

The WORD (Wholeness, Oneness, Righteousness, Deliverance): A Faith-Based Weight-Loss Program Utilizing a Community-Based Participatory Research Approach

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Despite multidisciplinary efforts to control the nation's obesity epidemic, obesity has persisted as one of the U.S.'s top public health problems, particularly among African Americans. Innovative approaches to address obesity that are sensitive to the unique issues of African Americans are needed. Thus, a faith-based weight-loss intervention using a community-based participatory research approach was developed, implemented, and evaluated with a rural African American faith community. A two-group, quasi-experimental, delayed intervention design was used, with church as the unit of assignment (treatment $n = 2$, control $n = 2$) and individual as the unit of observation (treatment $n = 36$, control $n = 37$). Weekly small groups led by trained community members met for 8 weeks and emphasized healthy nutrition, physical activity, and faith's connection with health. The mean weight loss of the treatment group was 3.60 ± 0.64 lbs. compared to the 0.59 ± 0.59 -lb loss of the control group.

Keywords: *community-based participatory research; weight loss; churches; African American; obesity*

Whether the information concerning obesity and overweight has been reported as prevalence rates (Mokdad et al., 2003), annual deaths attributable to obesity (Allison, Fontaine, Manson, Stevens, & VanItallie, 1999), years of life lost (Fontaine, Redden, Wang, Westfall, & Allison, 2003), or disease burden (Must et al., 1999), the overall message is clear: Obesity is a major U.S. public health problem of epidemic proportions. Compared to other segments of the population, African Americans bear one of the highest burdens of the obesity epidemic, with 31.1% of Blacks being obese compared to 19.6% of Whites (Mokdad et al., 2003).

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Although African Americans bear a greater proportion of the nation's obesity burden, they are less likely to benefit from weight-loss programs compared to Whites (Kumanyika, 2002). This has been attributed to social and cultural barriers (Cooper et al., 2001; Kumanyika, 2002), including differential body-image ideals, cultural food attitudes, fewer models for physical activity, and normative views of overweight and obesity (Kumanyika, 2002). Thus, to successfully address disparities in obesity, multiple sociocultural factors need to be addressed. A community-based participatory research (CBPR) approach offers a potentially influential way to incorporate sociocultural factors associated with obesity into an appropriate program for African Americans by involving them in the development and implementation of these programs.

CBPR aims to address the complex reality of health—including racial/ethnic disparities—by collaborating with communities (Viswanathan et al., 2004). Through fostering dialogue and partnership to improve community health, the strengths and insights of all partners are integrated to address ethnic/racial health disparities in a powerful way (Corbie-Smith, Thomas, Williams, & Moody-Ayers, 1999). CBPR has been used to address and understand factors surrounding various health outcomes, such as hypertension, various cancers, and diabetes (Viswanathan et al., 2004). However, the use of CBPR to create a weight-loss program sensitive to the unique issues of African Americans has not been fully explored.

Historically, the Black church has been an influential force in African American communities through which entrée, legitimacy, and credibility was granted to outsiders (Baskin, Resnicow, & Campbell, 2001). Thus, partnership with Black churches is a necessity for weight-loss interventions that aim to have community-wide influence (Baskin et al., 2001). The powerful role of some Black churches in attending to the needs of Black Americans and defining the values and norms of the communities they serve also provides a means through which community-level sociocultural barriers can be addressed and changed (Eng & Hatch, 1991).

Although numerous studies have successfully used Black churches as intervention sites to change obesity-related health behaviors, such as physical activity and diet, to prevent chronic disease (Campbell et al., 1999; Yanek, Becker, Moy, Gittelsohn, & Koffman, 2001), few have specifically evaluated the effectiveness of weight-loss programs. An 8-week weight-loss program among Black women resulted in an average 6 ± 5 -lb weight loss in the treatment group. This program consisted of group nutrition education and behavioral counseling and activities, an exercise component, and consultations with a dietitian. However, there was no control group (Kumanyika & Charleston, 1992). In their weight-loss intervention, McNabb and colleagues reported a weight loss of 10 ± 10.28 pounds compared to a 1.9 ± 4.25 gain in the control group (McNabb, Quinn, Kerver, Cook, & Karrison, 1997). Their 14-week intervention consisted of weekly small groups addressing behavioral and sociocultural issues related to weight co-led by trained lay facilitators and health professionals. These church-based weight-loss studies have shown promising results but are few in number. Furthermore, they were conducted in urban settings and included only female participants; whether church-based weight-loss programs are successful in rural settings with female and male participants is not clear. Although these programs incorporated African American cultural components, elements of the unique faith culture were not incorporated. Thus, this article will describe a faith-based weight-loss intervention for a rural African American community using a CBPR approach.

