

PSYCHOMETRIC PROPERTIES OF THE FAMILY SUPPORT SCALE ADAPTED FOR AFRICAN AMERICAN WOMEN WITH TYPE 2 DIABETES MELLITUS

Objective: The purpose of our study was two-fold: 1) adapt and test a social support measure specific to the experiences of African American women with type 2 diabetes mellitus (T2DM); 2) examine its relationship to psychosocial measures.

Research Design and Methods: 200 rural African American women with uncontrolled T2DM participating in a randomized controlled trial completed surveys at baseline on their social support, empowerment, self-care, self-efficacy, depression and diabetes distress. Exploratory factor analysis and correlation analysis were conducted to test the psychometric properties of the Dunst Family Support Scale adapted for AA women with T2DM (FSS-AA T2DM) and its relationship with other psychosocial measures.

Results: The 16 items of the FSS-AA T2DM loaded onto three distinct factors: parent and spouse/partner support, community and medical support, and extended family and friends support. Reliability for the entire scale was good (Cronbach's $\alpha = .90$) and was acceptable to high across these three factors (Cronbach's α of .86, .83, and .83 respectively). All three factors were significantly correlated with self-reported empowerment, self-care, self-efficacy, depression and diabetes distress, although the pattern was different for each factor. FSS-AA-T2DM showed good concurrent validity when compared with similar items on the Diabetes Distress Scale.

Conclusion: The FSS-AA T2DM, a 16-item scale measuring social support among rural African American women with T2DM, is internally consistent and reliable. Findings support the utility of this screening tool in this population, although additional testing is needed with other groups in additional settings. (*Ethn Dis.* 2015; 25[2]:193-199)

Key Words: Social Support, Diabetes, African American, Women

From School of Social Work, College of Human Ecology (KL), and Brody School of Medicine and Center for Health Disparities (DC), and Department of Psychology, Health Psychology Program (LL, CS), East Carolina University, Greenville, North Carolina.

Address correspondence to Kerry Littlewood, PhD, MSW; Assistant Professor of Social Work; School of Social Work College of Human Ecology; East Carolina University; Greenville, NC 27858; 252.737.2117; littlewoodk@ecu.edu

Kerry Littlewood, PhD, MSW;
Doyle M. Cummings, PharmD, FCP, FCCP;
Lesley Lutes, PhD; Chelsey Solar, MS, EdS

INTRODUCTION

Several studies have documented the positive relationship between social support and diabetes-related health outcomes and self-management behaviors. Griffith et al found that under high stress conditions, patients with high levels of social support exhibited better glycemic control than those with lower social support.¹ Other studies have found that social support is a significant predictor of self-care behaviors, including dietary adherence, glucose testing and medication adherence.^{2,3}

However, social support is experienced differently in the African American community. For example, African Americans have shown a greater reliance on informal social networks and a deep commitment to family support and extended kinship support for those with diabetes.^{4,5} Samuel-Hodge et al also identified the specific role of caring for multiple family members in African American households as a significant issue.⁶ African Americans have also scored higher than other racial and ethnic groups on social support measures.⁷ Despite ethnic differences, few studies have examined the specific role of social support in diabetes self-management among rural African American women. Better knowledge of the ways in which social support operates is needed for enhancing culturally relevant diabetes patient self-care, adherence to professional advice, and helping to improve outcomes.⁸ A major limitation in this field remains the lack of culturally relevant measurement tools that are sensitive to these issues. In a systematic review involving multiple measures, Van Dam et al could not identify the most effective components

We investigated the psychometric properties of an adapted version of the Dunst Family Support Scale (FSS), a strengths-based measure extensively used with African American women, to assess diabetes-specific social support.^{9,10}

of social support or the optimal amount of support for diverse populations.⁸ Furthermore, no clear cut-off points for optimal social network size, optimal amount or best kind of social support, or most effective components of it, could be concluded. Of particular note, no measure asked the participant to specifically assess how helpful people in a patient's life have been in helping them manage their diabetes. To address these limitations, we investigated the psychometric properties of an adapted version of the Dunst Family Support Scale (FSS), a strengths-based measure extensively used with African American women, to assess diabetes-specific social support.^{9,10}

METHOD

Participants, Procedures, and Data Collection

The participants of our study were enrolled in a year-long randomized clinical trial examining the impact of a

Table 1. Baseline characteristics of the EMPOWER diabetes project participants (N=200)^a

