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Cultural Adaptation of Evidence-Based Lifestyle Interventions for African American Men With Prostate Cancer: A Dyadic Approach

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Abstract

Although a number of lifestyle interventions have been developed for cancer survivors, the extent to which they are effective for African American men with cancer is unclear. Given that African American men have the highest prostate cancer burden and the lack of proven interventions, this study developed a culturally-tailored lifestyle intervention for African American men with prostate cancer and their partners that aimed to improve healthy lifestyle behaviors (physical activity and healthy eating) and quality of life. The aim of the present study is to provide a detailed overview of the model-based process of intervention adaptation. Based on the IM Adapt approach (Highfield et al., 2015) and Typology of Adaptation (Davidson et al., 2013), the present study adapted existing, evidence-based interventions to address African American prostate cancer survivors' and their partners' potential unmet needs including anxiety/uncertainty about cancer progression, communication between partners, cultural sensitivity, and concordance/discordance of motivation and behaviors between partners. The intervention adaptation was a comprehensive and fluid process. To the best knowledge of the author, this is the first couple-based lifestyle intervention specifically developed for African American men with prostate cancer. The present study will be highly informative to future investigators by providing flexible and detailed information regarding lifestyle intervention adaptation for racial/ethnic minority men with prostate cancer and their partners.

Keywords

Black men, cultural adaptation, lifestyle intervention, couple-based, prostate cancer

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Prostate cancer (PCa) is the most commonly diagnosed non-skin cancer among American men, among which African Americans have the highest PCa burden. African American men are more likely to be diagnosed with and die from PCa than any other racial ethnic group in the United States (DeSantis et al., 2019, 2016). Disparities in PCa exist beyond incidence and mortality as African American PCa survivors report lower quality of life (Kinlock et al., 2017; Quach et al., 2016), lower satisfaction with treatment outcomes (Sanda et al., 2008), and higher stress than non-African American PCa survivors (Purnell et al., 2011).

Healthy lifestyle behaviors such as physical activity and healthy eating may reduce the risk of morbidity and mortality and can enhance quality of life among PCa survivors (Farris et al., 2016; Kenfield et al., 2011;

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Phillips et al., 2015). In fact, PCa survivors are more likely to die from competing causes (e.g., cardiovascular disease) than PCa itself (Riihimäki et al., 2011); these diseases can be prevented by healthy lifestyle behaviors (Nayor & Vasan, 2015; Wahid et al., 2016; Wang et al., 2014). Meta-analyses have reported that exercise is positively associated with overall and cancer-specific quality of life among survivors (Brown et al., 2011; Buffart et al., 2017; Mishra et al., 2014).

African American cancer survivors are less likely to eat healthy or exercise, and more likely to be overweight/obese than non-Hispanic white cancer survivors (Byrd et al., 2017; Nayak et al., 2015). Although many lifestyle interventions for survivors exist, they were predominantly developed with samples in which racial/ethnic minority men were poorly represented (Bluethmann et al., 2015; Bourke et al., 2013; Goode et al., 2015), and it is unknown whether existing lifestyle interventions will be effective for African American men with PCa. Provision of culturally-relevant lifestyle interventions that effectively promote healthy lifestyle behaviors may substantially reduce the large gap in PCa disparities.

This article presents the process to culturally adapt existing evidence-based interventions for African American men with PCa and their intimate partners (including married or unmarried, as well as same-sex or heterosexual). It describes the decision-making process of the adaptation and specify strategies that have been implemented in an ongoing study "Watchful Living," targeting healthy lifestyle behaviors in African American men with PCa and their partners.

Interdependence of Health Between Intimate Partners

Health can be interdependent between intimate partners. That is, an individual's health may be tied to his or her significant other's health. For example, nonobese individuals are more likely to become obese if their spouses become obese over the course of their marriage (Cobb et al., 2016). A partner's physical activity changes have been reported to be associated with the other partner's changes (i.e., if one partner adopts exercise, the other partner is also likely to do so; Smith et al., 2013), and living with a partner who enacts positive healthy lifestyle changes such as smoking cessation, exercise, and weight loss can increase the odds of the other partner making positive changes in these behaviors (Jackson et al., 2015). Close relationships play an important role in illness management (through social control, autonomy support, and modeling; Martire & Helgeson, 2017). In fact, a study conducted specifically among PCa survivors reported high concordance of fruit and vegetable consumption (62.6%) and physical activity (60%) between survivors and their intimate partners (Myers Virtue et al., 2015).

