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Baton Rouge Healthy Eating and Lifestyle Program (BR-HELP): A Pilot Health Promotion Program

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Abstract

Preventing weight gain rather than treating recognized obesity is an important economic and public health response to the growing levels of obesity nationwide. Community centers offer potential sites for community health promotion programs targeting African Americans. In this paper, results from a pilot health promotion program at a community center are reported. The purpose of this 12-month pilot program was to improve diet and increase physical activity to prevent weight gain in African American adults by delivering a lifestyle intervention. Fifty-one African American adults were randomized into two groups: lifestyle intervention or financial counseling, and 73% completed the program. At the end of 12 months, weight for all participants was maintained from baseline to completion with no significant differences between the groups. Both lifestyle intervention and financial counseling groups were approximately 87% food secure with improvements observed in self-esteem and total quality of life scores.

Keywords

Nutrition education; healthy living; financial counseling

Introduction

Overweight and obesity are increasingly common public health issues. They represent the second leading cause of preventable death in the US (Meenan, Vogt, Williams, Albright & Nigg, 2010). Their prevalence is particularly high in African American communities and is a vital health issue (Braithwaite, Taylor, and Treadwell, 2009). Nevertheless, health deficits often take a back seat to more urgent concerns such as inadequate housing, high unemployment, family stresses, or high levels of violence (Kumanyika, 2005). These more immediate conditions are themselves determinants of health and may be affected by health (Williams, Costa, Odunlami, and Mohammed, 2008). Despite the high levels of obesity within African American communities (Ogden, Carroll, Curtin, Lamb, and Flegal, 2007-2008), “there is more to daily functioning and survival than deciding how many

calories to eat or whether to exercise (Kumanyika, Prewitt, Banks, and Samuel-Hodge, 2010).” Therefore, education is vital to combating health issues and their underlying causes. Past research and experience in the community has provided a basis for designing and conducting effective interventions that deliver measurable benefits to those who participate (Kennedy et al., 2011; 2007).

Environmental factors influence behaviors such as diet and physical activity, and attempts to change these behaviors may be made in various settings such as the home, religious facility, worksite, and various community groups (Booth et al., 2001; Kennedy et al., 2005). Community centers are potentially effective settings because they typically emphasize health promotion, and offer convenience in program participation and dissemination (Kennedy et al., 2005; Lasater, Becker, Hill, and Gans, 1997; Resnicow et al., 2000). This paper reports results from a 12-month pilot health promotion program at a community center. The purpose of this pilot program was to improve diet and physical activity to prevent weight gain in African American adults.

Methods and Procedures

Participants

BR-HELP was conducted at a high school Alumni Center believed to be the first of its kind in southern Louisiana. The Alumni Board of Directors approved the use of the Center for BR-HELP activities, including classroom space, kitchen and banquet areas, and locked storage space for program equipment. To be eligible for BR-HELP, potential participants were: African American men or women, age 18 years or older, body mass index (BMI) ≥ 23 kg/m², willing to participate, able to provide informed consent, and willing to make monthly visits to the program site for 12 months—the length of the program. Only one person per household was allowed to participate in the program.

Exclusion criteria included recent and serious medical conditions, medications such as diabetes drugs and lipid-lowering agents, on a medically supervised diet, diagnosed eating disorders, pregnancy, and participation in another lifestyle modification program. The complete list of inclusion and exclusion criteria was provided during recruitment. Upon agreeing to participate in the program, eligible participants were given a consent form describing details of the program and were scheduled to visit the Alumni Center for screening. The written informed consent was obtained at this visit. The program protocol, procedures, and consent form were reviewed and approved by the Pennington Biomedical Research Center's (PBRC) Institutional Review Board.

Since this was a pilot program, power analysis was not conducted and 51 African Americans (8 men, 43 women) were randomized in the program and are discussed more in the intervention section. All participants received T-shirts, pedometers, duffle bags, healthy snacks and meals, and a stipend of \$100 as incentives for participating and completing the program.