Parameter	Intervention Group (n=100)	Control Group (n=100)
Age, years	52 ± 1.2	54 ± 1.0
≤High school education, %	48	47
<\$30,000 annual income, %	75	82
BMI	37 ± .8	38 ± .9
HbA1c	9.1 ± .2	9.1 ± .2
Blood pressure, systolic/diastolic	133 ± 2.1/84 ± 1.2	135 ± 2.0/84 ± 1.1
Duration of diabetes-self-reported, years	10.5 ± .7	10.9 ± .9
Diabetes distress score	2.6 ± .1	2.7 ± .1
Self-care score	3.2 ± .1	3.5 ± .10
Self-efficacy score	6.3 ± .3	6.5 ± .3
Morisky medication adherence score	5.2 ± .2	5.4 ± .2
CES-D depression score	7.3 ± .4	7.0 ± .4
FSS-AA	1.94 ± 1.16	2.26 ± 1.22

^a Data are mean ± SD unless noted otherwise.

community-health worker led intervention using small changes in diet and physical activity vs a mail-based education program to help African American women with uncontrolled diabetes (The EMPOWER Trial). The design, rationale, and baseline characteristics from the EMPOWER study have been outlined in detail and previously published.¹¹ However, a brief explanation is provided here.

Study participants included rural adult (aged 19–75 years) African American women with a medical record diagnosis of type 2 diabetes mellitus and a HbA1c at the time of enrollment that reflects inadequate glycemic control (HbA1c ≥ 7.0), recruited from regional primary care practices and from community-based programs. Exclusion criteria included a diagnosis of advanced disease (eg, end stage renal disease, advanced heart failure, blindness, metastatic cancer), and the presence of alcoholism or major psychiatric disease that would preclude active participation. Table 1 includes the baseline characteristics of this study. Following completion of a comprehensive baseline assessment, participants were randomized to receive either a 16-session, phone-based, small changes treatment intervention delivered by community

health workers or receive 16 mailed sessions related to diabetes care and management. The primary outcomes were HbA1c and weight between groups at 12 months. Secondary outcomes included blood pressure, self-reported dietary and physical activity patterns, and psychosocial measures including diabetes, empowerment, distress, depression, self-care, social support, medication adherence, and life satisfaction. While these measures were all used to examine differences between the groups at 12 months, for the purposes of our study, only the Dunst family support scale and its adaption are outlined in detail.

The Family Support Scale

The original Dunst Family Support Scale (FSS) was designed to measure the helpfulness of various sources of support including family, friends, social groups, professional agencies, and service providers.⁹ The scale consists of 18 items and requires participants to rate the level of perceived helpfulness on a 5-point Likert scale ranging from “not at all helpful” to “extremely helpful” and has been demonstrated to be both valid and reliable.¹² Higher scores on the FSS indicate greater amounts of perceived social support.⁹

Adaptation of the FSS for African American Women with T2DM (FSS-AA)

Two major adaptations were made to the FSS to use with African American women with T2DM. First, the directions were revised to ask the same question as the original FSS, but asked participants to specifically rate how helpful sources of support have been in managing their diabetes (instead of raising children). The second adaptation revised the sources of support to include diabetes specific sources, instead of caregiving sources. Item generation was guided by the articulated conceptualization of social support from local patients and from previous research, discussion about potential items not adequately represented in the literature, and seeking feedback from experts and lay people. Using a qualitative approach, six African American women who serve as Community Health Workers (three with T2DM), participated in a focus group to inform the item generation during training for the EMPOWER trial. The women were given the original scale and asked to identify items that would capture sources of social support for T2DM. The goal was to review the existing scale and generate items to ensure content validity through participant agreement by including items that were theoretically connected to the conceptualizations. Participants agreed to remove items if they only dealt with caregiving for children and items were added to include sources of support specific to diabetes management. The following items were removed: other parents, parent groups, early childhood intervention program, and school/day care provider. These items were added: family members with diabetes, friends with diabetes, regular (primary care) physician, urgent/emergency care physician, and nutritionist/dietician.