Little is known regarding the interdependence of lifestyle behaviors among African American couples. The abovementioned study conducted among PCa survivors was comprised of mostly (78%) non-Hispanic white survivors (Myers Virtue et al., 2015). Although not conducted among PCa survivors specifically, the only two couple-based lifestyle behavior studies conducted among African Americans reported that a partner's health and weight management behaviors were concordant with the other partner's health and weight management behaviors (Cho et al., 2020; O'Neal et al., 2015). Importantly, including partners in lifestyle interventions for African American PCa survivors may be not only culturally relevant but also preferred. A review study summarized three key roles of women (mostly wives) in African American men's PCa screening and treatment decision-making: (a) counselor, (b) coordinator, and (c) confidant (Bergner et al., 2018); as a counselor, women provide advice or information for men to make informed decisions about screening and treatment options. As a coordinator, women help men to schedule medical appointments, obtain prostate care, and eat healthy. Finally, as a confidant, women provide emotional support and reassurance.

The existing couple-based exercise interventions for cancer survivors (Pisu et al., 2017; Winters-Stone et al., 2016) and a dyadic (mother–daughter) weight maintenance intervention for breast cancer survivors (Demark-Wahnefried et al., 2014) reported that the interventions were feasible as indicated by high retention rates (>80%) and no adverse events reported. To date, no lifestyle intervention specifically designed for African American men with PCa and their partners exists except for Watchful Living, which is an ongoing, feasibility study (NCT03575832) that recruits this population in a lifestyle intervention.

Watchful Living provides physical activity and nutrition counseling in addition to biweekly health coaching calls over 6 months. Initially, Watchful Living targeted African American men on active surveillance, but was subsequently expanded to include those who underwent active treatment (e.g., surgery, chemo, and/or radiation therapy). In this article, the adaptation process of tailoring interventions to the African American men on active surveillance and their partners was presented. Of the three intervention components (i.e., physical activity, nutrition, health coaching calls), the adaptation process of the present study largely focuses on a physical activity program.

Methods

Intervention Adaptation Process

Adaptation is the process of modifying evidence-based interventions without competing with or contradicting

their core elements or internal logic (McKleroy et al., 2006). The intervention adaptation process of the present study was based on both the Intervention Mapping Adapt (IM Adapt; Highfield et al., 2015) and Typology of Adaptation (Davidson et al., 2013). The IM Adapt provides a systematic adaptation process, which includes the following steps: (a) assess needs and organizational capacity; (b) find an evidence-based intervention; (c) plan adaptations based on fit assessments; (d) make adaptations; (e) plan for implementations; and (f) plan for evaluation of the adapted intervention. The Typology of Adaptation provides strategies (a tool kit) for intervention adaptation for minority populations across six broad categories: (a) collaborative working; (b) team; (c) endorsement; (d) materials; (e) messages; and (f) delivery. IM Adapt was used as the foundational framework upon which elements of the Typology of Adaptation were incorporated.

Results

Step 1: Organizational Capacity, Needs Assessment, and Logic Model

Organizational Capacity. The University of Texas MD Anderson Cancer Center, a National Cancer Institute (NCI)-designated cancer center, initiated the research. Initially, the research team was comprised of multidisciplinary investigators who have expertise in health disparities research, behavioral science, psychology, medical oncology, and statistics. Later, the research team was expanded to include investigators with expertise in urology and social work from within and outside the institution. The research team had regular meetings and agreed to the heightened needs for the target population, importance of energy balance, and validity of the couple-focused approach.

