

LOVE YOUR HEART: A PILOT COMMUNITY-BASED INTERVENTION TO IMPROVE THE CARDIOVASCULAR HEALTH OF AFRICAN AMERICAN WOMEN

Cardiovascular disease remains the leading cause of death for women, and racial and ethnic minority groups disproportionately suffer from cardiovascular risk factors. We developed an intensive, culturally-tailored 12-week nutrition and physical activity program, Love Your Heart, to reduce cardiovascular risk factors for African American women in the Boston area from January to April 2011. The pilot study partnered an academic institution with two community-based organizations, the Boston Black Women's Health Institute (BBWHI) and Body by Brandy Wellness Center (BBWBC). The study sample consisted of 34 women with a mean age of 48 years (SD±3), with high rates of hypertension (79%), obesity (79%), and elevated waist circumference (94%). Over 12 weeks of follow-up, there were substantial reductions in hypertension and elevated waist circumference. We found that a culturally tailored weight management program reduced weight and cardiovascular risk factors for African American women in an urban community. While small, our study suggests that targeted community-based interventions focusing on personal and group wellness have the power to reduce health disparities and improve cardiovascular health for African American women. (*Ethn Dis.* 2012;22[4]: 416–421)

Key Words: Health Care Disparities, Cardiovascular Diseases, Community-Based Participatory Research, Obesity, Hypertension

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INTRODUCTION

Reducing racial and ethnic disparities in health remains a national priority,^{1,2} and African American women have a higher burden of cardiovascular disease (CVD) and CVD risk factors as compared to Whites.^{3–7} CVD-related deaths account for over a third of the differences in mortality between Whites and Blacks, and African Americans have increased mortality from CVD at younger ages.^{8,9} Young and middle-aged women, particularly of racial and ethnic minority groups, stand to gain significantly from targeted heart disease prevention and risk reduction programs.^{10–12}

Importantly, CVD is largely preventable through lifestyle modifications. Few programs have addressed the unique community needs of disadvantaged minority populations to reduce the burden of CVD risk factors.^{13–15} We sought to develop, implement and evaluate a community-based intervention, Love Your Heart, a culturally sensitive, holistic CVD prevention and risk reduction program for overweight African American women.

METHODS

Community Organizations

Funded through Brigham and Women's Hospital, a non-profit teaching hospital of Harvard Medical School, Love Your Heart was held in partnership between the Boston Black Women's Health Institute (BBWHI) and Body by Brandy Wellness Center (BBWBC). The Love Your Heart (LYH) pilot study was an intensive, culturally tailored 12-week nutrition and physical activity program aimed at reducing cardiovascular risk factors for

African American women in the Boston area from January to April 2011.

BBWHI is a 501(c)3 nonprofit organization devoted to advancing the health and wellness of Boston's Black women through advocacy, community health and wellness education, and leadership development. Founded in 1995 by a group of community activists, BBWHI has helped empower Black women in Boston to improve their own health and the health of their families and communities.

The BBWBC is a program within the for-profit Body by Brandy Fitness Center dedicated to investing in the health of its community through creative fitness programming, health education, self-empowerment and community outreach. Since its founding in Dorchester, Massachusetts in 1996, the Body by Brandy Fitness Center remains one of a handful of Black women-owned gyms in the country.

The founder of the BBWHI and the founder/owner of BBWBC played an integral part in developing and leading LYH, which was modeled after

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BBWHI's "Slim Down Sisters" – a weight-loss program for African American women in Roxbury, Massachusetts. Having partnered on similar projects, including the Roxbury Weigh-In and Roxbury Wellness Center aimed at helping to improve the overall health and well-being of women and families, the relationships between BBWHI and BBBWC were utilized for the pilot LYH program.

Sessions were moderated by leaders from the BBWHI. These sessions had a focus on addressing the emotional, physical, mental, and spiritual aspects that affect weight and cardiovascular and overall health. The owner/founder of BBBWC, who is also a certified personal trainer, offered her expertise by running fitness classes and educational sessions highlighting the importance of nutrition and physical activity to heart health. A certified nutritionist from the Boston Public Health Commission provided additional support. Together, these program leaders helped address the many factors that play a role in healthy weight maintenance.

