

Un programme de gestion autonome culturellement spécifique à l'intention des Afro-américains atteints de diabète de type 2

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Une connaissance insuffisante de l'influence qu'exerce le mode de vie sur les résultats cliniques contribue aux difficultés que vivent de nombreux Afro-américains atteints de diabète de type 2 (DT2). Cette étude pilote axée sur une collectivité confessionnelle avait pour objet une intervention d'éducation à la gestion autonome du diabète (DSME) qui a été menée pendant une période de 12 semaines et qui ciblait des Afro-américains d'âge mûr et plus âgés atteints de DT2. Des données quantitatives ont été recueillies au début de l'étude et au bout de 12 semaines à l'aide de questionnaires et des mesures anthropométriques ont été prises. Des hausses importantes d'adhésion aux médicaments ($p = ,006$), à une alimentation saine ($p = ,009$) et aux soins des pieds ($p = ,003$) ont été relevées. L'intervention a produit un effet significatif du point de vue clinique sur la tension artérielle systolique, les lipides sanguins, l'activité physique et le tour de taille. Les interventions DSME axées sur une collectivité confessionnelle et culturellement spécifique menées auprès de personnes atteintes de DT2 peuvent donner de meilleurs résultats chez les Afro-américains souffrant de cette maladie. Les auteurs discutent de la valeur des interventions communautaires qui visent à changer les comportements de populations atteintes de maladies chroniques, particulièrement celles qui ont été historiquement exclues et/ou mal desservies.

Mots clés : diabète, gestion autonome, activité physique, culturellement spécifique

A Culturally Targeted Self-Management Program for African Americans With Type 2 Diabetes Mellitus

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Inadequate knowledge of the influence of lifestyle on clinical outcomes contributes to the difficulties many African Americans experience with type 2 diabetes mellitus (T2DM). This pilot study examined a 12-week church-based culturally targeted diabetes self-management education (DSME) intervention for middle-aged and older African Americans with T2DM. Quantitative data were collected at baseline and at 12 weeks and included questionnaires and anthropometric measures. There were significant increases in medication adherence ($p = .006$), healthy eating ($p = .009$), and foot care adherence ($p = .003$). The intervention had a clinically significant effect on systolic blood pressure, blood lipids, physical activity, and waist circumference. Church-based culturally targeted DSME interventions may result in improved outcomes for African-American adults with T2DM. The authors discuss the value of community-based interventions that target behavioural changes in populations of chronically ill patients, particularly those who historically have been disenfranchised and/or underserved.

Keywords: diabetes, self-management, physical activity, culture

Introduction

Over three million African Americans in the United States have diabetes (Centers for Disease Control and Prevention [CDC], 2007), and African Americans are twice as likely as Caucasians to experience diabetes complications such as blindness (retinopathy), endstage renal disease, and lower-extremity amputations (Anderson-Loftin & Moneyham, 2000; Blank, Mahmood, Fox, & Guterbock, 2002; CDC, 2007). In the southern United States, African Americans with diabetes have poorer glycemic control and higher blood pressure than Caucasians and are at greater risk for diabetes-related complications and death (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988; Delamater et al., 2001). The disproportionately high rate of diabetes in African-American com-

munities is similar to the disproportionately high rates of other chronic diseases in these communities.

The disparities draw attention to the need for accessible and efficacious programs to improve disease management and reduce the negative impact of chronic diseases like type 2 diabetes mellitus (T2DM) on African Americans (Faridi et al., 2009; Gaines & Weaver, 2006). This presents a challenge to clinicians and researchers who provide services to such populations. We need innovations in the administration and execution of interventional and research protocols that improve the effectiveness of treatments.

This article discusses an innovative approach to the treatment and management of T2DM among African Americans whereby a model is constructed to better serve underserved populations.

Effective self-management of T2DM typically involves a long-term, complex regimen of healthy eating, weight control, medications, blood glucose monitoring, exercise, and stress management (Gould, Kelly, Goldstone, & Gammon, 2001; van Tilburg et al., 2001). Interventions that combine dietary counselling, weight reduction, and physical activity are pivotal in reducing the morbidity associated with T2DM (Gregg et al., 2001).