Needs Assessment. First, the study was presented in the institution's Community Scientist Program, which was designed to provide researchers with rapid feedback from trained community members to ensure their research projects are culturally appropriate and relevant to the community. Community members well received the needs for the couple-focused program and recommended imparting the program to women as well as PCa survivors to target spouses or daughters of PCa survivors, who may refer the program to the survivor. Second, in order to evaluate the target population, six formative interviews were conducted with African American PCa survivors who had completed treatment (four were couple interviews with PCa survivors and their partners, and two were individual interviews with PCa survivors only). Participants were asked about their previous (before cancer diagnosis) and current physical activities and eating behaviors, impact of cancer, determinants of lifestyle behavior changes, social support for lifestyle behaviors from their partner, and their interest in couple-based lifestyle behavior programs. The interviews were conducted either in person (in local churches close to their residential areas) or via phone. Participants were recruited from local Black churches, a PCa support group, and by word-of-mouth. Interviews took 90 min to 2 hr and each participant received a $20 gift card to complete the interview.

Summaries of the interviews revealed several psychological and behavioral issues that may act as barriers to quality of life and healthy lifestyle behaviors: (a) *Anxiety*. Of the six survivors, four men reported that they were eligible for active surveillance. However, three of them decided to receive surgery because they wanted to be proactive and did not want to worry about cancer progression. One man reported that even with the quality of life-lowering side effects he is currently suffering (e.g., incontinence, sexual dysfunction), he does not regret receiving surgery and would choose surgery again. (b) *Cancer may not necessarily be a teachable moment for lifestyle behavior change.* Survivors' physical activity remained mostly unchanged after their cancer diagnosis/treatment; those who were sedentary tended to remain so and those who were active tended to stay active. One patient mentioned that he changed his unhealthy eating habits not because of cancer but because of hypertension. (c) *Concordance and discordance in behaviors.* Eating behaviors were similar within a couple (i.e., they both ate healthy or did not), but exercise was not. Most survivors did not believe that exercise was important for preventing cancer and cancer recurrence. In contrast, partners more often believed that sedentary behaviors and unhealthy diets caused the cancer, and healthy lifestyle behaviors are crucial for preventing cancer recurrence. (d) *Need for help from experts.* Partners mentioned that enhancing survivors' healthy behaviors was challenging and their efforts had not been successful. Survivors and partners showed interest in obtaining help from experts who could provide guidance on their health behaviors.

Logic Model. Based on the results of the needs assessment, a logic model of change was developed, which is presented in Figure 1. The behavioral outcome of interest is to meet physical activity recommendations (e.g., 150 min of moderate intensity or 75 min of vigorous intensity physical activity each week) and cancer prevention guidelines for healthy eating (e.g., at least 2.5 cups of fruit and vegetable intake each day, limiting red meat and processed meat intake) based on the American Cancer Society (ACS) Physical Activity and Nutrition Guidelines (Kushi et al., 2012). The environmental outcome of interest is to engage both members of the dyad to provide

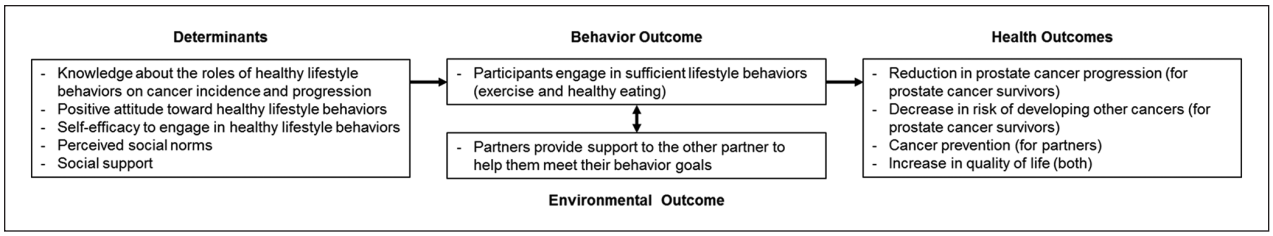

Figure 1. Logic model of behavior change.

support to each other in meeting their behavioral goals. Determinants include knowledge about healthy lifestyle behaviors, PCa incidence and progression, outcome expectancy (i.e., belief of what is expected as a result of behavior changes), self-efficacy (i.e., belief that one can successfully execute the tasks or achieve goals), social support and modeling (i.e., learning from observation of models). These determinants have been selected based on social cognitive theory (Bandura, 1986).

