market and Walgreens partner stores. Community members are currently doing educational tours of the Farmer's Market, where patients and community residents learn to identify and use the wide variety of produce at the market (that may have been previously unfamiliar), meet the farmers, and receive “special invitations” for the cooking demonstrations. In the first 4 months of the program, nearly 150 people have participated in the Farmer's Market tours. At Walgreens, pharmacists (also trained in diabetes education) are due to begin conducting tours of the healthy food sections in the stores in the fall of 2013 at participating stores.

Community Food Pantries

We have partnered with a local community center to enhance the access of our patients to free healthy food. The K.L.E.O. Community Family Life Center distributes several tons of fresh produce and other healthy food items, provided by the Greater Chicago Food Depository, to South Side community members every month. We have reorganized the food pantry to become a more comprehensive community health event by incorporating health education, fitness and cooking demonstrations, free health screenings, and referrals for regular medical care. Our team is currently working with several faith-based organizations and churches with food pantries to implement a similar model elsewhere on Chicago's South Side. From April 2012 to September 2013, we have had 1,459 touch points with 1,122 unique persons, 77 of whom were referred from one of our six health centers. An estimated 200 persons have been screened for diabetes and hypertension, and 85 persons without a regular physician were referred to a medical home.

Skills Training in Healthy Food Preparation/Cooking

Our team has worked closely with local chefs and culinary experts to provide skills training in healthy food preparation throughout the South Side, including our regular community events (e.g., Farmer's Market, K.L.E.O. Food Pantry) as well as other health events (e.g., health fairs). We have launched an Annual Diabetes Cook-Off, whose purpose is to showcase community-created diabetes-friendly dishes that are flavorful and can be enjoyed by everyone (i.e., also persons without diabetes). The Cook-Off is held in conjunction with a local community college's culinary arts program; instructors and students at the college support the Cook-Off semifinalists with the “professional presentation” of their food dishes to a panel of judges, which include celebrity chefs, nutritionists, persons with diabetes, and community leaders. The Diabetes Cook-Off is aired on a local cable television station and hosted by a local media personality. In the first year of the Cook-Off (2012), we had over 75 recipe submissions from patients and community members. Two of the semifinalists had completed our diabetes education classes.

Physical Activity Classes

Despite the widespread availability of parks within Chicago, many residents on the South Side do not have access to safe places for physical activity because of crime and other challenges within the local built environment. The Community Fitness Program is held at the Museum of Science and Industry and was designed by the University of Chicago Medical Center to encourage healthy fitness habits and to provide a safe place to exercise and help alleviate some of the most common barriers to exercise. The program offers a safe,

warm place to walk for 90 minutes or participate in a free fitness class. We help promote this program within the patient education classes, clinics, and community venues.

In 2013, our team launched the Community Fitness Passport Program (CFPP), designed to expose South Side residents to a variety of fitness program (e.g., yoga, zumba, weight training) as well as a variety of local resources for physical activity (e.g., Park District centers, local churches with open fitness facilities, YMCA locations). The first CFPP class enrolled 25 participants, 19 of whom had completed the diabetes education classes. Because several of the “stops” along the Passport “journey” were at Chicago Park District centers, participants were exposed to existing facilities, programs, and resources that they could continue using through the Exercise Rx, which provide 6 months of free access to a local Park District center. The Passport program was designed to help community residents identify physical activity behaviors and facilities that they enjoyed and in which they would continue engaging after the CFPP ended.

Provider Workshops

We have conducted a workshop series among health care providers (i.e., physicians, nurse practitioners, physician assistants) and staff designed to increase knowledge and skills in motivational interviewing, patient-provider communication (with a focus on SDM), and culturally competent care. The goal of these interactive workshops is to equip health care teams to better activate diabetes patients from racial/ethnic minority communities and support such patients in making lifestyle changes to improve their health. To date, 100 providers and staff have been trained at the six participating health centers. In pre- posttest surveys using Likert-type response options, statistically significant improvements were noted in participants' self-rated ability to assess patients' readiness and motivation to change behavior, help patients initiate and maintain behavior change, understand potential barriers to engaging patients as active partners in care, and support patients' active participation in care ($p < .001$ for all).