A published review of 16 community-based interventions found that only half (8 studies) contained representative samples or discussions of populations that have been historically and disproportionately burdened by diabetes (African and Mexican Americans, American Indians, and Native Hawaiians) (Satterfield et al., 2003). The value of community-based, culturally tailored interventions has been demonstrated in international populations for many years (Long, 1978; Ockene et al., 2012) but has gained renewed popularity recently (Collins-McNeil, Holston, Edwards, Benbow, & Ford, 2009).

Diabetes self-management behaviours are influenced by culture and lifestyle, including food choices (Gould et al., 2001). In particular, impediments to self-management by African Americans with diabetes include poor understanding of the relationship between diabetes and diet; poor psychological adjustment; denial that diabetes is a serious condition; and lack of confidence, coping skills, and competence (Gould et al., 2001; Grey, Boland, Davidson, Li, & Tamborlane, 2000). In addition, negative attitudes and emotional distress such as depression and anxiety can contribute to poor diabetic control (Hill-Briggs et al., 2005; Houston, Martin, Williams, & Hill, 2006; Jiang et al., 2003).

In designing interventions for underserved populations such as African Americans with T2DM, it is important to draw on natural points of connection and sources of social support such as the church. From the time of slavery through the civil rights movement of the 1950s and 1960s

to the local organizing that characterized the 1990s, the church has been a central institution in the African-American community (Markens, Fox, Taub, & Gilbert, 2002). African-American churches in the South now provide a wide range of prevention- and treatment-oriented programs that contribute to the psychological and physical well-being of their congregants (Blank et al., 2002; Sbrocco et al., 2005). Thus, church-based diabetes self-management programs may be an effective resource for African Americans.

The study reported on here examined the feasibility of conducting a church-based diabetes self-management education (DSME) program and its effects on the appraisal of diabetes self-management; level of self-care management; emotional distress; glycemic control (HbA1C); and blood pressure, lipid levels, waist circumference, and weight.

Methods

Setting and Sample

The 12-week DSME intervention was piloted with 12 African Americans ($n = 10$ women; $n = 2$ men) in the southeastern United States. Quantitative data were collected at baseline and at 12 weeks. Qualitative data were collected in a focus group at the conclusion of the study. Participants had to self-identify as African American, have a medical diagnosis of T2DM, demonstrate written or verbal comprehension, and sign or make a witnessed mark indicating consent. All had to provide a statement of medical clearance from their health-care provider and remain under the care of their provider for the duration of the study.

The study was approved by the Duke University Institutional Review Board. Incentives for participants consisted of payments of \$20 at the initial and final assessment.

Intervention

The DSME intervention was developed by advanced practice registered nurses (RNs), nurse scientists, psychologists, physicians, and certified diabetes educators in collaboration with three local pastors. The program focused on seven areas of T2DM self-care: (1) healthy eating, (2) being active, (3) monitoring blood glucose, (4) taking medications, (5) problem-solving, (6) reducing risks, and (7) healthy coping. The program included both educational and behavioural strategies directed towards helping patients to achieve self-management goals.

DSME modules were adapted from the Duke University Outpatient Adult Diabetes Education Program, which is based on the standards of diabetes care recommended by the American Diabetes Association (ADA) and the American Association of Diabetes Educators. Sessions

were held once a week for 2 hours over 6 weeks and were led by health-care providers and clerics. Culturally targeted written materials, videotapes, and presentations by racially concordant health-care providers and research staff were also provided. After the sessions were completed, participants were asked to practise self-management behaviours independently for 6 additional weeks.

The *healthy eating* module included education on the diabetes diet, label reading, meal planning, carbohydrate counting, controlling dietary fats, portion sizes, and keeping food logs to identify barriers to healthy eating. Culture-specific meals (participants selected the menu) were prepared using recipes from the *New Soul Food Cookbook for People With Diabetes* (Gaines & Weaver, 2006). Participants selected the appropriate portion sizes and documented their food intake using logs.

The *being active* module focused on aerobic exercises and overall fitness, weight management, and blood glucose control. Participants kept weekly exercise logs. Group discussions included barriers to being active, types of physical activity (walking, work-related exercise, recreational physical activities, group exercises, and community-based exercise programs), and cultural preferences for physical activity. Participants contracted with program staff and clergy to perform the physical activity of their choice for a minimum of 30 minutes three times a week. Participants also wore a standard pedometer.