Step 2: Search for Evidence-Based Interventions

An existing evidence-based, physical activity intervention, Active Living After Cancer (ALAC) was selected—as it has been reported to promote physical activity and quality of life among sedentary cancer patients and survivors (Basen-Engquist et al., 2006)—and was modified using the IM Adapt process. The ALAC program is a theory-based (social cognitive theory, transtheoretical model), in-person, and group-based program that consists of 12 weekly sessions. The sessions are held in the community and led by trained health educators. Participants receive a workbook with information on cognitive and behavioral skills to increase physical activity, written and in-class interactive exercises to practice these skills, and case examples of cancer survivors who have successfully made physical activity changes. Participants engage in 10–15 min of physical activity together (e.g., resistance training and stretching, Zumba) and discuss survivorship topics (e.g., nutrition, fatigue, emotional distress) during each session.

Note that the research team did not search for a health coaching intervention because the team already had a health coaching call intervention based on "motivational interviewing" (Miller & Rollnick, 2002).

Steps 3: Assess Fit and Plan Adaptations

The Watchful Living research team met with the ALAC program team (both teams are housed at the same institution) and obtained a facilitator guide and participants' workbook. Fit between the two programs was assessed across different categories including target population, behavioral determinants, delivery for components, and agency readiness and resource requirements to determine whether they match or if adaptation is needed (see Table 1).

Results showed that the ALAC program needed to be adapted regarding its target population, target behavior, determinants of behavioral change, program delivery, and agency readiness and resource requirements. Specifically: (a) The ALAC program is for any cancer survivor, whereas Watchful Living is for African American PCa survivors and their partners. The ALAC program materials needed to be tailored for African American PCa survivors and their partners and the Watchful Living program may need to address anxiety and uncertainty about cancer progression and recurrence. (b) While behavioral determinants of Watchful Living parallel those of ALAC, relationship-based determinants may need to be honed to facilitate collaboration within a couple for behavioral change, such as communication. (c) The ALAC program is an in-person, group-based, weekly intervention. The research team's experience with racial/ethnic minority populations suggests that an in-person program can be challenging due to time and transportation constraints and a home-based intervention needs to be designed. (d) The Watchful Living study team consists of a racially/ethnically diverse group of investigators with expertise in designing and implementing lifestyle behavior interventions, PCa, caregiving, health disparities research, and cultural adaptation of interventions and has adequate and sufficient skills and knowledge regarding the target population. However, because Watchful Living was a small feasibility study, funding and resources were limited.

Step 4: Adaptations Made

The abovementioned interviews with the target population and comparative assessment between Watchful Living and ALAC, along with the research team's previous research experience with minority populations, informed the adaptations to be made. Specifically, guided by the Typology of Adaptation, adaptations were made across six broad domains (see Supplemental Table 1 for examples).

Table 1. Assessing Intervention Tools: Active Living After Cancer (ALAC) Versus Watchful Living (WL).

Fit category	ALAC	WL	Match or adapt
Population	Any cancer survivors	AA PCa survivors on AS and their partners	Was the intervention designed for your population? Yes **No**
Target behavior	Physical activity	Physical activity and nutrition	Was the intervention designed to change the target behavior in your population? Yes **No**
Behavioral determinants	Knowledge; outcome expectancy; modeling; social support; self-efficacy; stage of change	Outcome expectancy; modeling; social support; self-efficacy	Was the intervention designed to change the behavioral determinants of physical activity and nutrition in your population? Yes **No**
Delivery for components	In-person, group-based weekly intervention occurring in communities led by a health educator	Phone-based, biweekly intervention led by a health educator	Was the intervention designed for and tested with your population? Yes **No**
Agency readiness and resource requirements	Adequate funding, space, staff, and resources	Skills and knowledge about the target population, staff, resources	Do you have the time, resources, staff and funds?[a] Yes **No**

Note. AA = African American, PCa = prostate cancer, AS = active surveillance.
[a]While the WL program has adequate resources and staff, it has limited time to execute the research and funding.