Measurements

All baseline and end of program measurements were conducted at the Alumni Center by trained technicians. At baseline, participants were asked to provide demographic information such as age, gender, marital status, smoking history, and family history of diabetes. Dietary assessment was conducted using the PBRC Food Frequency Questionnaire (FFQ), a modification of the Block questionnaire (Block, Thompson, Hartman, Larkin, and Guire, 1992) at baseline and at 12 months. Participants were asked to report all foods eaten during the previous 24 hours. Food models and measuring guides were used to estimate portion size, and appropriate probing questions were used.

Anthropometric assessments included height and weight. Height was measured at baseline only without shoes to the nearest centimeter using a stadiometer. Weight was measured in kilograms at the program-site each month for 12 months for all participants. Body mass index (BMI) was calculated as the weight in kilograms divided by height in meters squared (kg/m^2). Blood pressure was measured in three replicates using a sphygmomanometer. Each measurement was made after the participant rested for 5 minutes. The average of the three measurements was used in the analysis.

Participants were encouraged at the onset of BR-HELP to begin walking fifteen minutes daily and gradually increase over the course of the program to at least thirty minutes per day. Walking and other physical activity were self-reported in a daily diary. Participants were asked to complete quality of life and health questionnaires at baseline and at end of program. Quality of life (in the past week) was assessed using the Impact of Weight on Quality of Life-Lite (IWQOL-L) questionnaire (Kolotin, Crosby, Kosloski, and Williams, 2001) which contains items about physical function (11 items), self-esteem (7 items), sexual life (4 items), public distress (5 items), and work (4 items). An example of these items is “because of my weight, I am embarrassed to be seen in public places.” For each item, the Likert-type responses range from 1 (never true) to 5 (always true). The Short Form Health Survey (SF-36), a 36-item questionnaire designed to assess general health and emotional well-being was also used in the program (Ware & Sherbourne, 1992). Item content focuses on self-perception of overall health, and physical as well as emotional problems related to health. It also includes a single item that provides an indication of perceived change in health.

Household food security status was evaluated using the 18 question US Food Security Survey Module (Bickel, Nord, Price, Hamilton, and Cook, 2000) to construct the 12-month food security scale that classifies households as food-secure or food-insecure with or without hunger. Food security means access at all times by all people to adequate amounts of safe, nutritious, and culturally appropriate food for an active and healthy life (“Poverty and Hunger,” 1986; Position of the American Dietetic Association, 2003). Food-Insecure without hunger is evident when members of the household are concerned about adequacy of the household food supply and in adjustments to household food management, including reduced quality of food and increased unusual coping patterns. In this context, little or no reduction in members’ food intake is reported. Food-insecure with hunger is where food intake for adults and children in the household has been reduced to the extent that they have repeatedly experienced the physical sensations of hunger. Because of limited observations,

the second and third categories were combined, resulting in food secure and food insecure groups (Stuff et al., 2006).

Intervention

Fifty-one participants were randomized into 2 groups: lifestyle intervention (n=26), or financial counseling (n=25). The lifestyle intervention group received 12 monthly classes taught by a research dietitian for 1 ½ hours each and included cooking demonstrations and techniques to increase physical activity. Lifestyle intervention materials currently available at PBRC were selected by the program investigators and were organized into 12 separate lesson plans. Participants monitored food intake and physical activity by keeping food and exercise diaries. Participants were asked to submit a 7-day food and exercise diary each month for 12 months. Each of the assigned 7-day blocks consisted of 5 weekdays and 2 weekend days. At each monthly visit to the program site, the research dietitian reviewed with participants the lesson plan, and provided feedback and guidance based on current recommendations to maintain and/or prevent weight gain. Examples of the lifestyle intervention lesson plans were: “Essentials for Better Health, Portion Control, and Move those Muscles.”

The financial counseling group received 12 monthly classes from “Small Steps to Health and Wealth”-- Rutgers Cooperative Extension program (O'Neill, 2008), including sessions on budgeting finances, balancing payroll, how to avoid repossessions and bankruptcy, individual counseling sessions, and special guest lectures. Each class was 1 ½ hours in length and were taught by the Principal Investigator. Special guest lectures consisted of topics on entrepreneurship opportunities, banking, real estate, long-term disability, and living wills. Several participants in the financial counseling group took advantage of personal individual counseling sessions. These personal one-on-one counseling sessions highlighted steps participants could follow to take control of their finances. For example, some participants were unemployed or only working part-time at the beginning of these sessions. By the end of the sessions many participants had obtained employment, second jobs and in one case, three part-time jobs.