The module on *self-monitoring of blood glucose* included education about equipment choice and selection, timing and frequency of testing, target values, and interpretation and use of results. Each participant received a new glucometer and two strips per day for the 12-week intervention period. Participants checked their glucose levels and blood pressure weekly under the guidance of an RN research assistant (RA). All readings were verified by the RA.

The *taking medications* module targeted diabetes-specific medications and their actions, side effects, and toxicity. One-on-one medication education sessions were also held with each participant to review prescribed medications and assess the participants' knowledge of their medications, the effects of missed or delayed doses, and proper storage of medications.

The module on *problem-solving* skills (Grey et al., 2000) was designed to help participants to choose healthy foods or establish an exercise regimen and make appropriate decisions about diet, physical activity, and medications on sick days or when they had high or low blood-glucose readings. Participants also discussed problem-solving strategies for issues such as family relationships, lack of support, budgeting for medications and food, the cost of glucometer strips, over-eating, and avoiding low and high blood sugar.

The *risk-reduction* module included ways to reduce risk behaviours such as smoking and the importance of regular eye, foot, and dental examinations. Participants were taught how to identify the need for a referral and how to make a list of their questions or concerns in order to improve communication with their providers. They received instruction in foot care and were required to perform demonstrations of proper foot care. Finally, participants had 1-hour sessions with the study's endocrinologist to ask questions about their personal health, fears, and various cultural mores and folk treatments for diabetes.

The *healthy coping* module included education on psychological distress and ways in which it directly affects health and influences motivation to keep diabetes under control. Participants received instruction in recognition of mood changes and on symptoms of anxiety and depression.

The emotion-focused coping modules included strategies to help participants reduce the emotional distress caused by stressful events and manage emotions that might result from stressors. Strategies included sharing personal stories and feelings related to diabetes self-management, deep breathing exercises, mental imagery, biblical stories and examples, scriptural readings, prayers, and songs. The stress-management modules included use of cognitive and behavioural skills to recognize and reduce stress and instruction in progressive muscle relaxation (PMR) (Surwit et al., 2002). A licensed clinical psychologist taught participants to consecutively tense and relax muscle groups in the body, starting with the feet and progressing to the head. PMR was also combined with techniques such as deep breathing and mental imagery specific to African-American culture.

Spiritual coping was integrated into all sessions. Participants were able to interact directly with clerics or trained spiritual counsellors regarding their feelings, beliefs, and attitudes about diabetes self-care practices and individual problem-solving. All intervention sessions opened and closed with prayer. Activities included reading of scriptures, praise and worship, prayer, meditation, and group exercises in faith, trust, and forgiveness.

Variables and Their Measurement

The Diabetes Self-Care Practices Measurement Questionnaire (DSCPM) (Skelly et al., 2000) was used to collect date of birth, marital status, years of education, race/ethnicity, gender, employment, annual income, and health-care payer. It also assessed healthy eating, medication-taking, physical activity, self-monitoring of blood glucose, and foot care.

Respondents were asked how frequently they engaged in these practices using five responses ranging from *never* (0%) to *all of the time* (100%). Physical activity was measured by self-reported frequency of the activity/week, duration, type of activity, and intensity (slow or brisk). Cronbach's alpha for the DSCPM has been reported to be 0.88 and test-retest reliability .95 measured at 2-week intervals (Skelly, Marshall, Haughey, Davis, & Dunford, 1995).

The Self-Appraisal Diabetes Self-Management Scale (SADSM) developed for this study was a visual analogue scale (VAS) with a horizontal line 100 mm in length. Participants marked on the line the point that represented their perception of their current state of diabetes self-management. The VAS score was determined by measuring the millimeters from the left-hand end of the line to the point marked by the participant (Gould et al., 2001). The VAS measured self-appraisal of diabetes self-management in the past month; scores ranged from 1 to 10, with 1 (10 mm) representing very poor self-management and 10 (100 mm) very good self-management.

The 20-item Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977) was used to assess depressive symptoms. CES-D scores can range from 0 to 60, with scores of 16 or higher indicating clinical depression (Jiang et al., 2003). The CES-D has been shown to be reliable for assessing the number, types, and duration of depressive symptoms across racial, gender, and age categories (Jiang et al., 2003; Radloff, 1977). Good internal consistency has been reported, with Cronbach's alpha coefficients ranging from .85 to .90 (Jiang et al., 2003). Concurrent validity and substantial evidence of construct validity have been demonstrated using clinical and self-report criteria (Jiang et al., 2003; Knight, Williams, McGee, & Olan, 1997).