Domain 1: Collaborative Working. Collaborative working indicates exploratory work with the target population to assess their unmet needs. The abovementioned needs assessment implied that while the dyads generally agreed that the lifestyle intervention would be helpful, it may need to address key features specific to this population including: (a) potential anxiety regarding cancer progression; (b) specific skills to promote support for each other (e.g., communication); and (c) increase positive attitudes toward physical activity especially among PCa survivors. Because of the reported discordance of exercise between PCa survivors and partners in the formative interviews, individual differences in goal setting need to be respected. Feedback from these initial interviews was used to revise intervention materials and components before implementation to ensure that the intervention is responsive to dyads' needs and culturally relevant.

Because the ALAC program does not address nutrition, two nutrition counseling sessions were added provided at baseline and month 3 by a registered dietitian either in-person or via telephone. Messages of nutrition were based on the ACS guidelines and both sessions are provided to couples (i.e., a survivor and a partner) together. Participants also received selected materials (e.g., tracking food, healthy shopping and cooking, understanding carbohydrates and eating well away from home) from Prevent T2, a type 2 diabetes prevention program from the Centers for Disease Control and Prevention. Finally, participants were encouraged to record their food intake via MyFitnessPal.com or on a paper form created by the research team for self-monitoring purposes (i.e., they were not collected).

Domain 2: Team. This considers the matching of race/ethnicity of the program facilitators and leadership of the research team with the target population. In this study, the registered dietitian and exercise physiologist are African Americans who are knowledgeable of the culture of the African American population and the principal investigator/program director of the study is African American who has strong relationships with the target population in local communities. Counselors and the dietitian were trained in cancer survivorship and couples functioning in the context of PCa (approximately 1.5 hr including a didactic presentation about stress, coping, communication, and intimacy from a social work professor who specializes in couple-focused research in psycho-oncology). Counselors were trained in PCa diagnosis and treatment (approximately 1.5 hr including a brief presentation and Q&A session from a medical oncologist) to increase counseling quality and improve their self-efficacy to provide the counseling. These trainings were necessary given that survivors and partners may report anxiety regarding potential cancer progression, which may make them drop out of active surveillance and receive over-treatment. If informed, counselors could provide appropriate support when needed.

Domain 3: Endorsement. This indicates the ownership fostered through linkages with individuals and/or formal

and informal institutions and organizations to enhance community support for interventions. Strong collaborations were built with urology departments serving diverse populations, PCa support groups, and Black churches. Collaborations with communities occurred through an institutional resource (Center for Community-Engaged Translational Research), which is directed by the principal investigator of the research, that maintains strong and extensive relationships with local African American organizations (e.g., churches, civic organizations).

Domain 4: Materials. This domain includes materials that depict individuals from target populations and appropriate graphics and scenarios. Specifically, recruitment flyers were created portraying the target population (African American couples). In the flyers, "program" instead of "intervention" was used as the latter may imply medical treatment. The target behaviors were specified (i.e., exercise and nutrition) and using "lifestyle behaviors" was avoided. Printed materials from the ALAC program were adapted using surface structure adaptations (Resnicow et al., 2000) that include portraying African American men or African American couples on intervention materials, including names in survivor stories reflecting African Americans (e.g., Darryl), changing language from "I/You" to "We/Your couple" and explicitly describing that the program was designed for African American PCa survivors on active surveillance. Contents not relevant to PCa survivors on active surveillance such as lymphedema, surgery, and chemotherapy were removed. Furthermore, the adapted ALAC program content was created as a 12-slide PowerPoint file (with a health coach's [African American men] voice-over), with help from the ALAC program research staff.

Domain 5: Messages. This domain includes providing specific data for target populations and teaching appropriate communication skills. In the adapted printed materials, benefits of physical activity specific to PCa (e.g., "Do you know that prostate cancer patients are more likely to die from other competing causes such as cardiovascular disease rather than cancer? As physical activity reduces cardiovascular disease, there is a promise to increase your health.") were presented. Since the needs assessment identified the importance of individual differences within couples that need to be respected, counselors encouraged individuals to begin with one behavior (either physical activity or healthy eating) per person/per session selected by the participant. Survivors could begin to change their sedentary habits, whereas partners could choose to change their eating habits. This strategy would also be expected to reduce coaching call time. Furthermore, each survivor and partner established their own behavior goals and began at their own pace while providing support for each other, addressing how best to support each other (e.g., providing emotional and practical support and avoiding nagging).

