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A community-based, culturally relevant intervention to promote healthy eating and physical activity among middle-aged African American women in rural Alabama: Findings from a group randomized controlled trial

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ABSTRACT

Objective: We examined the efficacy of a community-based, culturally relevant intervention to promote healthy eating and physical activity among African American (AA) women between the ages of 45–65 years, residing in rural Alabama.

Methods: We conducted a group randomized controlled trial with counties as the unit of randomization that evaluated two interventions based on health priorities identified by the community: (1) promotion of healthy eating and physical activity; and (2) promotion of breast and cervical cancer screening. A total of 6 counties with 565 participants were enrolled in the study between November 2009 and October 2011.

Results: The overall retention rate at 24-month follow-up was 54.7%. Higher retention rate was observed in the "healthy lifestyle" arm (63.1%) as compared to the "screening" arm (45.3%). Participants in the "healthy lifestyle" arm showed significant positive changes compared to the "screening" arm at 12-month follow-up with regard to decrease in fried food consumption and an increase in both fruit/vegetable intake and physical activity. At 24-month follow-up, these positive changes were maintained with healthy eating behaviors, but not engagement in physical activity.

Conclusions: A culturally relevant intervention, developed in collaboration with the target audience, can improve (and maintain) healthy eating among AA women living in rural areas.

Introduction

Unhealthy eating and sedentary lifestyle have been identified as the second leading cause of death (after tobacco use) in the United States (Mokdad et al., 2004). Although the potential mechanisms require further investigation, there is strong evidence that these behaviors are associated with a number of chronic illnesses (Ye et al., 2012; Hooper et al., 2012; McGavock et al., 2006). Racial/ethnic minorities in the United States, especially African Americans, experience higher incidence and mortality rates of heart disease, stroke, diabetes, and cancer than whites (Smedley et al., 2002; U.S. Department of Health and Human Services, 2009).

Recent findings show that African Americans have the highest age-adjusted rates of obesity (49.5%) as compared to Hispanics (39.1%) and non-Hispanic whites (34.3%) (Flegal et al., 2012). African American women also had nearly double the rates of extreme obesity as compared to white and Hispanic women (17.8% versus 7.1% and 6.0%) (Flegal et al., 2012).

Place of residence (rural vs. urban) is also an important variable to be considered when examining obesity disparities. Obesity prevalence in rural areas is significantly higher than in urban areas (Befort et al., 2012; Boggs et al., 2011a). Some factors that may contribute to increased obesity in rural areas include remoteness/isolation (Befort et al., 2012), poverty (Centers for Disease Control and Prevention, 2007), lack of recreational facilities (Keberhadt and Pamuk, 2004; Humpel et al., 2002), lack of sidewalks and walking trails (Keberhadt and Pamuk, 2004; Humpel et al., 2002), lack of nutrition education (Thakur and D'Amico, 1999), and food insecurity (Rose and Bodor, 2006). Studies have also shown that rural African American women are more likely to be overweight/obese and experience obesity-related health problems than their rural white counterparts, and, therefore, experience double disparities (race/ethnicity and place of residence) (Befort et al., 2012; Boggs et al., 2011a). Therefore, promotion of healthy eating habits and physical activity could have an impact on lowering the risk of chronic diseases associated with these behaviors among African Americans, particularly among middle-aged African American women living in rural areas.

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It has been shown that African Americans' daily fruit and vegetable intake is much lower than national recommendations, while the daily intake of saturated fat is higher and the majority does not meet the recommended levels of physical activity (Gary et al., 2004; Li et al., 2012; Mathieu et al., 2012). This scenario is even worse for African American women as compared to African American men (Gary et al., 2004; Li et al., 2012). It has also been shown that African Americans 50 years of age and older have lower fruit and vegetable intake than African Americans under 50 years of age (Gary et al., 2004).

Due to cultural differences and life experiences, strategies that have been successful in other populations may not be easily transferable to African American women in rural areas, where poverty and unemployment are high and access to healthy food and recreational activity centers are limited. Furthermore, studies have found African American women to be more self-accepting of weight, body shape, and appearance than white women (Abrams et al., 1993; Akan and Grilo, 1995). As such, African American women may engage in behaviors that promote a larger body size or have beliefs that perpetuate a cultural preference for heavier figures. Given African American women's views about attractiveness, messages that emphasize enhancement of one's current shape may have greater socio-cultural relevance than messages that promote weight loss or thinness (Blixen et al., 2006). Therefore, strategies that do not focus on weight loss but rather on healthy eating and physical activity may be a promising approach to promote a healthy lifestyle in this population given the proven benefits of engagement in these healthy behaviors (Reiner et al., 2013; Willett and Stampfer, 2013). The present study tested the efficacy of a community-based, culturally relevant intervention to promote healthy eating and physical activity among African American women between the ages of 45 and 65 years residing in rural counties in Alabama. In addition to older African American women having lower fruit and vegetable intake than African Americans under 50 years of age, this age range (45–65 years of age) was chosen to be consistent with the age requirements in the comparison group (breast and cervical cancer screening). At the time of the study, the Alabama Breast and Cervical Early Detection Program only provided breast and cervical cancer to eligible women between the ages of 45 and 65 years (Gary et al., 2004).