The Spielberger State Anxiety Subscale from the Spielberger State-Trait Anxiety Inventory (STAI) was used to measure anxiety symptoms (Patterson, O'Sullivan, & Spielberger, 1980). The STAI-State (STAI-S) is a 20-item self-administered scale that measures current general anxiety level. Responses to each item are scored from 1 to 4, with total scores ranging from 20 to 80 and higher scores indicating more anxiety. The STAI has been shown to have excellent psychometric properties for assessing anxiety in elderly persons and in African Americans (Knight, Silverstein, McCallum, & Fox, 2000; Patterson et al., 1980).

Perceived stress was measured using the Perceived Stress Scale (PSS) (Cohen et al., 1983), a validated 10-item global measure of the degree to which situations in one's life are perceived as stressful. Scores range from 0 to 16. This measure has been used successfully with diverse samples and is psychometrically sound (Cohen & Williamson, 1988).

Anthropometric measurements were taken at baseline and at 12 weeks by trained advanced practice nurses. Height was measured without shoes to the nearest 0.1 cm. Body weight was obtained on a balanced scale. Body mass index (BMI) was calculated by dividing body weight (in kilograms) by the square of height (in metres). Waist circumference was measured in duplicate using a measuring tape. Measurements were taken at the natural waist or at the midpoint between the bottom of the rib cage and 2 cm above the top of the iliac crest. Two measurements were made for each participant. Duplicate measurements were taken to the nearest 0.1 cm and repeated if they differed by more than 0.50 cm. The average of two or three readings was used for the analysis. Systolic and diastolic blood pressures were collected from an average of three sitting blood pressure readings done by RNs following standard procedures.

Participant logs were used to record anthropometric measures and labs during the study period, including total cholesterol (TC), low-density lipoproteins (LDL), high-density lipoproteins (HDL), triglycerides (TG), hemoglobin A1c (HbA1C), capillary blood glucose, BMI, systolic blood pressure (SBP), diastolic blood pressure (DBP), and waist circumference. RAs obtained all anthropometric measures except for capillary blood glucose. Participants measured glucose levels weekly under the supervision of RNs as part of the intervention.

Glycemic control was measured by fasting HbA1c levels at baseline and at 12 weeks. Using a standard finger-stick technique, capillary blood was collected into a capillary-collection vial (AccuBase A_{1c}Test Kit™), which was stored at 4°C. Blood samples were shipped for processing to Diabetes Technologies, Inc. (Thomasville, GA), a reference laboratory certified by the Clinical Laboratory Improvement Advisory Committee (CLIA) and Centers for Medicare and Medicaid Services. Fasting lipids (TC HDL, LDL, and TG) were measured using the Cholestech L-D-X System (CHOLESTECH Corp., Hayward, CA) at baseline and at 12 weeks; the Cholestech L-D-X is a CLIA-waived device.

Results

The participants were 12 adults aged 35 to 68 years (55.83 ± 9.62). Half were high-school graduates and one was a college graduate. Six were unmarried. Eight reported an annual household income of over \$30,000.

At baseline, all 12 participants had TC levels within the recommended range (163.08 ± 57.81 mg/dL), with HDL levels (38.62 ± 11.54 mg/dL) below the recommended range and LDL (105.08 ± 46.21 mg/dL) levels above the recommended level of < 100 mg/dL. Mean BMI (35.92 ± 6.9 kg/m²) met the national diagnostic criterion for Class II Obesity

(BMI ≥ 34.9 kg/m²) (NHLBI, NIH, 2000). Mean HgbA1c level at baseline was $7.56\% \pm 1.26$, indicative of poor glycemic control. Mean waist circumference at baseline was 112 ± 14.2 cm. Physical activity levels (days exercised, moving large muscle groups, for 30 minutes or more) were lower (2.76 ± 2.0 days) than the 150 minutes per week recommended by the ADA (2007).

After the intervention, there was a mean change of 9mmHg in SPB, a reduction of 10 mg/dL in LDL, an increase of 4mg/dL in HDL, and a reduction of 26 mg/dL in TG. Participants also had an average reduction in waist circumference of 5.3 cm and an average weight loss of 2.2 pounds. Participants' physical activity increased (3.58 ± 1.62 days) and three participant logs indicated increases in brisk mall walking, up to 4 miles three times a week by week 9 of the intervention. There were no significant changes in physical activity or in the anthropometric measures (Table 1).