Statistical Analysis

Height and weight, blood pressure, quality-of-life and health indices, and dietary intake values for fruit, vegetable, energy (kcal), alcohol consumption, and total dietary fiber were recorded at baseline and month 12 for all program participants. Analysis of variance was conducted to test for statistical significance of differences in mean change from baseline between the lifestyle intervention and financial counseling groups. All analyses were conducted by using SAS version 9.2 (SAS Institute, Inc., Cary, North Carolina). Significance was defined as $P < 0.05$.

Results

A total of 64 adults were screened for enrollment in BR-HELP. Thirteen potential participants dropped (7 changed minds, 3 had schedule conflicts, 2 had no transportation, and 1 wife was enrolled). Fifty-one participants were randomized and 37 (73%) completed

the program. Of the 51 randomized participants, 14 dropped (7 from each group): 5 never started the program, 4 changed mind, 2 moved out of state, and 1 each had dental problems, no transportation, or became pregnant (financial counseling group).

Selected baseline characteristics of the 37 African Americans completing the BR-HELP pilot program along with overall population data for East Baton Rouge (EBR) and State of Louisiana are presented in Table 1. The mean age of participants was 54 (range 26-75) years whereas the mean age of citizens in EBR is 31.5 years (US Census, 2011). The overall population in EBR for men is approximately 48% as compared to 16% of those enrolled in BR-HELP. Married individuals in the program accounted for 46% versus 47% in EBR. Current smoking history for adults (18 years and over) in the State of Louisiana revealed that 20.5% smoke (BRFSS, 2007-2009) as compared to 22% in BR-HELP. Forty nine percent of participants in BR-HELP reported a family history of diabetes, and approximately 87% of all participants were food secure.

As shown in Table 2, the baseline measurements of both groups were comparable. Mean BMI at baseline was high, ($34.9 \text{ kg/m}^2 \pm 1.1$) and ($34.8 \text{ kg/m}^2 \pm 1.1$) at month 12 for BR-HELP participants and are comparable to BMI status in the State of Louisiana (BRFSS, 2007-2009) with a cut-off value of obesity 30 kg/m^2 . Weight for all participants was maintained from baseline to completion with no significant differences between the groups. There was also no significant difference between groups for change in blood pressure however, participants in the financial counseling group decreased in systolic blood pressure (-11.3 ± 5.1), while diastolic blood pressure decreased (-7.0 ± 2.9) in the lifestyle intervention group.

In Table 3, meaningful increases in the IWQOL-L self-esteem subscale and total scores were observed over the course of BR-HELP for both groups. The financial counseling group scores increased considerably for the IWQOL-L public distress (3.9 ± 1.8) and work (5.9 ± 2.0) subscales. The difference between groups at 12 months for the IWQOL-L work subscale was significant and the financial counseling group reported improvements (5.9 ± 2.0 , $p < .04$) while the lifestyle intervention group (0.0 ± 2.0) remained unchanged. Scores on the SF-36 health transition scale decreased both in financial counseling (-0.9 ± 0.2) and lifestyle intervention (-0.6 ± 0.2) at month 12, indicating slightly poorer perceived health compared to a year prior. At month 12, the SF-36 general health scale improved in both groups with financial counseling reporting a slightly greater increase (2.7 ± 3.8) compared to lifestyle intervention (-0.4 ± 3.7). A trend for differences between the groups in terms of overall SF-36 physical health summary scores was observed, with a slight increase (2.2 ± 1.3) in the lifestyle intervention versus a slight decrease (-1.5 ± 1.3) in the financial counseling group.

Table 4 indicates that consumption of fruit/fruit juice and vegetable servings increased slightly in both groups with no significant differences observed between the groups. Alcohol consumption was comparable in both groups at baseline and at month 12. Although statistically insignificant, total dietary fiber (g/day) increased slightly at month 12 in financial counseling (3.1 ± 1.3), while lifestyle intervention remained about the same as baseline.

