



Type 2 Diabetes Self-Management in Non-Hispanic Black Men: a Current State of the Literature

Jaclynn M. Hawkins¹

Published online: 11 February 2019
© Springer Science+Business Media, LLC, part of Springer Nature 2019

Abstract

Purpose of Review This article discusses the state of type 2 diabetes (T2D) self-management research on non-Hispanic Black men with a focus on their knowledge of diabetes, factors that impact T2D self-management and intervention research that specifically targets non-Hispanic Black men with T2D.

Recent Findings Studies on T2D knowledge and barriers and facilitators to T2D self-management in non-Hispanic Black men are limited to small qualitative focus group and in-depth interviews. To date, few T2D interventions for non-Hispanic Black men have been developed and tested.

Summary Research shows that non-Hispanic Black men's knowledge of T2D may be less than optimal compared to non-Hispanic white men. Factors that influence T2D self-management in non-Hispanic Black men include gender-related values and beliefs, and a range of other psychosocial (e.g., social support) and structural (e.g., access to health care) factors. Interventions with gender-specific programming may show promise. More studies with larger sample sizes and longitudinal designs are needed to develop programming to effectively target this at-risk population.

Keywords Type 2 diabetes · Gender · Self-management · Men's health · Interventions · Race

Introduction

In the USA, 23.1 million people have diabetes [1]. Racial and gender disparities also exist: non-Hispanic Blacks are twice as likely to have diabetes compared to non-Hispanic Whites and non-Hispanic Black women have slightly higher rates of diabetes, 13.2%, compared to 12.2% of non-Hispanic Black men [1]. As such, type 2 diabetes (T2D) intervention research aimed at self-management has begun to target non-Hispanic Blacks in response to the increased emphasis and effectiveness of cultural tailoring [2–4]; however, higher T2D diagnosis rates persist in this population compared to non-Hispanic Whites [1]. Additionally, men are more likely to drop out and participate less in T2D self-management intervention research on non-Hispanic Blacks compared to non-Hispanic Black

women [5]. This highlights a need for further tailoring of these interventions to account for other factors. Evidence suggests that one such factor is gender, which previous work has demonstrated plays a critical role in T2D self-management behaviors [6, 7]. However, while past and more recent research on non-Hispanic Blacks with T2D emphasizes the importance of tailoring interventions to account for gender-based health behaviors, almost all of this work is dominated by, or focused exclusively on, non-Hispanic Black women [6, 8, 9]. Also, a vast majority of empirical studies that focus on better understanding T2D self-management among non-Hispanic Blacks have small numbers of male participants. One review found that men comprised an average of 15% of sample sizes in T2D self-management research on non-Hispanic Blacks over the last 20 years [6]. Thus, what is typically applied to treating and educating men about T2D self-management is derived largely from research involving primarily female participants [8, 9]. Further, almost all of the research that does focus on factors that influence T2D self-management in non-Hispanic Black men are almost exclusively region-specific qualitative studies with small sample sizes [6]. As a result, in spite of a growing body of literature on gender- and culture-specific programming for managing T2D, there remains a

This article is part of the Topical Collection on *Psychosocial Aspects*

✉ Jaclynn M. Hawkins
jachawk@umich.edu

¹ School of Social Work, University of Michigan, 1080 S. University Ave, Ann Arbor, MI 48109, USA

dearth of literature on non-Hispanic Black men with T2D, that both describes factors that impact T2D self-management, while also providing guidelines for gender-specific programming for this population.

A large body of research shows that compared to non-Hispanic White men, non-Hispanic Black men have higher prevalence rates of diabetes, die earlier from diabetes-related complications, and develop diabetes earlier in the life course but are more likely to be diagnosed at later stages of the disease [10]. And yet, T2D research that considers gender-related needs of this population are few in number or non-existent [9, 10]. Considering the limited knowledgebase on T2D self-management in non-Hispanic Black men a synthesis of the existing literature is critical to assist in the development of interventions for this marginalized and understudied population. Therefore, this article discusses the state of T2D self-management research on Black men with a focus on Black men's knowledge of T2D and factors that impact T2D self-management, concluding with suggestions for programming to effectively target this at-risk population.