Domain 6: Delivery. This domain includes using preferred methods of communication and incentives relevant to the target population and addressing physical/financial barriers to participation. The in-person, ALAC program was adapted to a phone-based home intervention to reduce time and geographical and transportation barriers to study participation. Home-based intervention is particularly important to the study participant because not all dyads live in the metro area and transportation has been extensively recorded as barrier from couple-based interventions. By providing a home-based intervention, dyads living further away from the cancer center could be included. In order to have higher retention, nutrition counseling, exercise prescription, and counseling calls occurred at the dyad's convenient times (after-work hours or weekends). Parking validations (for in-person visits) and a small incentive (gift card) were provided for all completed assessments. The PowerPoint slides and coupled voice files were sent to participants' emails (biweekly over a 6-month period) by Mailchimp, which records participation rates (i.e., the number of times a participant downloads the slides).

Step 5: Plan for Implementation

Because the median age of PCa diagnosis is 66 years (Surveillance Epidemiology and End Results Program, 2020), the program is delivered via phone and email, which are universal and easy to be used in older age groups. Furthermore, no space is needed for the delivery of the intervention, as it is home-based, and allows the couples to engage with the intervention at times that are convenient for them. The research team requires computers and space that participants can use to complete assessments; they also need to establish collaborations with clinical departments to retrieve eligible participants' data. Research staff set up appointments for assessments and provision of printed materials. As patients are not always present with their partners, patients are screened over the phone 1–2 weeks prior to the appointment and asked to come to the hospital with their partners. The in-person assessments are conducted on the same day as the patients' urology clinic appointments, so that finding another time that the survivor, partner, and research team are all available is not required.

The Watchful Living study counselors have master's degrees in behavioral sciences and experience in providing lifestyle interventions to racial/ethnic minorities. The counselor: (a) makes reminder calls (2–3 days before the scheduled health coaching call); (b) provides protocol-driven counseling calls for the couples; and (c) documents

important aspects of every call (e.g., goals for the next 2 weeks, long-term goals, progress, etc.). All calls are recorded for quality control.

Step 6: Plan for Evaluation

Note that the intervention is currently underway and providing the efficacy of the intervention is not the focus of this manuscript. The evaluation plan seeks to: (a) determine the feasibility of recruiting the survivor-partner dyads and implementing the intervention; (b) evaluate the preliminary efficacy of the intervention in improving physical activity, healthy diets, quality of life, and inflammation (measured from blood) at 6 months after baseline; and (c) conduct a process evaluation of the intervention. In order to evaluate the feasibility and preliminary efficacy, a two-arm randomized controlled trial with a 3:1 ratio of intervention and control group with a total of 40 couples will be conducted. All participants are assessed at baseline and 3- and 6-month follow-ups, and a subset of the participants (up to 15 couples from the intervention and five couples from the control group) is invited for couple interviews at each assessment time point to obtain in-depth information regarding changes in couple interactions. This is a mixed-method study incorporating a randomized controlled trial and qualitative interviews.

Feasibility will be determined by enrollment, adherence, and retention. Because the unit of interest is the survivor–partner dyad (i.e., both survivors and partners), feasibility will be determined based on dyads not individuals. That is, both survivors and partners need to be enrolled, adhere to the intervention, and complete the 6-month assessments to define enrollment, adherence, and retention, respectively. Interviews with couples will help identify elements of the intervention that were successful and/or need improvement for a future larger trial and understand their experiences and behavior changes over the study time period.

Discussion

The aim of the present study is to provide details of a model-based adaptation of evidence-based interventions for African American men with PCa and their partners using IM Adapt (Highfield et al., 2015) and Typology of Adaptation processes (Davidson et al., 2013). The IM Adapt was used as an overarching framework and the Typology of Adaptation was used as a specific strategy (tool kit).

There are several important points that emerged during the adaptation process. First, the intervention adaptation is not a simple retailoring of existing intervention components. Even though the cultural adaptation of the present study was focused on relatively minor changes at the surface-level structure (e.g., portraying African American couples; Resnicow et al., 2000), a comprehensive process was still required, which included building a research team, conducting needs assessment, establishing a logic model, searching existing evidence-based interventions, evaluating fit between interventions, making adaptations, and implementing and evaluating the adapted intervention.