Discussion

The purpose of this 12-month pilot health promotion program was to improve diet and physical activity to prevent weight gain in African American adults. Program participants were demographically heterogeneous and reflected the program's eligibility criteria. Mean BMI, marital, and current smoking status of BR-HELP participants was comparable to the general targeted population. Age distribution ranges, sex, marital status, smoking history, family history of diabetes, and food security status were comparable to both groups in BR-HELP while the overall mean age, and sex were not comparable to the general population.

At the end of the program, mean weight change was not significant within either the financial counseling or lifestyle intervention group, and in this sense both groups were successful in maintaining weight. This was an unexpected outcome, but one that perhaps indicates that the financial counseling group derived some therapeutic benefit. Indeed, improvements were realized in measures of quality of life and in self-esteem scores in both groups. The financial counseling was an active intervention with potential for having an unintended therapeutic effect in addition to a placebo effect. It is plausible that neither intervention directly contributed to weight stability except for benefits derived solely from placebo effects.

Previous research has suggested that weight control efforts should focus on promoting small lifestyle changes as was done in this pilot program, and not on producing weight loss or preventing obesity, but on eliminating or reducing the gradual excessive weight gain that ostensibly occurs in people of all ages (O'Neill, 2008; Hill, 2009). Thus, a comprehensive approach involving small changes in both diet and physical activity and small steps to health and wealth may help address the global epidemic of obesity. From the results of this pilot program, perhaps promoting economic security is another viable approach to preventing weight gain. Other approaches might provide programs aimed at improving management of stress, time, and sleep health—since stress, time pressures and poor sleep are all potential mediators of weight gain.

Both groups had reductions in systolic and diastolic blood pressure over the 12 months of the program. It is not unusual to see this occur when participants are studied over time and become adjusted to the measurement procedures, but the degree of reduction is somewhat surprising and it is conceivable the decrease reflects improvements in stress levels produced by both groups. Participants showed slight improvements in consumption of fruits and vegetables at 12 months, but they did not reach the recommended “Five a Day” goal as observed in previous studies in which these items were provided weekly to participants (Kennedy et al., 2009). Although all participants were provided pedometers and encouraged to walk daily, no formal physical activity measurements were obtained other than to provide feedback to participants. Future community-based programs may benefit from collecting information from diaries as official data for investigating protocol compliance, especially since pedometers are relatively simple and inexpensive and may be useful for stimulating interest and motivating participation in physical activity in communities with limited access to health care (Zoellner et al., 2009). The quality of life scores at baseline were similar to those reported in a study of 199 obese individuals assessed by the same questionnaire

(Kolotkin et al., 2001). The financial counseling group experienced less public distress related to their weight and also reported experiencing improved work functioning, while this measure was unchanged in the lifestyle intervention group.

Results from this pilot health promotion program suggest that a community center setting may provide an effective delivery venue for pilot testing health promotion programs. Though it was not a goal, future programs might target weight loss if trained peer educators are utilized to implement the program as done in other community-based studies (Kennedy et al., 2005; 2009). Additionally, trained peer educators from the community and those employed at community centers may provide sustainability to the program long after researchers vacate the premises.

Implications for Practice

Lessons learned from BR-HELP consist of the need for peer educators and more intense lifestyle intervention sessions. Instead of once per month classes, every other week classes may have produced better outcomes. To be successful in future health promotion programs several factors must be considered in order for the results to be meaningful and more generalizable: 1) increase the sample size by targeting the general population as opposed to a specific area of the community; 2) utilize peer educators to conduct the intervention as opposed to registered dietitians especially when the program is conducted in the community setting; and 3) seek more participation of men as women seemingly always exceed their presence in programs whether community-based or otherwise.