Variable	Baseline	Post-intervention
Hemoglobin A1C	$7.56 \pm 1.26\%$	$7.73 \pm 1.23\%$
Self-monitored blood glucose (non-fasting)	168 ± 70	128 ± 75
Total cholesterol	163.08 ± 57.81 mg/dL	199.42 ± 78.21 mg/dL
HDLs	38.62 ± 11.54 mg/dL	42.92 ± 15.13 mg/dL
LDLs	105.08 ± 46.21 mg/dL	96.42 ± 41.81 mg/dL
Triglycerides	258.83 ± 143.10 mg/dL	226.25 ± 143.99 mg/dL
SBP	132.77 ± 11.21 mmHg	123.67 ± 12.0 mmHg
DBP	72.46 ± 8.75 mmHg	73.58 ± 9.45 mmHg
BMI	36.0 ± 7.0 kg/m ²	35.6 ± 6.7 kg/m ²
Weight	211.2 ± 44.0 lb	209.0 ± 42.0 lb
Waist circumference	112 ± 14.2 cm	$106.8 \text{ cm} \pm 13.1$ cm
Physical activity days	2.76 ± 2.0 days	3.58 ± 1.62 days
<i>p</i> = .05		

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Based on CES-D scores, the participants did not meet the criteria for clinical depression at baseline (CES-D < 16; 10 ± 7.56) or post-intervention. Participants had lower depressive symptom scores post-intervention (CES-D < 16; 8.75 ± 8.49) but the difference was not significant. Participants had low anxiety scores both at baseline (STAI; 25.83 ± 4.69) and-post intervention (STAI; 24.08 ± 11.76). There was no significant difference between baseline and week 12 scores. Participants had moderately high perceived stress levels (PSS; 13.67 ± 7.57) at baseline. They had lower perceived stress levels post-intervention (PSS; 10.25 ± 7.87) but the difference was not significant.

At baseline, seven participants scored their diabetes self-management as very good (80–100 mm), two as fair (40–50 mm), and three as very poor (10–20 mm). At week 12, 10 participants scored their self-management as very good (80–100 mm), one as good (60–70 mm), and one as very poor (10–20 mm). There were no significant differences in perceived self-management.

At the conclusion of the study, participants showed significant improvements in adherence to diabetes self-management practices, including medication and insulin administration ($\chi^2 = 14.38, p = .006$; Cramer's V = .85, $p = .006$), diet ($\chi^2 = 26.67, p = .009$; Cramer's V = .94, $p = .009$), and foot care self-care practices ($\chi^2 = 25.57, p = .003$; Cramer's V = .83, $p = .003$). However, there were no significant differences in physical activity and glucose monitoring (Table 2).

Self-care	Adherence (n)						p
	Baseline			Post-intervention			
		50-100%	0-25%		50-100%	0-25%	
Medicines	9	9	0	10	10	0	.006*
Diet	8	7	1	11	10	1	.009*
Foot care	12	10	2	12	11	1	.003*
Self-monitored blood glucose	12	7	5	12	10	2	.1
Physical activity	11	5	6	12	11	1	.5

*p = .05

Feasibility and acceptability of the intervention were assessed by examining recruitment, retention, and attendance rates. A total of 13 participants were recruited for the study but one left the study due to hospitalization. The retention rate was thus 87% ($n = 12$) for the 12-week study period. Eight participants had 100% attendance at study sessions. Reasons for absences were unrelated to the intervention (e.g., automobile accidents, birth of a premature grandchild, caregiver to sick aging parent, hospitalization).

Audiorecordings of focus groups indicated that the majority of participants were receptive and that they found the church-based culturally targeted diabetes management intervention acceptable. The collaborative work of minority health-care providers (advanced practice nurses, a clinical psychologist, certified diabetes educators, and a board-certified endocrinologist) and clergy was evaluated by asking participants what they liked or disliked about the program. One participant responded, "I liked that the program was just for me, you know, that it taught me about my diabetes and how it affects me as an African American and what changes I need to make in my life." Another participant commented, "I like the group setting at the church and I hope the church continues the program as a support group." Requests to continue the sessions were received from both study participants and church congregants with diabetes who were not able to enrol in the study. Additionally, the first author has received requests from other churches for the program. Thus, team members and clergy concluded that the church-based culturally targeted DSME was well received.