In total, 16 items were generated. We used the same Likert response scale which included: 0 = not available,

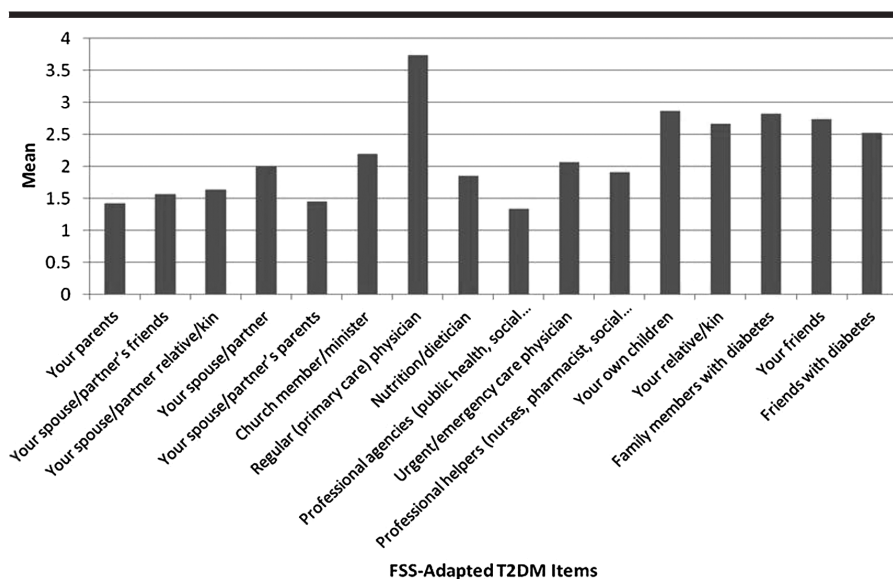


Fig 1. Item means for the FSS-AA T2DM

1 = not at all helpful, 2 = sometimes helpful, 3 = generally helpful, 4 = very helpful, 5 = extremely helpful. In a pilot test, the adapted measure was self-administered to the six African American community health workers before being used in the EMPOWER study. Before using the measure for the trial, the FSS-AA was reviewed by the EMPOWER trial multidisciplinary research team, including faculty in medical, behavioral and social disciplines.

Other Psychosocial Measures

Other psychosocial measures were used to assess construct validity. Psychosocial outcomes were measured using validated questionnaires to assess: diabetes attitude/empowerment; diabetes distress/psychosocial stress; self-efficacy to perform self-management behaviors; depression, subjective norms, locus of control, and life satisfaction/subjective well-being.¹³⁻¹⁹

Statistical Analysis

After data collection, the data were entered into the Statistical Package for the Social Sciences for Windows (SPSS Version 20.0, IBM). Several quality control measures were taken before

analyzing the data. Descriptive statistics were computed to ensure the accuracy of data entry and computation. Data were normally distributed and missing values constituted less than 5% on each item in the survey and did not reveal patterns of systematic error.

Exploratory factor analysis (EFA) was conducted on the items in the FSS-AA T2DM to examine the relationships between scale items and to determine the number of factors present within the scale. Before conducting EFA, bivariate correlations were used to assess the relationship between items. Acceptable internal consistency between the items was based on Cronbach's α coefficient of $\geq .70$.²⁰ Principal components extraction with varimax rotation was conducted on the 16 items of the FSS-AA T2DM to estimate the number of factors present. Orthogonal rotation with Kaiser normalization was used because of the expected consecutive nature of the factors. A maximum of 25 iterations was allowed for scale convergence. Eigenvalues of >1.0 were used to define each factor. All items were retained in the scale with Eigenvalues >1.0 and the structure coefficient was $\geq .50$.²¹ To examine consistency

over time, we assessed the test-retest reliability coefficient using the baseline, six month and 12 month FSS-AA T2DM scores and compared two time periods (baseline to six month and six month to 12 month). To explore the relationship between FSS and the other psychosocial measures, we constructed and tested Pearson correlations.

RESULTS

Figure 1 displays the item means for the FSS-AA T2DM. Participants rated their regular or primary care physician as providing the most adequate support, ($x^2 = 3.74, \pm 1.34$), followed by their own children ($x^2 = 2.86, \pm 1.89$), family members with diabetes ($x^2 = 2.82, \pm 1.88$), and friends ($x^2 = 2.74, \pm 1.70$). Those items rated as providing the least adequate support were professional agencies ($x^2 = 1.33, \pm 1.84$), parents ($x^2 = 1.42, \pm 1.92$), and spouse/partner's parents ($x^2 = 1.45, \pm 1.95$).