Method

Search Strategy and Databases

Major health literature search databases were utilized to complete this review and included Academic Search Complete (EBSCO), CINAHL, ERIC (EBSCO), JSTOR, MEDLINE (Ovid), PsycINFO, PubMed, ScienceDirect (Elsevier), Social Sciences Abstract, and Web of Science. Combinations of the following words and their synonyms were used to search the aforementioned databases: (a) African American, black; (b) diabetes, T2DM, diabetes mellitus; (c) recruitment; (d) interventions, program, randomized-controlled trial, treatment, clinical trial, controlled clinical trial; (e) men, male, man, gender; and (f) self-management, self-care.

Results

Non-Hispanic Black Men's Knowledge of T2D

In terms of knowledge, non-Hispanic Black men have reported a general familiarity with the etiology of T2D and the consequences of uncontrolled T2D but may have gaps in knowledge in areas such as risk factors for developing T2D and T2D-related complications for those already diagnosed [11, 12]. However, even when non-Hispanic Black men possess adequate knowledge of self-management strategies, they still encounter significant barriers to daily T2D management [12]. Thus, recent work has also focused on identifying factors

that impact the development and management of T2D that are specific to non-Hispanic Black men which is discussed in more detail below.

Barriers and Facilitators to T2D Self-Management for Non-Hispanic Black Men

Among non-Hispanic Black men, barriers to engaging in T2D self-management behaviors include a range of psychosocial and structural factors. For instance, in a study that conducted semistructured interviews with 19 non-Hispanic Black men, participants stated fears associated with engaging in specific self-management activities, such as pain from use of needles, hindered their ability to engage in daily self-monitoring of blood glucose [13]. Men in this study were from the Southern USA with a majority under the age of 55 [13]. A recent review of literature on needle fear prevalence, and whether these fears impact outcomes for patients managing diabetes, estimates that needle fear affects 28% of adults who manage their diabetes with insulin injections. The review also found that anxiety around injection or needles is associated with higher HbA1c levels and greater avoidance behavior of diabetes management, such as fewer insulin injections. However, research to date has not examined racial and ethnic and gender differences in needle fear prevalence among men with T2D, in addition to solutions targeting men and fear of needle use [14].

Non-Hispanic Black men also express that self-management of T2D evokes feelings of stress that undermine their perceived ability to manage T2D [15]. For example, in a focus group study of 20 Midwestern non-Hispanic Black men, barriers identified included excessive family responsibilities (such as parenting and being the primary breadwinner), dissatisfaction with health care providers and lack of stress coping strategies that often led to increased stress levels and manifested into both pessimistic and fatalistic views of men's ability to self-manage their T2D [15]. These findings are supported by previous work on non-Hispanic White, and Hispanic men with T2D, which shows that the prioritization of work over medical issues can lead to poor diet, low rates of exercise and obesity [16, 17••]. More research is needed on the impact of stress on T2D self-management, specifically among non-Hispanic Black men who research has shown have higher rates of stress compared with their non-Hispanic White counterparts [18] and are more likely to have experienced stress attributable to racial discrimination compared with non-Hispanic Black women [19]. This may put them at an increased risk for stress-related barriers to management of T2D.

Other factors that non-Hispanic Black men describe as impeding self-management of T2D include the physical effects of T2D on mobility, affordability of medications and testing strips, lack of health insurance, and inadequate access to consistent quality health care [12]. Another study of Southern

non-Hispanic Black men ($n = 19$), with an average age of 55, explored dietary practices and perceived barriers to healthy eating via focus groups. Diet-related barriers to T2D self-management identified included difficulty unlearning unhealthy eating habits, limited resources to purchase healthy foods, availability of healthy food (at home and in neighborhood grocery stores), and a lack of information for dietary restrictions from health care professionals [20]. While non-Hispanic Black men are more likely to have lower SES and limited access to diabetes-related health care compared to non-Hispanic white men, Thorpe and colleagues suggest that this is more a function of racial segregation [21••]. According to Thorpe, “racial segregation facilitates the production and propagation of health disparities by exposing individuals differentially to health-promoting resources (p. 221).” Using a low-income urban sample, Thorpe et al. found that non-Hispanic Black men had similar odds of having T2D compared to non-Hispanic White men from the same geographic location, in addition to other chronic conditions that are typically diagnosed at higher rates in non-Hispanic Black men [21••]. These findings suggest a more in-depth analysis is needed into the influence of social and physical environments on increasing (or decreasing) T2D and related complications in men of different racial/ethnic groups.