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Table 1

Baseline Characteristics of 37 BR-HELP Program Participants

Age [Range 26-75] Mean Age 54	No. Financial Counseling Group	No. Lifestyle Intervention Group	(%) Total	EBR Census ^a Mean Age 31.5
18-39	3	3	16	Unavailable
40-59	8	10	49	Unavailable
60 up	7	6	35	Unavailable
Sex				
Men	2	4	16	47.9
Women	16	15	84	52.1
Marital Status				
Never	4	3	19	34.2
Married	7	10	46	47.4
Divorced	5	4	24	10.0
Widowed	2	2	11	6.1
Separated	0	0	0	2.3
Smoking History				
Current	4	4	22	20.5 ^b
Formerly/Never	14	15	78	Unavailable
Family History of Diabetes				
Yes	9	9	49	Unavailable
No	9	10	51	Unavailable
Food Security Status				
Food-Secure	17	15	86.5	Unavailable
Food-Insecure	1	4	13.5	Unavailable

^aEast Baton Rouge (EBR) census data 2000.^bBRFSS, Behavioral Risk Factor Surveillance System <http://www.cdc.gov/brfss/>.

Table 2

Anthropometric measurements and blood pressure at baseline and change at 12-months*

Variable	BRFSS ^a	All participants (n=37)		Financial Counseling Group (n=18)		Lifestyle Intervention Group (n=19)		** P
		Mean Value at Baseline	Mean change at 12-months	Mean Value at Baseline	Mean Change at 12-months	Mean Value at Baseline	Mean Change at 12-months	
Weight (kg)	Unavailable	96.6 ± 3.6	96.4 ± 3.7	91.9 ± 4.3	-0.3 ± 0.9	101.1 ± 5.6	-0.1 ± 0.8	0.83
BMI (kg/m ²)	30 ^a	34.9 ± 1.1	34.8 ± 1.1	34.2 ± 1.4	-0.11 ± 0.32	35.6 ± 1.6	-0.04 ± 0.31	0.87
Systolic blood pressure (mm/Hg)	Unavailable	133.3 ± 3.8	123.3 ± 2.7	133.1 ± 5.7	-11.3 ± 5.1 [†]	133.5 ± 5.4	-8.9 ± 5.0	0.74
Diastolic blood pressure (mm/Hg)	Unavailable	83.0 ± 2.4	77.0 ± 2.0	81.0 ± 3.6	-5.2 ± 3.0	85.0 ± 3.1	-7.0 ± 2.9 [†]	0.67

^a BRFSS, Behavioral Risk Factor Surveillance System <http://www.cdc.gov/brfss/>.

* Data are presented as mean ± SEM unless noted.

** P-value for the difference in change (from baseline to twelve months) between the financial counseling and lifestyle intervention groups.

[†] Indicates significant change from baseline value ($P < 0.05$).

Table 3
Quality of life score and health measurements at baseline and change at 12-months*