Mobile Technology Program

We developed a theory-driven interactive mobile technology program to support diabetes patients. The program components are described in detail elsewhere (Dick et al., 2011; Nundy et al., 2012) but are summarized briefly here. Patients received interactive text messages to support them with diabetes self-management. Text messages were categorized into four content domains: education, medication reminders, glucose-monitoring reminders, and foot care reminders. Each domain was comprised of 2-week modules, which vary by topic and frequency of messages. The education domain covered diabetes self-management (e.g., purpose of medication and glucose monitoring, nutrition, foot care, and exercise) as well as living with a chronic illness (e.g., navigating the health care system, coping with stress). The other three domains supported behavior change with *reminders* (“Time to take your diabetes medication”), *tips* (“Think of your plate as a meal plan. Half your plate should be vegetables, a quarter meat or other proteins, and a quarter starches”), *assessments* (“On how many of the past 7 days did you take all of your diabetes medications?”), and *feedback* (“Great job!”). In addition, nurse-administrators used the automated text messaging to

provide personalized self-management support for diabetes patients and facilitated care coordination with the primary care team.

Behavior Change Theoretical Frameworks

Several behavior change theoretical frameworks have informed the design and implementation of components of the South Side Diabetes Project. In this section, we describe the relevant theoretical constructs and discuss how we have directly applied them to our work. We use the following levels of the ecological model (Fisher et al., 2002; Sallis, Owen, & Fisher, 2008) to organize the discussion: Patients; Family, Friends and Small Groups; Organizations, Communities, and Culture; and Government, Policies, and Large Systems. Within each of these levels, we describe behavioral theories that have direct relevance to our intervention and our target population. Some theories (e.g., health belief model) are more salient to behavior initiation (an important goal of the intervention), whereas other theories (e.g., self-efficacy) are more salient to the maintenance of behavior change.

Patients

At the individual patient level, we used several behavioral theories, which have some content overlap, to inform our program.

Health Belief Model—The health belief model theorizes that health behaviors are influenced by perceptions of the threat, severity of illness, and its consequences; perceived barriers to behavior change; and beliefs about the benefits of behavior change (Janz & Becker, 1984). Thus, patients must first believe that they are at risk for the disease and/or its complications before behavior change can occur to reduce these risks. Risk perception has been shown to play an important role in developing healthy behaviors, such as dietary changes (Janz & Becker, 1984). However, because the prevalence, morbidity, and mortality related to diabetes are disproportionately high among African Americans (Chow, Foster, Gonzalez, & McIver, 2012), particularly within South Side communities, many of the persons with diabetes in our project believed that their risk for diabetes-related complications was significantly greater than it actually was. That is, they believed that personal complications from diabetes (e.g., renal failure, lower extremity amputation) were inevitable because of the experiences of friends and family members with the disease. Ironically, because of these fatalistic beliefs, many patients admitted to using “denial” as a coping strategy for dealing with diabetes (Peek et al., 2009). Consequently, although our diabetes education classes included important information about diabetes complications, the curriculum focused more on risk factor reduction and the benefits of behavior change. One of the key messages of the classes has been “You can have diabetes, but diabetes doesn't have to have you.” That is, diabetes is a chronic disease that can be controlled, and the risks of complications are significantly reduced by patients' decisions and behaviors. We encouraged the sharing of success stories among diabetes patients within the class to help promote the idea, through personal testimonials, that diabetes is a condition over which patients can have control. In our interactive mobile texting program, we specifically included text messages designed to influence health beliefs; program participants had

statistically significant changes in their health beliefs (e.g., perceived risk of long-term complications) at program completion (Nundy, Mishra, et al., 2014).

Our program has addressed perceived barriers to behavior change, a key aspect of the health belief model. We have used multiple strategies, including active problem-solving and skills-building exercises within the patient classes (e.g., hands-on instructions about self-glucose testing, role-playing with teachers about SDM), identifying and promoting community resources for lifestyle changes (e.g., “prescriptions” for healthy food and exercise), providing social support, and sending regular text message reminders about diabetes self-care activities.