The exploratory factor analysis demonstrated the multidimensional structure that was anticipated in this study. As indicated in Table 2, the 16 items of the FSS-AA T2DM clustered in 3 distinct factors, explaining 62% of the total variance. Five items loaded in Factor 1 (coefficients .43 to .88) and pertained to sources of social support from the participant's parents, spouse/partner's parents, spouse/partner relative/kin, spouse/partner, and spouse/partner's friends. Six items loaded in Factor 2 (coefficients .55 to .81) and pertained to sources of social support including: the participant's church member/minister, regular (primary care) physician, urgent/emergency care physician, nutrition/dietician, professional helpers (nurses, pharmacist, social worker), and professional agencies (public health, social services, mental health). Five items loaded in Factor 3 (coefficients .46 to .79) referred to: the participant's family members with diabetes, friends

Table 2. Factor structure of FSS-AA T2DM

Item	Factors		
	1	2	3
Factor 1. Parent and spouse/partner support			
Your parents	.427	.043	.315
Your spouse/partner's friends	.704	.106	.417
Your spouse/partner relative/kin	.864	.173	.209
Your spouse/partner	.831	.161	.188
Your spouse/partner's parents	.878	.147	.133
Factor 2. Community and medical support			
Church member/minister	.109	.545	.385
Regular (primary care) physician	-.009	.555	.190
Nutrition/dietitian	.134	.734	.271
Professional agencies (public health, social services, mental health)	.159	.780	.077
Urgent/emergency care physician	.288	.797	.013
Professional helpers (nurses, pharmacist, social worker)	.090	.814	.220
Factor 3. Extended family and friends support			
Your own children	.372	.175	.464
Your relative/kin	.369	.206	.679
Family members with diabetes	.216	.225	.706
Your friends	.300	.168	.781
Friends with diabetes	.111	.271	.793

with diabetes, friends, own children, and relative/kin.

The internal consistency and reliability are given in Table 3. With the retention of all items, the Cronbach's alpha coefficients for Factor 1 (Parent and Spouse/Partner Support subscale),

Factor 2 (Community and Medical Support subscale), and Factor 3 (Extended Family & Friends Support subscale) were .86, .83, and .83, respectively. The overall reliability for the 16-item measure was found to be high ($\alpha = .90$), far exceeding the standard

cutoff of .70 for reliability.²² Test re-test reliability performed with the baseline, six month and twelve month scores showed a coefficient of .69 at each time point.

Correlation analyses with other psychosocial measures are given in Table 4. FSS-AA T2DM scores were positively correlated with diabetes attitude/empowerment, self-care, self-efficacy, and life satisfaction, and negatively correlated with depression and diabetes distress. FSS-AA T2DM scores were also significantly correlated with each component of the self-care measure. The extended family and friends support component was the most significantly correlated component with other psychosocial measures, including empowerment, self-care, self-efficacy, depression, and diabetes distress. FSS-AA T2DM scores were not well correlated with life satisfaction.

To further explore the concurrent validity of the FSS-AA T2DM, we examined how the items related to support from primary care physicians, family and friends related to similar items of the Diabetes Distress Scale (DDS). Table 5 shows how well the items of the FSS-AA T2DM are

Table 3. Internal consistency and reliability for FSS-AA T2DM

Item	Mean	SD	IT	α If Item Deleted
Factor 1. Parent and spouse/partner support (subscale $\alpha = .86$)				
Your parents	1.42	1.92	.39	.90
Your spouse/partner's friends	1.57	1.97	.62	.83
Your spouse/partner relative/kin	1.64	1.90	.66	.81
Your spouse/partner	1.99	2.03	.62	.83
Your spouse/partner's parents	1.45	1.98	.62	.80
Factor 2. Community and medical support (subscale $\alpha = .83$)				
Church member/minister	2.19	1.96	.53	.82
Regular (primary care) physician	3.74	1.36	.36	.83
Nutrition/dietician	1.85	2.08	.59	.79
Professional agencies (public health, social services, mental health)	1.33	1.85	.52	.79
Urgent/emergency care physician	2.07	2.09	.58	.77
Professional helpers (nurses, pharmacist, social worker)	1.91	2.03	.59	.79
Factor 3. Extended family and friends support (subscale $\alpha = .83$)				
Your own children	2.86	1.88	.52	.84
Your relative/kin	2.66	1.73	.66	.80
Family members with diabetes	2.82	1.86	.60	.80
Your friends	2.74	1.70	.66	.79
Friends with diabetes	2.52	1.86	.61	.79

Table 4. Correlation analysis for FSS-AA T2DM with other psychosocial measures

Factors of FSS-AA	Empowerment	Self-care	Self-efficacy	Life Satisfaction	Depression	Diabetes Distress
Parent and spouse/partner support (comp 1)	.142	.156 ^a	.084	.038	-.090	-.093
Community and medical support (comp 2)	.173 ^a	.440 ^b	.099	.481	-.011	-.224 ^b
Extended family and friends support (comp 3)	.211 ^b	.300 ^b	.203 ^b	.141	-.199 ^b	-.265 ^b

^a P<.05.