Discussion

This study tested the feasibility of a church-based culturally targeted diabetes self-management intervention for African-American adults with T2DM. The results indicate that interventions focused on DSME, physical activity, behavioural management, and emotional regulation can be implemented in the community and can lead to improvements in self-care management, emotional distress, and physical health in African-American adults with T2DM. The study also reaffirms a history of investigations that are indexed by published reviews demonstrating the value of tailored interventions for populations that are not well served by standard interventions implemented in traditional medical settings (Satterfield et al., 2003).

Although changes in participants' anthropometric measurements were not statistically significant, clinically relevant changes were noted in systolic blood pressure and lipid levels. To our surprise, we saw trends for increasing HbA1c from time 1 to time 2 evaluations. Previous studies

have shown that in the general population a reduction in SBP as small as 5mmHg can lead to a 14% reduction in mortality due to stroke, a 9% reduction in mortality due to coronary heart disease (CHD), and a 7% decrease in all-cause mortality (Whelton et al., 2002). Multiple studies have shown that a reduction in LDL can lead to a decrease in mortality due to CHD (National Cholesterol Education Program Expert Panel, 2002). Thus if culturally targeted, church-based interventions such as this were shown to be successful with larger samples, the effects on SBP and lipids could have significant implications for reducing the risk of CHD and stroke in African Americans.

Changes in physical activity were not statistically significant. However, the majority of participants ($n = 9$) reported meeting their goal of performing physical activity at least 90 minutes a week (30 minutes 3 times/wk) at 12 weeks. Participants indicated that they preferred group physical activities to individual exercises. They also attributed their being active to the support they found in their DSME group meetings and the support they received from their church.

These middle-aged and older African-American adults with T2DM did not have clinically relevant anxiety or symptoms indicative of clinical depression, though they had moderately high levels of perceived stress at baseline. Their anxiety and depressive symptom scores and perceived stress were lower post-intervention. These findings are consistent with those of Steinhardt, Mamerow, Brown, and Jolly (2009), who found that African Americans with T2DM who participated in a church-based resiliency training intervention showed no significant changes in depressive symptoms and perceived stress scores but did report decreases in stress and depressive symptoms post-intervention. Additional prospective investigations are needed to better understand the role of culturally targeted, church-based interventions in managing psychological distress in African Americans with T2DM.

Surprisingly, at baseline the majority of participants in the study perceived themselves as managing their diabetes despite their high BMI and high glycemic and lipid indexes. This suggests that the perception of "good" self-management in African-American adults with T2DM may not fit with the outcome indices used by most health-care providers. Qualitative studies may be needed to explore perceptions of quality self-management in African Americans with T2DM.

The limitations of this study include the small, non-randomized sample, the limited range of demographics of the sample, and the lack of a control group. In addition, some of the data were based on self-report, and the SADS scale did not have test-retest data. Further, some outcomes, including HbA1C, did not improve. However, in general the outcomes of this study are encouraging for the use of culturally tailored,

community-based interventions to promote quality diabetes self-management behaviours among African-American adults with T2DM. We sacrifice external validity (generalizability to other populations) in this pilot study for high internal validity and the ability to build models directly for African Americans. It is particularly noteworthy that participants showed decreases in SBP, lipid levels, and waist circumference and an increase in physical activity. However, replication of the study with a larger sample and a control group are necessary to more definitively evaluate the effectiveness of this community church-based DSME intervention in improving diabetes self-management behaviours in African-American adults. In the meantime, the results clearly show the importance of collaborating with pastors or other recognized community leaders to ensure that interventions targeting behavioural change are feasible and acceptable to vulnerable populations such as African Americans with T2DM.

We lastly note that it is also important to replicate our findings with other disenfranchised and underserved national and international populations, with the goal of producing additional information for the development of culturally tailored, community-based interventions. The church, as we modelled it for African Americans in the present study, may be an appropriate venue for the promotion of health for some populations. We suggest that a temple, a mosque, a home, or an outdoor public space could be more appropriate for others. Studies conceptualized, conducted, and consumed in a cultural context are needed, to increase the effectiveness of such interventions for the multitude of populations that do not respond to generalized interventions.

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