Self-Efficacy—Self-efficacy, or the sense of confidence in one's ability to perform an activity, is an important precursor to behavioral change (Bandura, 1997). In Bandura's model, self-efficacy is built through mastery experience, social persuasions, physiological factors, and social modeling (Skaff, Mullan, Fisher, & Chesla, 2003; Walker, Mertz, Kalten, & Flynn, 2003). In *mastery experience*, small successes raise self-efficacy. That is, individuals are more likely to believe they can do something continually if they have seen for themselves that they can do it at least once. A major goal of our overall project is to provide opportunities for small success in diabetes self-care and management through experiential learning. For example, in our diabetes classes, participants practice reading food labels, role-play ordering food from local restaurant menus, participate in chair-based exercises to jazz music, and role-play asking their physicians questions about recommended medications. We provide real-world opportunities for mastery experience through our guided shopping tours (where people practice reading food labels and shopping for healthy food options on budget), cooking demonstrations and community cook-off events, and “Ask the Doctor” opportunities at community venues, where community residents can engage physicians on our team and ask general questions about health/health care.

Social persuasions are defined as the encouragements or discouragements that affect an individual's self-efficacy. In the diabetes classes, we created an environment in which participants' behavior changes (e.g., beginning a physical activity regimen, discussing concerns about medication side effects with physicians at a prior clinic visit) and health outcomes (e.g., reduced HbA1c values, weight loss) were celebrated by the entire group. Class participants wanted to “make their teammates proud” of them and looked forward to sharing small victories during the class. Participants in the mobile texting program described the desire to “not let down” the text manager in aspects of their diabetes self-care and appreciated receiving positive feedback texts (e.g., “Great job!”) when they reported medication adherence.

Because hyperglycemia and hypoglycemia frequently cause physical symptoms, *physiological factors* played an important role in building self-efficacy. As patients in the classes reported fewer symptoms (e.g., fatigue, polyuria, blurry vision, palpitations, diaphoresis) related to unregulated glucose, it reinforced the positive behavioral changes they were making regarding their diet, physical activity, and treatment adherence. The relationship between symptoms and diabetes control was underscored for patients during the

weekly reviews of blood glucose logbooks and discussions of diabetes-related symptoms and behavior modifications.

Social modeling has been a key strategy used by our team to influence the behavior of persons with diabetes. We have provided multiple opportunities for people to meet and learn from others who were living healthy lives because of the personal decisions and behaviors they made about their diabetes management. We celebrate graduates from our diabetes classes who have seen improvements in their diabetes, blood pressure, lipids, and/or weight. Some former class participants have served as peer mentors for patients struggling with their diabetes management, have been tour guides at the Farmer's Market and SAL, and work with our team at community outreach events (e.g., health fairs). We have worked closely with celebrity chefs, several of whom have diabetes or family members with the disease, who bring personal testimony to the real possibility of controlling diabetes with lifestyle changes. Thus, our team has sought to enhance the self-efficacy of our participants in performing diabetes-related health behaviors. In both the patient classes and the mobile texting program, statistically significant improvements in diabetes self-efficacy were noted among participants.

Theory of Planned Behavior—According to the theory of planned behavior (TPB), individual behavior is determined by a person's *intention* to perform it and by *perceived control* (self-efficacy) over performing the behavior (Ajzen, 1991). A person's intention is determined by the weighted relative importance of the *behavioral attitudes* (positive or negative feelings about performing a behavior that reflect the summation of *behavioral beliefs*) and the *subjective norms* (perceived social pressure to perform a behavior that reflects a summation of the *normative beliefs*; Ajzen, 1991). That is, the TPB posits that behavior change is influenced by an individual's attitudes, perceived social norms, intention to perform the behavior, and perceived control over the process to change the behavior. We sought to influence each of the elements in the TPB model to promote behavior change among our patients with diabetes, many of which conceptually overlap with the health belief model and Bandura's (1997) self-efficacy model. As described earlier, our team has sought to modify beliefs and attitudes about diabetes-related health behaviors and increase patients' self-efficacy at successfully implementing behavioral changes.