^b P<.025.

correlated to the DDS. Most items on the FSS-AA T2DM, especially those related to the respondent's family and friends, are well correlated with similar items on the DDS. Items that showed little association were the respondent's parents, spouse or partner's parents, and spouse's partner's relatives/kin.

DISCUSSION

In this study, we describe the adaptation and testing of the FSS-AA T2DM as a tool specifically designed to measure sources of social support for adult African American women with T2DM. Past researchers who have examined social support in these populations have used generic support measures that may fail to capture the unique

sources, forms and characteristics of social support for these women which we believe have implications for accurately targeting treatment interventions. Using a sample of rural African American women with uncontrolled T2DM (N=200), we have identified three important subscales of social support with strong internal consistency and described the relationship between this adapted measure of social support and other psychosocial measures. The brief format and the sound psychometric properties of the FSS-AA T2DM also allow for further testing and validation with other populations, including African American men and women from other cultures.

The FSS-AA T2DM provided information on how rural African American women with uncontrolled T2DM as-

essed the adequacy of specific sources of support for helping to manage their diabetes. Respondents indicated that primary care physicians, their own children, and family with diabetes were the most helpful with disease management. These sources of support were more adequate than the respondent's church or minister, which has historically been a highly

Respondents indicated that primary care physicians, their own children, and family with diabetes were the most helpful with disease management.

Table 5. Concurrent validity: FSS-AA and DDS correlations

	I feel that friends or family are not support enough of my self-care efforts	I feel that friends or family don't appreciate how difficult living with diabetes can be	I feel that friends or family don't give me the emotional support that I would like.
Your parents		-.174 ^a	
Spouse/partner's parents			-.143 ^a
Relative/kin	-.278 ^b	-.320 ^b	-.295 ^b
Spouse/partner's relative/kin			
Spouse/partner	-.154 ^a		-.151 ^a
Friends	-.232 ^b	-.228 ^b	-.253 ^b
Spouse/partner's friends	-.165 ^a	-.179 ^a	-.154 ^a
Own children	-.249 ^b	-.156 ^a	-.228 ^b
Family members	-.264 ^b	-.398 ^b	-.323 ^b
Friends with diabetes	-.146 ^a	-.242 ^b	-.186 ^b
	My doctor doesn't know enough about diabetes and diabetes care.	My doctor doesn't give me clear enough directions on how to manage my diabetes.	I feel that my doctor doesn't take my concerns seriously enough.
Regular physician	-.223 ^b	-.355 ^b	-.325 ^b
			I feel that I don't have a doctor who I can see regularly about my diabetes.
			-.430 ^b

^a P<.05.

^b P<.025.

valued resource for African American families. Perhaps the church is a broad source of support or a vehicle for connecting with other more valuable sources of support, but not as helpful for women in the day-to-day management of their diabetes. Further, church events with desserts and sweet tea may pose particular challenges for these women.

Perhaps most notably, our results suggest that primary care physicians are the most highly valued source of support for these women. It is clear that most patients with type 2 diabetes, especially in rural areas, are managed by primary care physicians and not by subspecialists. Consequently, designing interventions that promote the development of this relationship and investigating ways to leverage the quality of this relationship to improve medication adherence and other self-management behaviors could be helpful for this population. While a physician-based intervention would be optimal, the feasibility for such interventions is limited, given time constraints and high patient demand of primary care physicians. Instead, examining additional/innovative ways to incorporate physician support/endorsement with interventions based out of primary care may have significant potential in this population, without imposing additional burden on the primary care staff. Several recent studies have utilized technology as a means for innovative primary-care based intervention.^{23,24} Other studies have examined the impact of additional team members such as nurse care managers, or community health workers tied with a primary care physician to provide treatment.²⁵ For future interventions, it will be important to know if the perception of social support is unique to the primary care provider or if the perception can be generalized to team-based practice models that are becoming increasingly common for chronic disease care in patient-centered medical homes.