Values and beliefs derived from gender identity also play a critical role in the management of chronic illnesses such as T2D, particularly among non-Hispanic Black men. Research demonstrates that among non-Hispanic Black men, gender identity can interfere with engaging in T2D self-management behaviors [9, 12, 15]. For men, across racial and ethnic backgrounds, gender identity is a key variable in decisions about health behaviors, including how to engage with the healthcare system. “Masculinity” can be defined as rules that guide gender behavior and is based on a complex array of social and cultural factors that can shift over time and place [6]. Within this context “men are socialized to project strength, individuality, autonomy, dominance, stoicism and physical aggression, and to avoid demonstrations of emotion or vulnerability that could be construed as weakness” (p.726) [22]. For example, cultural beliefs for male self-reliance among non-Hispanic Black men can negatively affect help-seeking from health professionals, and societal beliefs that men should display autonomy, dominance and cope independently with pain or discomfort, can create barriers to asking for help from family members to support health behavior change, or following health advice given by medical professionals [15]. Several of the previously discussed studies [9, 15, 17••] also specifically examined the role of masculinity in T2D self-management and noted that non-Hispanic Black men report waiting until symptoms became severe before seeking medical attention [9, 15, 17••]. This is consistent with the broader literature on men’s health disparities which demonstrates that for men of all racial and ethnic backgrounds, the

need to maintain a strong image to the outside world, and to maintain control of one’s own health may serve as barriers to engaging in healthy behaviors [14, 23]. For instance, a focus group study that included ten Midwestern non-Hispanic Black men found that men encountered difficulty discussing their T2D self-management-related needs with family members, particularly their spouses [17••]. This finding is consistent with other research that shows among men of varying racial and ethnic backgrounds, commonly held beliefs and values in mainstream society, such as promotion of independence, risk taking, dominance, and the need to suppress pain, can adversely affect communication about and acceptance of social support for self-management of chronic illnesses such as T2D [23, 24]. Similarly, Liburd and colleagues attributed these behaviors to gender values and beliefs, arguing that men view themselves as weak if they outwardly revealed any pain associated with illness [6]. A recent review found that gender and race/ethnicity can influence perceived type, quality and acceptance of social support, and that social support effects are stronger for women than men and vary by race/ethnicity [25]. The review attributes these findings to gender-related factors (e.g., expected family roles for women and gender-based coping mechanisms) [25]. This research indicates the need for more exploration of barriers to communication and social support in non-Hispanic Black men with T2D.

In terms of facilitators of T2D self-management, non-Hispanic Black men indicate that the presence of strong social support plays a critical role in assisting with self-management, particularly through family and close friends providing encouragement to engage in and assistance with managing T2D [12, 17••]. This finding is confirmed by previous research which shows that in general, men living with a chronic illness, such as T2D, can benefit from social support to better self-manage and increase engagement with care [17••]. For instance, a study utilizing the National Health Interview Survey found that frequency of church attendance increased health care use in non-Hispanic Black men with T2D, but not in non-Hispanic White men. This work suggests that the mechanisms through which social support functions and how it may differ based on race and ethnicity in men should be further explored [26]. While these studies supply information on a poorly understood population regarding what either motivates or prevents them from engaging in T2D self-management, the lack of empirical studies, that are also state and nationally representative, to confirm and expand on this work are almost non-existent. Further, as stated, information on knowledge and barriers and facilitators to T2D self-management in non-Hispanic Black men are limited to small qualitative focus group and in-depth interviews, which ask a diverse range of questions across studies. The lack of consistency and focus in research questions can make it difficult to draw conclusions regarding the larger non-Hispanic Black male population living with T2D.

Non-Hispanic Black Men's Preferences for T2D Interventions

While few in number, existing studies using focus groups and interviews have collected recommendations from non-Hispanic Black men with T2D for developing effective programming to help men better manage their T2D. Balls-Berry and colleagues [11] collected non-Hispanic Black men's feedback via focus groups on the development of a T2D community-based intervention. In this study ($n = 60$), regarding location, non-Hispanic Black men indicated preference for intervention delivery outside of traditional clinical settings in favor of community-based locations frequented and trusted by non-Hispanic Black men such as barbershops [11]. This finding aligns with previous work which supports the effectiveness of health promotion and research activities taking place in pre-existing well-established and trusted institutions in the Black community such as churches and community centers [11, 27]. Barbershops show promise as they have proven to be particularly well-suited for reaching non-Hispanic Black men for non-diabetes-related health-related programs [11]. While men have indicated preferable settings for T2D-related programming, scant research exists testing whether these locations are effective for delivery of T2D self-management interventions for non-Hispanic Black men.