In addition, we have tried to modify participants' subjective norms and normative beliefs about diabetes self-care: that is, what people believe is “normal behavior” for persons with diabetes and what they feel under social pressure to do regarding their diabetes care. We have largely accomplished this goal through the “social modeling” described above, but we have also used large media campaigns, involving television (e.g., annual 13-week series on the cable access network that takes live call-ins, interviews with local news stations), radio (e.g., regular interviews with several key African American radio stations), print media (e.g., community newspapers, major city newspapers), and social media, to influence subjective norms within the community.

Family, Friends, Small Groups

Support from friends, family members, and peers can help patients with diabetes modify their behaviors and achieve better health outcomes (Peek, Harmon, et al., 2012); Samuel-Hodge et al., 2000; Trento et al., 2001). We purposely encouraged class participants to bring family members and/or friends (“whoever helps you manage your diabetes”) to the classes and facilitated the development of a family-like atmosphere within the classes themselves. Participants reported that the strong social bonds formed with their classmates, as well as the teachers, were a motivator for class retention and a facilitator of behavior change (Goddu, Raffel, & Peek, 2012; Raffel, Goddu, & Peek, 2012).

Social Support—Social support has also been shown to have positive associations with diabetes behaviors and outcomes (Peek, Harmon, et al., 2012b; Samuel-Hodge et al., 2000; Trento et al., 2001). In Barrera's model, there are three types of social support: perceived support, enacted support, and social integration (Cohen, Shmukler, Ullman, Rivera, & Walker, 2010). *Perceived support* is a person's subjective judgment that others will offer or have offered help. *Enacted support* includes specific supportive actions offered by others during times of need. *Social integration* is the extent to which a recipient is connected within a social network. We designed the diabetes education classes with the goal of implementing all three of these aspects of social support. We wanted participants to feel supported, both interpersonally and in tangible ways, throughout the class. We introduced the class as a “second family” and established a cultural expectation of emotional support throughout each session. Teachers were available before and after classes to provide individual assistance (e.g., rereviewing educational concepts), and participants used that time to provide social support to each other as well. During the classes, participants received glucometers and other tools to assist with diabetes self-care (e.g., measuring cups, pedometers, diabetes socks), real-time assistance and referrals to address pressing health issues (e.g., mental health counselors, urgent care visits), and other tangible means of support. Participants in the class were also socially integrated with each other; they would communicate outside of class, referred to each other as “teammates” and “family,” and relied on one another during class sessions.

We were able to leverage this social integration to facilitate behavioral change, particularly in the utilization of community-based resources that our research team collaboratively developed. Class participants reported being more comfortable using a new resource for the first time with the “warm hand-off” provided by trusted peers, class teachers, and other members of the intervention team (e.g., clinic staff, project managers). Class participants have participated in the K.L.E.O. Food Pantry, Diabetes Cook-Off, Museum of Science and Industry walking program, and the CFPP; they have used Food Rx at both the 61st Street Farmer's Market and at Walgreens locations and have joined local fitness facilities together using the Chicago Park District Exercise Rx distributed by our health care providers; and class graduates have led tours of the Farmer's Market and SAL grocery store and helped our team staff at health fairs and other community events (see Figure 1).

Interestingly, participants in the mobile texting program reported statistically significant improvements in daily social support for diabetes self-care and qualitatively described

feeling supported by the program. (Nundy, Mishra, et al., 2014). Some participants in the texting program said they benefited from the feeling that “someone” was monitoring them and that help was available if needed. Some participants described the text messaging program as a “friend” or “support group,” and many valued the daily interaction the system provided.