Recruitment and Enrollment

LYH was promoted in a variety of ways, particularly within underserved Boston communities. Brigham and Women's Hospital partnered with the BBBWC to hold a free event at a local fitness center one month before program start, offering heart disease screenings, exercise classes and information on LYH. This event and registration for LYH were promoted through public service announcements on the radio and through ads placed in the Bay State Banner, a free bi-weekly local Boston newspaper. More than 50 women expressed interest in joining the program and, among those, a total of 34 women who were overweight or obese with at least one CVD risk factor were chosen at random to participate in Love Your Heart. Once chosen, the 34 women were notified by phone and email about acceptance into the program and were required to attend

orientation, where they signed consent forms and officially enrolled into the program. Women enrolling into the program also completed a health risk assessment, used to verify that they were healthy enough to participate in the program. Individuals with musculoskeletal issues or limited exercise capacity from an underlying medical condition completed a medical release form by their medical provider before participating in the program.

Program Components

The program included nutrition and physical activity interventions, a personalized wellness program, and sessions exploring mind-body connectedness. During the intervention period, participants received free gym memberships, weekly group sessions lasting 2 hours, group discussions, weigh-ins and blood pressure screenings at week 1, 6, and 12, free heart-healthy meals during each session, and a supermarket visit to model healthy and affordable food choices.

Self-Help Methodology

The principle of self-help is the underlying philosophy of the LYH program. Self-help is based on the belief that self-knowledge, validation of experiences, and sharing information are key factors that set the tone for healing, wellness and greater access to appropriate health care for a common disease or condition.^{16,17} Incorporating the self-help model into the health education seminars thereby increases the chances of sustainable behavior change.

The self-help group methodology, as utilized in the pilot LYH program, provides participants with a model to engage in consistent, mutually beneficial activities. Given the opportunity, support, and encouragement, women talk, listen, and begin to fully conceptualize their health circumstances. They can then move on to the development of strategies to address the issues at hand in ways that best meet their individual

needs while incorporating ideas and strategies from other group members. The model is culturally appropriate as the group reflects the culture of its participants. The groups evolve into supportive foundations for participants, which strengthen community commitment to health.

Group Sessions

The sessions took place at the Roxbury Wellness Center housed in the Body by Brandy Wellness Center on Saturday mornings from 9–11:00 a.m. The components of each session are outlined in Table 1. The founder of the BBWHI led each session with additional support from a registered dietitian from the Boston Public Health Commission as well as a personal trainer from BBBWC.

Physical Activity Sessions

All program participants had a fitness assessment with a BBBWC staff member. Individual fitness plans were created for each participant based on exercise capacity and fitness goals. All participants were provided with a free gym membership to the Body by Brandy Fitness Center during the study period. Participants signed in at gym during each visit. A logbook was maintained to capture the frequency of gym visits. Additionally, program participants were encouraged to maintain outside physical activity sessions such as walking and other pre-existing gym affiliations.

Participants also created an individualized wellness plan, which detailed their specific health goals with action plans with the help of the program moderator, nutritionist, and personal trainer. The wellness plan was reviewed at each step and modified accordingly with addition of new steps to ensure long-term sustainability.

Supermarket Session

There was one shopping trip to a local supermarket to practice and

Table 1. Components and design for self-help group meeting

Component	Time Allotted	Objective(s)
Weigh-in	Prior to starting the session (Week 1, 6, 12)	Participants weigh-in, body measurements, and blood pressure check
Opening the circle	15 min	Gives members a chance to settle into the circle and bring their attention away from their daily activities.
Check-in (listening pairs)	15 min	Gives each member a chance to speak about herself. Each participant is given an opportunity to share challenges or successes that they've experienced during the previous week in achieving health behavior change goals.
Agreements	5 min	A reminder of the group's agreements, especially the confidentiality guidelines.
Sisters in session/group discussion	20 min	Members have an opportunity to "talk out loud" about their experiences. Opportunity to learn new skills and tools to create behavior change. Topics such as body image, stress management, mindful eating, the importance of establishing a support system, and self-esteem will be presented in a discussion or activity format. A key component of the group discussion will be in motivating the participants to continue on their wellness journey.
"Health teach-in"/information session	30 min	Provides space for information sharing about specific health issues. Topics such as healthy nutrition, portion size, label reading, exercise, food plan/menu design, food preparation, food shopping will be covered throughout the program. Experiential training will be utilized wherever possible (eg. going to a supermarket and cooking demonstrations).
Business meeting	10 min	An opportunity to discuss the business of the group, including weekly challenges, announcements, and the next meeting objectives.
Closing circle	5 min	An organized ritual for parting which highlights the day's health themes and weight loss achievements.
Debrief of leaders/facilitators	After the meeting	Facilitators discuss how the meeting went and plans for the future.