Methods

Geographic setting

The study took place in six counties in the Alabama Black Belt — Dallas, Marengo, Sumter, Lowndes, Green, and Choctaw counties. The state of Alabama has over 1 million African Americans, and out of its 67 counties, 55 counties are classified as rural (Alabama Rural Health Association, 2014). We chose to work in 6 counties where we had existing infrastructure in place from our previous studies (Wynn et al., 2006; Fouad et al., 2010; Scarinci et al., 2009). Alabama also has a disproportionately large population of socioeconomically disadvantaged individuals. This is especially pronounced in Alabama's Black Belt, an area stretching across the state's south-central counties and named for both the dark color of its fertile soil as well as the extremes of poverty and deprivation among its African American population (Wikipedia, 2014; Black Belt Fact Book, 2002; Wynn and Fouad, 2012).

Philosophical framework

Community-based participatory research (CBPR) represents a philosophical framework through which evidence-based interventions using "gold standard" methodologies (e.g., randomized trials) are developed and implemented in the context of community engagement, which, in turn, facilitates the transition to translation of this level of evidence into interventions that benefit both individuals and the community. CBPR "is a partnership approach to research that equitably involves, for example, community members, organizational representatives, and researchers in all aspects of the research process" (Israel et al., 2003). WHO defines health promotion as the "process of enabling people and communities to take control over their health and its determinants" (World Health Organization, 1984). Thus, by definition, health should be promoted through community involvement in which community members decide what, when, where, and how health will be promoted in their communities.

Study design overview

This study was design as a cluster randomized study, a total of six counties, Dallas, Marengo, Sumter, Lowndes, Green, and Choctaw counties were randomized into either screening or healthy lifestyle arms. With at least 75 participants in each county, this study has 80% power to test an absolute difference of 12% between two arms on the primary outcomes of increase in breast and cervical cancer screening at two sided type I error rate of 0.05 considering an inflation factor of an ICC of 0.009 based on pilot data. This study was conducted in collaboration with members of the Alabama Racial and Ethnic Approaches to Community Health (REACH) Coalition, a diverse and well-established partnership that is composed of state, local, faith-based, grassroots, and academic organizations with more than 10 years working together to eliminate breast and cervical cancer health disparities in Alabama (Wynn et al., 2006; Fouad et al., 2010). Although the initial charge of the coalition was promotion of breast and cervical cancer screening among African American women, the coalition's mission has evolved to focus on health issues identified by the community, including healthy eating and physical activity. Therefore, the present study addressed the two major health concerns raised by community residents, and consisted of a group randomized controlled trial that evaluated two interventions: (1) promotion of healthy eating and physical activity (healthy lifestyle); and (2) promotion of breast and cervical cancer screening (screening). That is, one arm served as the comparator for the other resulting in two interventions addressing relevant health issues identified by community members. The choice of "group" randomized trial (counties) vs. randomization at the individual level was based on the fact that "word of mouth" is very powerful among the target audience. The research protocol was reviewed and approved by the University of Alabama at Birmingham Institutional Review Board.

Intervention and comparison arms

The *intervention arm* consisted of a 5-week healthy lifestyle intervention (four group sessions and one individual session) that was adapted from the "New Leaf… Choices for Healthy Living with Diabetes" (Keyserling et al., 2000; Ammerman et al., 2007). The "New Leaf… Choices for Healthy Living" program is a structured nutrition and physical activity assessment and a counseling program that emphasizes practical strategies for change. It was originally developed for low-income adults with limited literacy skills residing in the south-eastern United States and is based on a combination of behavior change theories, including social cognitive theory, the transtheoretical model, and basic behavior modification principles (Melvin et al., 2013; Keyserling et al., 1997, 1999, 2000, 2002; Bandura, 1986; Eraker et al., 1984; Prochaska and Di Clemente, 1983; Rosamond et al., 2000; Ammerman et al., 2003; Cheng et al., 2004; Samuel-Hodge et al., 2006). For the current study, sessions were adapted to address healthy eating choices, promote physical activity, and provide practical applications of the newly acquired knowledge and skills in order to encourage behavior modification (Table 1). We also addressed stress management based on feedback from our partners and our previous work with African Americans in rural areas (Parham and Scarinci, 2007).

The *comparison arm* consisted of educational and behavioral strategies to promote breast and cervical cancer screening. In this arm we addressed the importance of knowing their family health history (perceived susceptibility), barriers and facilitators to screening, problem solving and communication skills. Both the intervention and comparison arms were delivered by lay health educators who lived in the targeted counties and went through extensive training. Once participants completed the 5-week intervention (four group sessions and one individual session), a number of retention strategies were implemented to keep women engaged in the program during the follow-up period and reinforce the knowledge and skills addressed in the intervention: newsletters, phone calls from the lay health educators, and bimonthly "reunions". Except for content, all the intervention and retention components were the same in both arms. Group sessions took place at locations that were convenient for participants (e.g., churches, community centers). Most of the individual sessions took place at participant's homes.

Participants

Participants were approached through numerous methods. Flyers were distributed in high traffic areas of the counties such as libraries, grocery stores