Correlation analysis indicated that the three subscales were related signifi-

cantly to empowerment, self-care, self-efficacy, depression and diabetes distress; yet, these relationships were unique for each of the three factors. This result supports the idea that different types of social support relate with other psychosocial measures in different patterns. Notably, the extended family and friends support component was the factor most correlated with other psychosocial factors. This finding is consistent with other research that has supported the importance of extended families and friends, or fictive kin (people regarded as being part of a family even though they are not related by either blood or marriage bonds), for African American families.⁹ Here again, the local church, a valued social structure in the African American community, may be a vehicle for linkage to these extended family and friends without being the identified source of social support for disease management. Future research could further examine how extended family and friends can be utilized to promote optimal diabetes management.

FSS-AA T2DM showed good concurrent validity because most items on the scale associated with family, friends and doctors were statistically significant to related items on the DDS. Items, which were less correlated, on the FSS-AA T2DM included the respondent's parents, spouse/partner's parents, and spouse/partner's relative kin. This finding seems appropriate because few women were married (33.5%, $n=65$) and with an older mean age of 52 (± 1.2), several women's parents could have been deceased. Test re-test reliability coefficient scores of .69 showed questionable, but close to acceptable reliability. It is possible that this score reflects changes in social support over the course of six months for the women in the study.

There were several limitations in this study. First, the sample was drawn from a rural, Southeastern US area. As with any regional study, researchers should use caution when generalizing the results to other geographical regions. While the

demographic composition of the sample was similar to the regional profile of African American women with T2DM, it is also important to note that these women have the highest prevalence of diabetes in the region, compared to other groups. It is difficult to interpret how this high prevalence affects the validity of the FSS-AA T2DM and its generalizability. Further, the sample included only African American women with uncontrolled type 2 diabetes mellitus ($HbA1c \geq 7.0$). It is possible that different patterns of social support may be important among African American women whose diabetes is under optimal control. Future testing should include samples that are more diverse in terms of sex, race, and disease control.

CONCLUSION

Our preliminary results suggest that FSS-AA T2DM can be useful for assessing social support in the context of helping African American women manage their T2DM. The FSS-AA T2DM not only allows for better understanding of social support, but may also aid in the development of targeted interventions to facilitate social support for African American women. We also need to understand if optimizing social support leads to improvement in biological measures of diabetes control as well as disease outcomes. In conclusion, this adaptation of the Dunst Family Support Scale for African American women with uncontrolled type 2 diabetes mellitus provides an internally consistent and reliable measure of social support.

ACKNOWLEDGMENTS

The authors acknowledge the generous financial support of Bristol-Myers Squibb Foundation's Together on Diabetes Initiative that funded this study. The authors also acknowledge the substantial contributions of our Program Coordinator Dr. Bertha Hambidge, our community health workers—Ms. J. Royal-Burgess, Ms. J. Jordan, Ms. P. Gatlin, Ms. F. Parker, Ms. E. Roberson-Morning,

and Ms. S. Taylor, staff member Ms. T. Kono, research assistants Ms. J. King, Mr. K. Quinn, Mr. E. Soto, Ms. L. Vines, and Ms. S. Williamson, our clinical laboratory scientists Mr. B. Gilpin, Ms. T. Davis, Ms. B. Whitehurst, Ms. N. Johnson and Ms. J. Sanderson, our Research Division supporters Ms. C. Kennedy and Ms. W. Wynne, and our community participants.