review skills of reading labels and purchasing healthy food options. Prior to the shopping trip, participants received health education/information on menu planning, coupled with interactive group activity using food models to design menus for healthy breakfast, lunch, dinner, and snacks with specific calories outlined for each meal and snack. Each participant created an individual weekly menu and shopping list for their families. Participants were given a \$20 gift card to purchase fruits, vegetables, and a whole grain product during the shopping trip. Participants learned the design layout of a supermarket. The session included education on shopping for better health, impulse buying, and healthy eating on a budget.

Outcomes

Blood pressure (BP), body weight (BW), body mass index (BMI), and waist circumference (WC) measurements were obtained from each participant at baseline, week 6, and at week 12. Additionally, we tracked women's participation in weekly sessions and

fitness activities. Our secondary endpoints were rates of hypertension (defined as systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg), elevated WC (>35 inches), and obesity (BMI >30 kg/m²).¹⁸⁻²⁰

The Quorum Review institutional review board approved the study protocol.

Statistics

We conducted descriptive analysis to summarize participants' baseline information and constructed a linear mixed effects model that permitted each woman to have her own subject-specific mean response trajectory over the study period to examine the changes in BP, BW, and WC longitudinally, adjusted for age. We used the Mantel-Haenszel χ^2 test to compare dichotomous and categorical variables, and Wilcoxon rank-sum test to compare continuous variables between baseline and week 12. All statistical analyses were conducted using SAS version 9.2 64-bit version (SAS Institute Inc. Cary, NC). All reported *P* values are two-sided at a significance level of 0.05.

RESULTS

The study included 34 African American women with a mean age of 48 (SD ± 13), ranging from 18 to 77 (Figure 1). At baseline, 41% of the women suffered from hypertension, 79% were obese (BMI ≥ 30 kg/m²), and 94% had an elevated WC >35 inches. On average, women attended a total of 8 sessions and 82% attended a minimum of 4 sessions. Figure 2 describes the number of sessions attended by participants by age group. On average, women attended 11 fitness sessions at BBBWC, with a range of 1 to 23 attended fitness sessions during the study period.

At week 12, 17 of the 34 women had blood pressure measured and 21 had waist circumference measured. The mixed model shows that overall there was a statistically significant reduction in systolic BP, BMI, BW, and WC (Table 2) over the 12-week intervention period.

In a secondary analysis restricted to women who completed week 12 measurements, we found a clinically important absolute reduction of 8 mmHg