Variable	All participants (n=37)			Financial Counseling Group (n=18)		Lifestyle Intervention Group (n=19)		P**
	Mean Value at Baseline	Mean change at 12-months	Mean Value at Baseline	Mean Change at 12-months	Mean Value at Baseline	Mean Change at 12-months		
Quality-of-life scores (IWQOL-L)								
Physical function	80.8 ± 3.1	83.5 ± 3.1	83.2 ± 4.0	0.9 ± 2.2	78.6 ± 4.8	4.3 ± 2.2	0.28	
Self-esteem	83.0 ± 3.0	90.4 ± 2.4	83.1 ± 4.1	8.3 ± 2.7 [†]	82.9 ± 4.6	6.4 ± 2.6 [†]	0.61	
Sexual life	92.1 ± 2.4	92.1 ± 2.7	92.7 ± 3.2	1.4 ± 1.9	91.5 ± 3.6	-1.3 ± 1.8	0.31	
Public distress	92.7 ± 2.3	94.7 ± 2.1	91.9 ± 3.4	3.9 ± 1.8 [†]	93.4 ± 3.2	0.3 ± 1.7	0.15	
Work	94.3 ± 1.5	97.1 ± 1.2	93.8 ± 2.2	5.9 ± 2.0 [†]	94.7 ± 2.0	0.0 ± 2.0	0.04	
Total	86.4 ± 2.3	89.7 ± 2.2	87.2 ± 2.9	3.8 ± 1.3 [†]	85.7 ± 3.6	2.8 ± 1.2 [†]	0.61	
Health measurements (SF-36)								
Bodily pain	73.90 ± 3.5	72.4 ± 3.6	79.0 ± 4.4	-3.4 ± 4.3	69.0 ± 5.4	0.4 ± 4.1	0.52	
General health	75.1 ± 2.5	76.2 ± 2.4	76.7 ± 3.2	2.7 ± 3.8	73.6 ± 3.8	-0.4 ± 3.7	0.56	
Mental health	80.5 ± 2.8	83.5 ± 2.0	79.6 ± 4.3	4.4 ± 3.8	81.5 ± 3.8	1.5 ± 3.7	0.58	
Physical functioning	78.8 ± 3.6	83.0 ± 3.9	87.5 ± 3.3	-0.6 ± 4.7	70.5 ± 5.8	8.7 ± 4.6	0.17	
Role emotional	91.0 ± 3.8	91.9 ± 3.5	90.7 ± 6.5	5.6 ± 7.5	91.2 ± 4.3	-3.5 ± 7.3	0.40	
Role physical	91.2 ± 3.2	91.9 ± 3.5	94.4 ± 2.5	-4.2 ± 6.6	88.2 ± 5.9	5.3 ± 6.4	0.31	
Social functioning	84.5 ± 3.4	84.8 ± 3.4	84.0 ± 5.1	0.7 ± 5.3	84.9 ± 4.7	0.0 ± 5.2	0.93	
Vitality	62.4 ± 2.9	69.2 ± 2.4	65.8 ± 3.8	6.9 ± 4.4	59.2 ± 4.2	6.6 ± 4.3	0.95	
Health Transition	2.9 ± 0.1	2.1 ± 0.1	2.8 ± 0.2	-0.9 ± 0.2 [†]	2.9 ± 0.1	-0.6 ± 0.2 [†]	0.23	
Physical Summary	50.6 ± 1.3	51.0 ± 1.4	53.5 ± 1.5	-1.5 ± 1.3	47.8 ± 1.9	2.2 ± 1.3	0.06	
Mental Summary	53.0 ± 1.5	54.4 ± 1.0	51.9 ± 2.4	3.2 ± 2.1	54.1 ± 1.9	-0.4 ± 2.0	0.22	

* Data are presented as mean ± SEM unless noted.

** P-value for the difference in change (from baseline to twelve months) between the financial counseling and lifestyle intervention group.

[†] Indicates significant change from baseline value ($P < 0.05$).

Table 4

Selected dietary intake from Food Frequency Questionnaire at baseline and change at 12-months*

Variable	All participants (n=37)			Financial Counseling Group (n=18)		Lifestyle Intervention Group (n=19)		** P
	Mean Value at Baseline	Mean change at 12-months	Mean Value at Baseline	Mean Change at 12-months	Mean Value at Baseline	Mean Change at 12-months		
Energy (kcal) [‡]	1296 ± 109	1255 ± 112	1342 ± 164	23.6 ± 144.0	1251 ± 149	-102.0 ± 141	0.54	
Energy w/o alcohol (kcal)	1280 ± 106	1244 ± 111	1317 ± 154	31.5 ± 144	1245 ± 149	-100.0 ± 140	0.52	
Total dietary fiber (g/day)	9.7 ± 0.9	11.2 ± 1.1	8.3 ± 0.9	3.1 ± 1.3 [‡]	11.0 ± 1.5	-0.1 ± 1.3	0.09	
Fruit/fruit juice servings/day	1.3 ± 0.2	1.7 ± 0.2	1.2 ± 0.2	0.4 ± 0.3	1.4 ± 0.3	0.5 ± 0.2	0.98	
Vegetables servings/day	1.8 ± 0.2	2.2 ± 0.2	1.7 ± 0.2	0.6 ± 0.3	1.9 ± 0.3	0.2 ± 0.3	0.40	
Alcohol servings/day	0.12 ± 0.05	0.11 ± 0.04	0.19 ± 0.11	0.17 ± 0.08	0.06 ± 0.02	0.05 ± 0.02	0.82	

* Data are presented as mean ± SEM unless noted.

** P-value for the difference in change (from baseline to twelve months) between the financial counseling and lifestyle intervention groups.

[‡] Energy intake does not include calories from alcohol.

[‡] Indicates significant change from baseline value ($P < 0.05$).