REFERENCES

1. Griffith LS, Field BJ, Lustman PJ. Life stress and social support in diabetes: association with glycemic control. *Int J Psychiatry Med.* 1990;20(4):364–373.
2. Wilson W, Ary DV, Biglan A, Glasgow RE, Toobert DJ, Campbell DR. Psychosocial predictors of self-care behaviors (compliance) and glycemic control in non-insulin-dependent diabetes mellitus. *Diabetes Care.* 1986;9(6):614–622.
3. Albright TL, Parchman M, Burge S. Predictors of self-care behavior in adults with type 2 diabetes: An RRNest study. *Fam Med.* 2001;33(5):354–360.
4. Ford ME, Tilley BC, McDonald PE. Social support among African American adults with diabetes, part 2: A review. *J Natl Med Assoc.* 1998;90(7):425–432.
5. Maillet NA, D'Eramo Melkus G, Spollett G. Using focus groups to characterize the health beliefs and practices of black women with non-insulin-dependent diabetes. *Diabetes Educ.* 1996;22(1):39–46.
6. Samuel-Hodge CD, Headen SW, Skelly AH, et al. Influences on day-to-day self-management of type 2 diabetes among African American women: Spirituality, the multi-caregiver role, and other social context factors. *Diabetes Care.* 2000;23(7):928–933.
7. Bertera EM. Psychosocial factors and ethnic disparities in diabetes diagnosis and treatment among older adults. *Health Soc Work.* 2003;28(1):33–42.
8. van Dam HA, van der Horst FG, Knoops L, Ryckman RM, Crebolder HF, van den Borne BH. Social support in diabetes: A systematic review of controlled intervention studies. *Patient Educ and Couns.* 2005;59(1):1–12.
9. Dunst C, Jenkins J, Trivette CM. Family support scale: reliability and validity. *J Indiv Fam Comm Well.* 1984;1:45–52.
10. Early TJ. Assessment tools: Measures for practice with families from a strengths perspective. *Fam Soc-J Contemp H.* 2001;82(2):225–232.
11. Cummings DM, Lutes LD, Littwood K, Dinatale E, Hambidge B, Shulman K. EMPOWER: a randomized trial using community health workers to deliver a lifestyle intervention program in African American women with Type 2 diabetes: design, rationale, and baseline characteristics. *Contemp Clin Trials.* 2013;36(1):147–53.
12. Hanley BH, Tasse MJ, Aman MG, Pace P. Psychometric properties of the family support scale with head start families. *J Child Fam Stud.* 1998;7(1):69–77.
13. Anderson RM, Fitzgerald JT, Gruppen LD, Funnell MM, Oh MS. The diabetes empowerment scale-short form (DES-SF). *Diabetes Care.* 2003;26(5):1641–1642.
14. Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial distress in diabetes: development of the Diabetes Distress Scale. *Diabetes Care.* 2005;28(3):626–631.
15. Lorig K, Stewart A, Ritter P, Gonzalez V, Laurent D, Lynch J. *Outcome Measures for Health Education and Other Health Care Interventions.* Thousand Oaks, CA: Sage Publications; 1996.
16. Radloff LS. The CES-D Scale: A self-report depression scale for research in the general population. *Appl Psych Meas.* 1977;1(3):385–401.
17. Dunn KI, Mohr P, Wilson CJ, Wittert GA. Determinants of fast-food consumption. An application of the theory of planned behaviour. *Appetite.* 2011;57(2):349–357.
18. Wallston KA. The validity of the multidimensional health locus of control scales. *J Health Psychol.* 2005;10(5):623–631.
19. Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction with Life Scale. *J Pers Assess.* 1985;49(1):71–75.
20. Nunnally JC, Bernstein IH. *Psychometric Theory.* 3rd ed. New York: Mcgraw-Hill; 1994.
21. Tabachnick GG, Fidell LS. *Experimental Designs Using ANOVA.* Belmont, CA: Duxbury; 2007.
22. DeVillis RF. *Scale Development: Theory and Applications.* 2nd ed. Thousand Oaks, Calif: Sage Publications; 2003.
23. Bennett GG, Herring SJ, Puleo E, Stein EK, Emmons KM, Gillman MW. Web-based weight loss in primary care: A randomized controlled trial. *Obesity.* 2010;18(2):308–313.
24. Yank V, Stafford RS, Roasas LG, Ma J. Baseline reach and adoption characteristics in a randomized controlled trial of two weight loss interventions translated into primary care: A structured report of real-world applicability. *Contemp Clin Trials.* 2013;34(1):126–135.
25. Deales A, Fratini M, Romano S, et al. Care manager to control cardiovascular risk factors in primary care: the Raffaello cluster randomized trial. *Nutr Metab Cardiovasc Dis.* 2014;24(5):563–571.

AUTHOR CONTRIBUTIONS

Design and concept of study: Littlewood, Cummings, Lutes, Solar
Acquisition of data: Cummings, Lutes, Solar
Data analysis and interpretation: Littlewood, Cummings, Lutes, Solar
Manuscript draft: Littlewood, Cummings, Lutes, Solar
Statistical expertise: Littlewood, Cummings, Lutes, Solar
Acquisition of funding: Cummings, Lutes, Solar
Administrative: Littlewood, Cummings, Lutes, Solar
Supervision: Littlewood, Cummings, Lutes, Solar