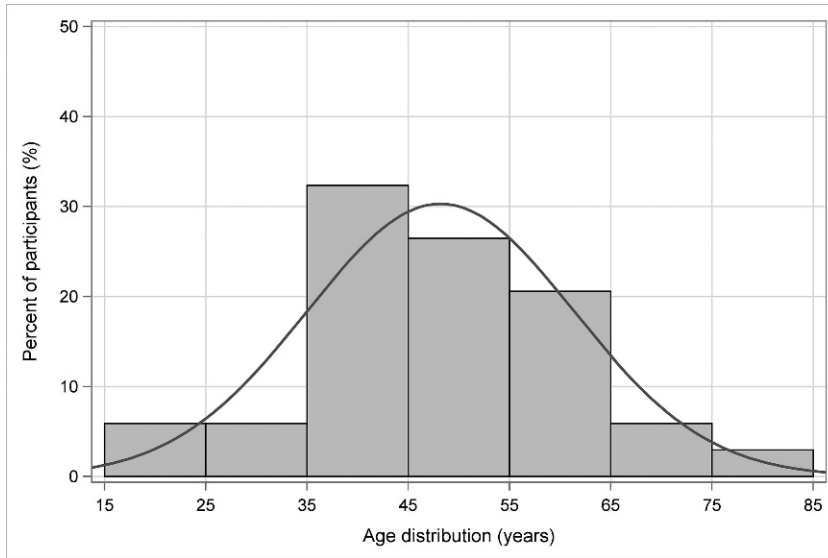


Fig 1. Age distribution of participants

in average systolic BP (139 to 131 mm Hg), 1.3 in BMI (33.8 to 32.5 kg/m²), and 5.0 inches in WC (42.7 to 38.7 inches) from baseline to the 12-week follow-up. Prevalence of hypertension and elevated WC (>35 inches) decreased during the study period (Figure 3). Although the prevalence of obesity was unchanged, women lost an average of 8.2 pounds during the intervention period.

DISCUSSION

We found that a culturally tailored, integrative weight management program could result in remarkable reductions in cardiovascular risk factors for African American women in an urban community. Evaluation of LYH best practices and feedback from our participants show that education alone does not change behavior. As documented

Although we found a significant difference in rates of our secondary endpoints of hypertension and elevated waist circumference, we did not see any changes in the rates of obesity.

from this pilot project, women are best able to make and sustain lifestyle and behavioral changes when health information is combined with both individual and group support mechanisms. While small, our study suggests that community-based interventions that leverage existing community resources can be successful in improving the cardiovascular health of African American women.

Although we found a significant difference in rates of our secondary endpoints of hypertension and elevated WC, we did not see any changes in the rates of obesity. This finding is most likely due to the high prevalence of obesity in our sample. Although women lost an average of 9 pounds during the study period, many of them continued to fall in the obese BMI category. However, participants showed a remarkable reduction in WC during the study period, an additional measurement of visceral adiposity that describes CVD morbidity and mortality independent of BMI.^{21,22}

Our study highlights the potential of community-academic partnerships in eliminating pervasive racial disparities in cardiovascular disease. LYH sought to collaborate with organizations that were respected and well-known by community members. Community members were involved in all aspects of study design, program implementation, and evaluation. The importance of these partnerships and community-based coalition building has similarly proved to be an

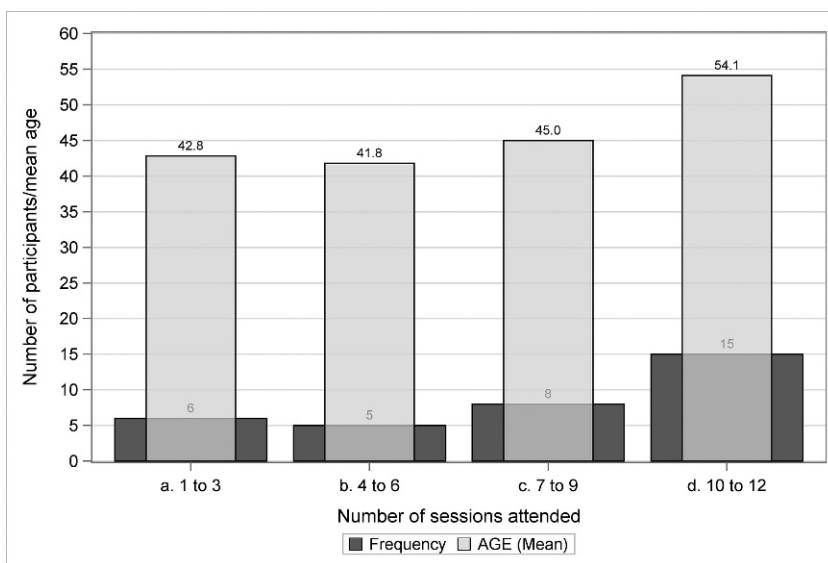


Fig 2. Number of sessions attended by age

Table 2. Average cardiovascular risk factor measurements at baseline, week 6, and week 12

Measurement	Baseline ^a	Week 6	Week 12	P ^b
Systolic blood pressure (mm Hg), mean (SD)	137.6 (17.9)	129.3 (10.1)	131.2 (12.1)	.0028
Diastolic blood pressure (mm Hg), mean (SD)	79.6 (15.0)	78.4 (5.1)	80.2 (8.2)	.1597
BMI (kg/m ²), mean (SD)	34.3 (5.1)	32.2 (4.3)	32.5 (4.8)	<.001
Waist circumference, mean (SD)	42.5 (4.7)	38.8 (4.8)	38.7 (4.3)	<.001
Body weight (pound), mean (SD)	208.2 (40.6)	197.3 (39.7)	204.3 (35.7)	<.001