Organizations, Communities, Culture

Ecological Model—This model expands behavior change influences from beyond the individual and their immediate social units (e.g., peers, family) to include environmental factors such as organizations, communities, and culture (Fisher et al., 2002; Sallis et al., 2008). *Health care organizations*, and the providers within these organizations, can provide the infrastructure to not only improve patient care but also support patients in making behavior changes. For example, nurse care managers have been shown to enhance social support, increase medication adherence, and facilitate the adoption of lifestyle behaviors regarding diet and physical activity (Sherbourne, Hays, Ordway, DiMatteo, & Kravitz, 1992). At one of our clinic sites, a nurse practitioner serves as a care manager for high-risk diabetes patients. She also coteaches in the diabetes education classes and, as such, is able to provide a seamless transition between intensive education, behavioral modification support, and care delivery. Increasingly, health systems are using team-based care and care coordination strategies for the management of chronic diseases such as diabetes, and a central component has been patient education and support of behavior change (Peek, Ferguson, Bergeron, Maltby, & Chin, 2014). Within our project, we set out to provide additional tools and skills for providers and staff in motivational interviewing, engaging patients in SDM, and providing culturally competent care. Participants in our 4-hour workshop reported increased confidence in their ability to engage patients in their care and guide them along the “stages of change” in behavioral modifications. Our project also includes a quality improvement collaborative, composed of the quality improvement teams of the six participating health centers, which is currently working to incorporate diabetes care coordinators. One of roles of the care coordinators will be to provide personalized “coaching” for behavior change and lifestyle modification. As part of our mobile texting program, we piloted the use of a patient-generated health data tool, which summarized data from patients' texts into a one-page document, among primary care physicians and endocrinologists at one of our participating clinics. Providers found it to be a helpful tool for focusing their clinic visits on specific barriers to diabetes self-care, including behavior change (Nundy, Lu, Hogan, Mishra, & Peek, 2014).

The importance of the *local community*, and its built environment, cannot be underestimated when assessing the feasibility of patients making recommended lifestyle changes to improve their health. Numerous studies have linked food deserts, the disproportionate presence of fast food venues (vs. grocery stores), and physical activity barriers (e.g., limited availability of parks and sidewalks, high traffic areas, crime/violence) to poor dietary patterns, sedentary lifestyles, obesity, and diabetes (Dutton, Johnson, Whitehead, Bodenlos, & Brantley, 2005; Krishnan, Cozier, Rosenberg, & Palmer, 2009; Mari Gallagher Research and Consulting Group, 2006; Seligman & Schillinger, 2010). Thus, identifying and leveraging community resources to facilitate the adoption of healthy lifestyles are critical to any program seeking to

change health behaviors among persons with diabetes. In our program, we specifically set out to identify and collaborate with local community resources that would help our activated patients sustain the behaviors they were eager to adopt. We did so in ways that addressed some of the financial constraints to the early adoption of behaviors, when patient ambivalence may allow financial constraints to outweigh the perceived benefits. Our Food Rx came with coupons or vouchers that allowed patients to obtain free, healthy food at locations close to their home. The Exercise Rx waived the fees for 6 months associated with the use of fitness facilities within the Chicago Park District, many of which are located within Chicago's South Side. The CFPP sought to expose participants to fitness resources on the South Side, at no cost, that they may not been aware of (e.g., local churches with designated space for weight training and exercise classes, University of Chicago recreational space that is open to the community) or may not have previously visited (e.g., local YMCA). The CFPP also sought to expose people to a range of physical activity types (e.g., weight training, yoga, running, line dancing) in order to help individuals “find their passion” about a specific physical activity that they would be willing to engage in long term. People are more likely to sustain behaviors that they enjoy (vs. cognitively recognize will improve their health), and so helping diabetes patients explore physical activity options, with the support of peers and members of our intervention team, may be an important way to bridge patients to community resources and sustain behavior change.