Non-Hispanic Black men have also identified a range of topics most relevant for them in T2D self-management intervention content. Desired topics for T2D programming include sessions focused on T2D education, T2D complications, diet, and exercise. In a study of 11 non-Hispanic Black men with T2D, participants indicated each session "address how to lead a healthier life given the men's busy lifestyles and family responsibilities as well as counteract fatalistic attitudes about [T2D]" (p.7) [21••]. While useful, these findings represent a broad range of factors and studies often lack specificity in what aspects of these areas, such as T2D education, men would like to learn more about and through what modality (e.g., group discussions, lectures, videos).

Other work has found that for non-Hispanic Black men specifically, situating program content within the social and cultural context is essential [12]. In focus groups with 25 non-Hispanic Black men with an average age of 53, findings revealed that this may involve communicating how not engaging in the management of T2D, and related health conditions, could negatively impact what these men perceive as important aspects of their lives. For instance, programs may focus on how health challenges may affect both their family and their performance of gender roles—particularly the roles of provider and protector [12]. T2D program activities should also integrate the family unit: non-Hispanic Black men have indicated a preference for increased family involvement in their care, particularly because family members may also lack education on how to manage their own T2D and/or need more

information on how to effectively support men living with T2D [11, 12]. Other research supports this finding, indicating that the effects of a T2D diagnosis and the demands of T2D self-management impact and require the involvement of the family unit among non-Hispanic Blacks [28]. Work focused on T2D has also found that female significant others and adult children who also live in household with an individual who has T2D are more likely to manage many aspects of T2D and engage in caregiving activities and other types of support [28].

Some work has also focused on asking non-Hispanic Black men about their preferences for intervention delivery, specifically focused on lay helper models. In two separate qualitative studies utilizing focus groups, Crabtree et al. [12] and Hawkins et al. [9] asked non-Hispanic Black men with T2D about their desire to work with and preferences for community health workers (CHWs). Men reported that they had no gender preference for CHWs and felt CHW primary responsibilities in a T2D support program should be to educate, hold support groups, help track daily activities, and help find resources [9, 12].

Lastly, men suggested that programs be of little to no cost to participants and consider men's work and life commitments in scheduling of sessions [29]. In another qualitative study with non-Hispanic Black men, participants suggested "sessions should be short, informative, and activity based, and should allow men to engage in fellowship with one another to capitalize on the strength of a brotherhood" (p.7) [21••]. More work is needed to explore and test what activities may be most effective with both educating and increasing rates of self-management in this population.

Conclusion

Presently, a lack of research exists regarding gender-specific factors that influence T2D self-management in non-Hispanic Black men. While few in number, the studies in this review reveal the importance, but also the absence of, a gender-focused perspective in T2D research that is designed for non-Hispanic Blacks. This review uncovered a dearth of research on non-Hispanic Black men with T2D and factors that may influence self-management and an absence of intervention research. More studies are critically needed to create a strong foundation of research that accurately portrays which factors help or hinder the ability of non-Hispanic Black men to manage their T2D. Furthering this work will enable researchers to develop and test self-management interventions that are tailored to meet the unique needs of non-Hispanic Black men with T2D. Specifically, this review found that further investigation is needed into needle fear prevalence as a barrier to T2D self-management in non-Hispanic Black men while also developing effective solutions [13, 30]. The review also found that stress plays a potentially important role in T2D

self-management among non-Hispanic Black men; yet, the mechanisms through which stress may impact T2D-related health behaviors and how to remedy these issues remains poorly understood in this population. Also, given the importance of family and community involvement in T2D self-management for non-Hispanic Black populations, a deeper exploration of the role of social support and communication with immediate family and other social networks is also needed. This work should focus on accurately characterizing the nature of these relationships and methods of communication paying special attention to how they may differ for non-Hispanic Black men. Additionally, more large-scale, nationally representative datasets need to be utilized to conduct both cross-sectional and longitudinal studies that explore barriers and facilitators of T2D self-management in non-Hispanic Black men, with special attention to how these factors may shift over the life course. Given research that highlights the importance of income, geographic location, and other factors on T2D self-management, intergroup analysis of these social indicators is needed to discover within group differences in non-Hispanic Black men as well.