^a includes all 34 women

^b P were drawn from linear mixed longitudinal models adjusted for age

important strategy in the success of various Centers for Disease Control and Prevention’s Racial and Ethnic Approaches to Community Health (REACH) programs.^{23–25}

An important methodology of this pilot project is the concept of self-help. For centuries, African American women have entrusted spirituality and cultural symbolism to seek meaning in everyday living, overcome barriers and personal struggles, confront oppression, and cope with intra-racial issues. LYH mirrors this tradition by allowing participants to incorporate spiritual and cultural themes for becoming empowered to

prevent and manage cardiovascular disease risk factors. Self-help strategies have been shown to be particularly helpful in the management of chronic disease as it relates to health behaviors.^{16,26–30}

There are several limitations to our study that warrant discussion. First, our sample was small, limiting our statistical power, although several outcomes were statistically significantly reduced. Yet, despite its small size, our study underscores that community-based strategies are effective in reducing the cardiovascular risk profile of a high-risk and often difficult-to-reach population. Additionally, there could have been selection bias

if the women who completed the study were systematically different from those who did not. We tried to overcome this bias by only considering program completers in our final analyses. Frequently cited reasons for drop-off among participants included language barriers, work responsibilities during weekly sessions, and transportation difficulties.

Larger and longer multi-site studies of Love Your Heart are ongoing to determine whether these results are replicable and sustainable. We also intend to follow-up with the pilot group of participants to determine the sustainability of the observed results.

In conclusion, the burden of cardiovascular disease morbidity and mortality has a disproportionate impact on members of racial and ethnic minority groups. Culturally sensitivity and community-based interventions are needed to reduce the widening gap in health outcomes.

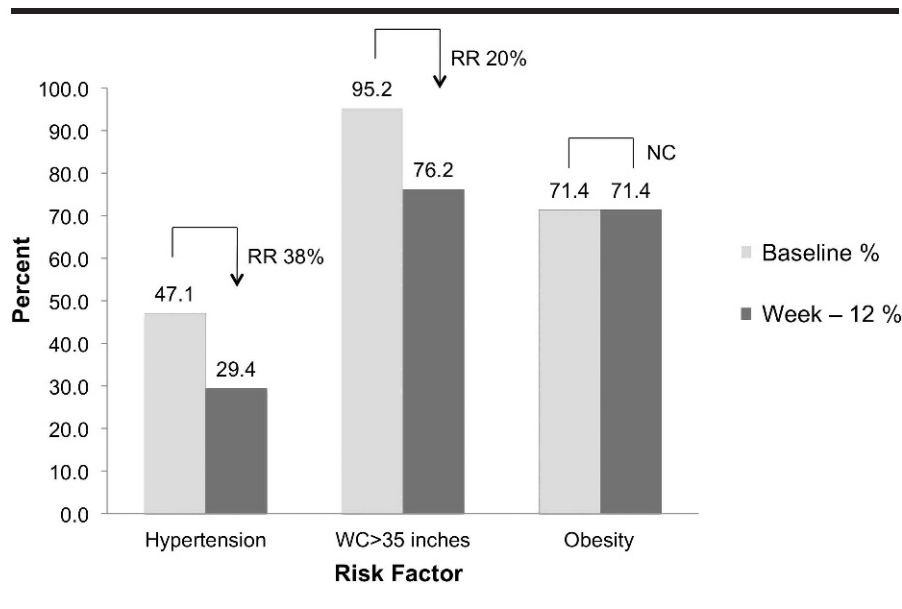


Fig 3. Love Your Heart: Change in cardiovascular risk factors

Reduction in cardiovascular risk factors for women who completed the 12-week study measurements. Hypertension was defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg; obesity was defined as body mass index (BMI) >30 kg/m²; WC: waist circumference; RR: relative reduction %; NC: no change.

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Data analysis and interpretation: Rodriguez, Wang, Foody
Manuscript draft: Rodriguez, Christopher, Johnson, Wang, Foody
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