Patients living on the South Side of Chicago are largely working-class African Americans that were part of the Great Migration (or descendants of it) from the Southern United States (Tolnay, 2003). As such, we have *culturally tailored* much of our program to fit the needs of this population. Our patient empowerment classes were designed based on qualitative research among African American diabetes patients on the South Side of Chicago (Peek et al., 2008; Peek et al., 2009; Peek et al., 2010), and in consultation with a panel of experts that included community members with diabetes. We tailored the educational content, SDM training, to a teaching style (e.g., use of narrative, or storytelling) to fit the needs of the population (Goddu et al., 2012; Peek, Harman, et al., 2012; Raffel et al., 2012). Similarly, we developed a bank of over 800 text messages for our mobile technology program with the help of a certified diabetes educator, who had worked on Chicago's South Side for decades, and several African American diabetes patients (Dick et al., 2011; Nundy et al., 2012). Our CFPP incorporates components that culturally resonate with African Americans (e.g., incorporation of line dancing and zumba classes, the use of local African American fitness celebrities, the use of a “passport” whose design includes images of African Americans engaging in physical activity). Our community cooking demonstrations use African American chefs who are able to showcase traditional African American foods prepared in healthy, diabetes-friendly ways.

Government, Policies, Large Systems

Ecological Model—The ecological model also recognizes that macro-level factors, such as governmental agencies, policies, and large systems, can significantly affect individual behavior change (Fisher et al., 2002; Sallis et al., 2008). For example, diabetes education has long been a key recommendation of the American Diabetes Association (2012) in their annual treatment guidelines, but it remains significantly underfunded by health insurers

(U.S. Department of Health and Human Services, 2011). Moreover, a recent review of insurance plans (private and federal) found that coverage of support for diabetes self-management in general was minimal, with the exception of services such as nurse phone lines for patient calls (Carpenter, Fisher, & Greene, 2012). However, the health policy landscape is changing in ways that will facilitate support of diabetes care. For example, in January 2014, the Centers for Medicare and Medicaid Services will provide Medicaid reimbursement for preventive health services by nontraditional health providers (e.g., community health workers), provided that the services have been recommended by a physician or other licensed health professional (Centers for Medicare and Medicaid Services, 2013). Other reimbursement changes (e.g., global payment systems, accountable care organizations) with the implementation of the Accountable Care Act will support a greater emphasis on prevention among persons with diabetes, including behavioral changes that enhance disease control and reduce complications. Our team has been part of the Alliance to Reduce Disparities in Diabetes and, through this Alliance, has helped share and promote lessons learned with state and federal health policy makers. We have participated in webinars, conferences, and individual meetings to talk about the importance of health policy changes to support behavioral changes and diabetes self-management. In 2012, the Alliance to Reduce Disparities in Diabetes hosted a Diabetes Summit in Washington, D.C., cosponsored by the Office of Minority Health and the Division of Diabetes Translation of the Centers for Disease Control and Prevention, with the goal of having a national conversation with multiple stakeholders about critical health policy changes needed to improve the health and reduce disparities among vulnerable populations with diabetes (e.g., racial/ethnic minorities). One of the key messages at the Summit was the importance of insurance reimbursement for community health educators.

Summary and Conclusions

In a 2013 Consensus Report, Marrero et al. described a “21st-century” approach to behavioral medicine that acknowledges the complexities of behavior change and highlights the importance of using a multitude of strategies and systems to support behavior change among persons with diabetes. Patients, rightly so, are usually the core focus of behavioral interventions, and we need to spend significant time identifying ways to modify health beliefs, enhance self-efficacy, and change cultural norms regarding behavioral change. Yet patients live in social communities of families, friends, and peers, whose support can prove invaluable to patients initiating or sustaining behavioral changes. Health systems and larger policy changes are now on the cutting edge for influencing individual-level behavior changes. In the South Side Diabetes Project, we have taken a comprehensive “21st-century” approach to supporting behavior change among persons with diabetes, and have evidence that such a strategy is improving the health behaviors and health outcomes of participants.

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Figure 1. Community Events Supporting Lifestyle Behavioral Changes Among Diabetes Patients

NOTE: Clockwise from upper right: K.L.E.O. Food Pantry participant; community leaders of Farmer's Market tours (including a patient class graduate), along with project staffer and state congressman; patient class graduate as a semifinalist in the 2012 Diabetes Cook-Off; Save-A-Lot grocery store tour being led by a dietician/certified diabetes educator; patient class graduate at the Farmer's Market.