It should also be noted that while the focus of this paper is on synthesizing T2D self-management literature for non-Hispanic Black men, important lessons can be learned from T2D prevention-centered intervention research with this population. For instance, The Save Our Sons study is one of few interventions aimed at preventing T2D that was informed by findings from studies with non-Hispanic Black men [31]. Save Our Sons, a community-based, culturally responsive, and gender-specific intervention, tested the feasibility of implementing a group health education and intervention model to reduce the incidence of diabetes and obesity among non-Hispanic Black men ($n = 42$). The study utilized trained community health workers to facilitate activities in a 6-week intervention. Results indicated increased knowledge of T2D self-management, increased exercise and improvements in clinical outcomes such blood pressure, weight, and body mass index levels. Results also showed that primary care doctor visits increased over the course of the study. While this intervention had meaningful findings, its small sample size, and the inclusion of men with and without T2D limited its findings [31]. Despite these promising findings, this study has not been replicated with a larger sample size, and few full-scale clinical trials of interventions with non-Hispanic Black men have not been conducted. Future work on adapting the Save our Sons model for men already living with T2D and others is critically needed.

The findings from this review contribute to the existing literature by discussing non-Hispanic Black men's knowledge of T2D, describing factors that influence their T2D self-management and assessing the current state of T2D intervention research that targets this underserved and at-risk group of men. Jack et al. [32] offers a gender-centered ecological

framework that can assist in the organization and examination of pathways between demographic factors, family functioning, knowledge and psychological health, biological health, behavioral health and medical compliance, masculinity, and diabetes-related outcomes. Future research can utilize such models as a guide to conceptually map factors that both impede and facilitate T2D self-management in non-Hispanic Black men and leverage this information to better shape future interventions [6, 31]. Continuing to expand this area of research will have significant public health impact and will be pivotal in determining effective sustainable strategies and approaches to address the absence of non-Hispanic Black men in T2D research.

Compliance with Ethical Standard

Conflict of Interest Jaclynn M. Hawkins declares that she has no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

Papers of particular interest, published recently, have been highlighted as:

- Of importance
 - Of major importance
1. Centers for Disease Control and Prevention. National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2018. Atlanta: US Department of Health and Human Services; 2018. Accessed on August 1, 2018 from <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>
 2. Majeed-Ariss R, Jackson C, Knapp P, Cheater FM. A systematic review of research into black and ethnic minority patients' views on self-management of type 2 diabetes. *Health Expect*. 2015;18(5): 625–42.
 3. Samuel-Hodge CD, Johnson CM, Braxton DF, Lackey M. Effectiveness of Diabetes Prevention program translations among African Americans. *Obes Rev*. 2014;15:107–24.
 4. Bhattacharya G. Self-management of type 2 diabetes among African Americans in the Arkansas Delta: a strengths perspective in social-cultural context. *J Health Care Poor Underserved*. 2012;23(1):161–78.
 5. Sherman LD, Hawkins JM, Bonner T. An analysis of the recruitment and participation of African American men in type 2 diabetes self-management research: a review of the published literature. *Soc Work Public Health*. 2017;32:38–48 **This study provides a review of participation of non-Hispanic Black men in type 2 diabetes self-management research.**
 6. Liburd LC, Namageyo-Funa A, Jack L Jr. Understanding “masculinity” and the challenges of managing type-2 diabetes among African-American men. *J Natl Med Assoc*. 2007;99:550–2 554–558.