Second, the intervention adaptation process described is fluid and iterative rather than fixed and one-directional. In fact, it includes frequent decision-making that needs to go back and forth to different steps. Information obtained from a certain step can direct useful strategies in a much later step. For example, needs assessment (Step 1) may not only provide directions for adapting intervention components but also recruiting/enrolling participants (Step 5); the interviews indicated that cancer diagnosis and treatment may not necessarily be a teachable moment for lifestyle behavior changes; in order to motivate participants, it may be more important to highlight the overall benefits of healthy lifestyle behaviors for preventing or coping with diseases that require daily management such as hypertension and diabetes rather than PCa itself.

Third, it should be noted that there are additional and unique challenges to targeting both survivors and partners. Because discordance of motivation to participate in the intervention between survivors and partners is common, diverse recruitment, enrollment, and intervention implementation strategies will be needed. For example, we have found that clinic-based recruitment is helpful to target men with PCa, but community-based recruitment has been helpful to target family members of PCa survivors, who may encourage the men to participate in the intervention. Once the survivor and partner are interested in the intervention, logistics to implement the study can also be challenging. Because partners are not always present at the clinic with survivors, they are specifically asked to come to the clinic together for enrollment and follow-up appointments. To shorten the time for enrollment, two research staff are required to obtain informed consent and conduct in-person assessments (e.g., while staff A is conducting survivors' health assessment, staff B is conducting partners' health assessment). Furthermore, counselor flexibility is critical. Regarding program implementation, rescheduling of counseling calls is very common and must be scheduled when all three—counselor, survivor, and partner—are available, which is usually after work/dinner hours or weekends.

It is also important to note that the intervention adaptation models that guided the present research are not the only ones available in the literature or those that have been identified as gold standard. In fact, a number of theoretical and empirical studies have published especially regarding cultural adaptation for racial/ethnic minorities

(Castro et al., 2010; Mejia et al., 2017). The challenge experienced by investigators approaching this line of work is the lack of established guidelines or benchmarks for meeting both scientific rigor and cultural flexibility to adapt an intervention that is expected to augment the selected outcomes and eventually representing a promising direction to reduce health disparities. There is an urgent need to establish "science of intervention adaptation" (Chambers & Norton, 2016) that includes principles and guidelines to develop and implement adaptive evidence-based interventions, which will ultimately advance the field.

The present study has several limitations. Because the needs assessment was conducted among a small sample size, the summary of the assessment should be cautiously interpreted and will not be generalizable to all African American PCa survivors and partners. Although it was assumed that existing lifestyle interventions would be less efficacious for African American PCa survivors and their partners and adaptations have "the potential to improve program outcomes" (Hansen, 2014, p. 343), whether and to what extent specific adaptation strategies improved intervention effectiveness remains to be determined.

To the best knowledge of the author, Watchful Living is the first study focusing on both African American PCa survivors and their partners to enhance their lifestyle behaviors, which was guided by a cultural adaptation. The effort that combined a model and actual practical strategies may be helpful for future studies on intervention adaptation especially for racial/ethnic minority groups or individuals at risk of poorer outcomes. As the adaptation was a relatively lengthy and complex process, investigators may need to plan accordingly. The intervention adaptation will strongly benefit from in-depth collaborations between interdisciplinary teams of investigators. It is critical to develop effective collaborations with researchers who developed the interventions considered for adaptation so that investigators can obtain relevant materials, feedback, and guidance in a timely manner.

In conclusion, the intervention adaptation for African American PCa survivors and their partners outlined in this work is a comprehensive and fluid process. Strategic adaptations that balance fidelity to the evidence-based intervention with the flexibility to meet the needs of underserved target populations are required/essential to continue to advance the field (Castro & Yasui, 2017).

Declaration of Conflicting Interests

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Ethical Approval

The study was approved by the Institutional Review Board (Protocol #: 2017-0556).

Informed Consent

Written informed consent was obtained from all individual participants included in the study.

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Supplemental Material

Supplemental material for this article is available online.

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