7. Sarafidis PA, McFarlane SI, Bakris GL. Gender disparity in outcomes of care and management for diabetes and the metabolic syndrome. *Curr Diab Rep.* 2006;6(3):219–24.
8. Jack L. A candid conversation about men, sexual health, and diabetes. *Diabetes Educ.* 2005;31(6):810–7.
9. Hawkins J, Watkins DC, Kieffer E, Spencer M, Espitia N, Anderson M. Psychosocial factors that influence health care use and self-management for African American and Latino men with type 2 diabetes: an exploratory study. *J Mens Stud.* 2015;23:161–76.
10. Thorpe RJ, Bell CN, Kennedy-Hendricks A, Harvey J, Smolen JR, Bowie JV, et al. Disentangling race and social context in understanding disparities in chronic conditions among men. *J Urban Health.* 2015;92(1):83–92.
11. Balls-Berry J, Watson C, Kadimpati S, Crockett A, Mohamed EA, Brown I, et al. Black men's perceptions and knowledge of diabetes: a church-affiliated barbershop focus group study. *J Racial Ethn Health Disparities.* 2015;2(4):465–72.
12. Crabtree K, Sherrer N, Rushton T, Willig A, Agne A, Shelton T, et al. Diabetes connect: African American men's preferences for a community-based diabetes management program. *Diabetes Educ.* 2015;41(1):118–26.
13. Sherman LD, Williams JS. Perspectives of fear as a barrier to self-management in non-Hispanic Black men with type 2 diabetes. *Health Educ Behav.* 2018;1:1090198118763938.
14. Heinrich KH, Callahan CP. Prevalence and outcomes of fear of needles and associated psychological conditions among patients managing diabetes. *Value Health.* 2016;19(3):A199–200.
15. Seawell AH, Hurt TR, Shirley MC. The influence of stress, gender, and culture on type 2 diabetes prevention and management among Black men: a qualitative analysis. *Am J Mens Health.* 2016;10(2):149–56.
16. Heraclides AM, Chandola T, Witte DR, Brunner EJ. Work stress, obesity and the risk of type 2 diabetes: gender-specific bidirectional effect in the Whitehall II study. *Obesity* 2012. 2011;20:428–33.
- 17.●● Hawkins J, Watkins DC, Kieffer E, Spencer M, Piatt G, Nicklett EJ, et al. An exploratory study of the impact of gender on health behavior among African American and Latino men with type 2 diabetes. *Am J Mens Health.* 2017;11(2):344–56 **This study provides a description of how gender influences type 2 diabetes self-management in non-Hispanic Black men along with directions for future research.**
18. Sellers SL, Cherepanov D, Hanmer J, Fryback DG, Palta M. Erratum to: interpersonal discrimination and health-related quality of life among black and white men and women in the United States. *Qual Life Res.* 2013;22(6):1313–8.
19. Moody-Ayers SY, Stewart AL, Covinsky KE, Inouye SK. Prevalence and correlates of perceived societal racism in older African-American adults with type 2 diabetes mellitus. *J Am Geriatr Soc.* 2005;53(12):2202–8.
20. Lee LT, Willig AL, Agne AA, Locher JL, Cherrington AL. Challenges to healthy eating practices: a qualitative study of non-Hispanic black men living with diabetes. *Diabetes Educ.* 2016;42(3):325–35.
- 21.●● Hurt TR, Seawell AH, O'Connor MC. Developing effective diabetes programming for Black men. *Glob Qual Nurs Res.* 2015;2:233393615610576 **This study provides recommendations for program format and content, desirable facilitator characteristics, and whether to include spouses/partners, relatives, and friends. Results provide guidance and ideas to health care professionals wishing to enhance type 2 diabetes education and patient outcomes for non-Hispanic Black men.**
22. Williams DR. The health of men: structured inequalities and opportunities. *Am J Public Health.* 2003;93(5):724–31.
23. Courtenay WH. Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Soc Sci Med.* 2000;50(10):1385–401.
24. Garfield CF, Isacco A, Rogers TE. A review of men's health and masculinity. *Am J Lifestyle Med.* 2008;2(6):474–87.
25. Rosland AM, Heisler M, Piette JD. The impact of family behaviors and communication patterns on chronic illness outcomes: a systematic review. *J Behav Med.* 2012;35(2):221–39.
26. Hawkins JM, Jamie Mitchell MSW. Can social integration and social support help to explain racial disparities in health care utilization among men with diabetes? *Int J Mens Health.* 2017;16(1):66.
27. Hess PL, Reingold JS, Jones J, Fellman MA, Knowles P, Ravenell JE, et al. Barbershops as hypertension detection, referral, and follow-up centers for black men. *Hypertension.* 2007;49(5):1040–6 Evaluation studies research support, N.I.H., extramural research support, non-U.S. Gov't.
28. Chesla CA, Fisher L, Mullan JT, Skaff MM, Gardiner P, Chun K, et al. Family and disease management in African-American patients with diabetes. *Diabetes Care.* 2004;27:2850–5.
29. Cooney SM, Small SA, O'Connor C. Strategies for recruiting and retaining participants in prevention programs (What Works, Wisconsin Research to Practice Series No. 2). Madison: University of Wisconsin-Madison/extension; 2007.
30. Heinrich KH, Callahan CP. Prevalence and outcomes of fear of needles and associated psychological conditions among patients managing diabetes. *Value Health.* 2016;19(3):A199–200.
31. Treadwell H, Holden K, Hubbard R, Harper F, Wright F, Ferrer M, et al. Addressing obesity and diabetes among African American men: examination of a community-based model of prevention. *J Natl Med Assoc.* 2010;102(9):794–802.
32. Jack L Jr, Toston T, Jack NH, Sims M. A gender-centered ecological framework targeting Black men living with diabetes: integrating a "masculinity" perspective in diabetes management and education research. *Am J Mens Health.* 2010 Mar;4(1):7–15.