METHOD

Community Collaboration

From a 13-year partnership between the University of North Carolina at Chapel Hill (UNC-CH) and various community organizations across North Carolina, a research team was formed, consisting of investigators and a rural African American faith community. At a community coalition meeting, the investigator met a community organizer from the faith community. The community coalition met monthly in the community and consisted of various community leaders representing nonprofit service organizations and faith communities. From this meeting, mutual interests to improve the health of the rural faith community were identified, and a partnership began. The research team, also known as the Wholeness, Oneness, Righteousness, Deliverance (WORD) Leadership Team, consisted of pastors, church board representatives, and congregation members of three rural African American churches in one city of central North Carolina in addition to representatives from nonprofit community organizations and investigators from UNC-CH. The churches were identified through the community organizer's connection and identification of them as the main churches serving this particular rural community. All three churches were Black Protestant churches (Steenland et al., 2000) and represented AME Zion, Holiness, and Pentecostal denominations. All community members on the WORD Leadership Team were pastors or members of the three churches.

After obtaining approval from the university's Institutional Review Board, a community health-assessment survey was designed, distributed, and evaluated to identify community assets and needs. The health assessment indicated that body weight was the health issue of most interest to the community. Focus groups were then conducted to inform the design of the intervention. In designing the intervention, the WORD Leadership Team developed, implemented, and evaluated information from the health-assessment survey and focus groups, with each partner contributing their expertise in constructing the intervention. The intervention was then implemented through preexisting networks identified and accessed by the WORD Leadership Team. This article will report the focus group and intervention components from this collaboration.

Focus Groups

A trained facilitator conducted five focus groups (one pilot, two groups with men, and two groups with women) to inform intervention development, particularly how faith informed perceptions of weight and related behaviors. Focus-group participants were recruited from the participating churches through the WORD Leadership Team's extensive networks. Announcements were made at participating churches, sign-up sheets were distributed after church services, and potential participants were informed through word of mouth. Selection criteria for those eligible included being (a) an African American, (b) an adult aged 18 or older, (c) a member of a church or a participant in church activities, and (d) a resident in a Southern rural community. Focus groups with women ranged from 10 to 13 participants per group, whereas focus groups with men ranged from 5 to 7 participants per group. The focus-group guide was developed by the WORD Leadership Team and included questions about participants' perceptions, beliefs, and attitudes regarding weight, perceived barriers and facilitators of weight loss, and preferences concerning intervention components. There were probes

about the role of faith throughout the focus-group guide. The focus-group guide was pilot-tested and the questions refined. Data from the focus groups were used to determine healthy-weight topics of interest, barriers and facilitators of weight loss, how the sociocultural (e.g., faith, social support) environment was related to healthy weight, and logistical issues related to the intervention.

Intervention—Overview

The intervention was an 8-week, behaviorally focused weight-loss program known as the WORD (Wholeness, Oneness, Righteousness, Deliverance), in which participants met once a week for 2 hours in WORD groups (8 to 10 people) led by a pair of trained community members known as WORD Leaders (or lay health leaders). WORD Leaders were members of a participating church and were assigned to facilitate WORD groups that consisted of participants from their respective churches. The study design was a two-group, pretest-posttest, quasi-experimental delayed treatment design, where church was the unit of assignment and individuals within the churches, the unit of observation. The previous church-based weight-loss literature, information from the focus groups, and insider knowledge from the WORD Leadership Team were used to inform the intervention.

Intervention—WORD Leaders

WORD Leaders served as lay health advisors by facilitating WORD groups and by supporting WORD group members through engaging preexisting social networks in participating churches. The lay health advisor model (Eng & Hatch, 1991; Jackson & Parks, 1997) was chosen primarily because of its emphasis on social networks. Black churches are characterized by strong social networks within the church and between the church and the broader community (Eng & Hatch, 1991). Thus, interventions built on these networks promote cultural appropriateness and sustainability (Eng & Hatch, 1991; Kumanyika & Charleston, 1992). The WORD Leadership team confirmed that the lay health advisor model would work very well in their community.

Standard protocol for recruiting lay health leaders was used to recruit WORD Leaders (Jackson & Parks, 1997). The networks of WORD Leadership team members were used to recruit 10 WORD Leaders. WORD Leaders were recruited from the three participating churches and qualifications included (a) an association with a participating church through membership or participation in a church activity, (b) adult aged 18 or older, and (c) interest in health.

WORD Leaders participated in four training sessions (2.5 hours per session) for a total of 10 hours of intensive training. The sessions were delivered during the course of 4 weeks. WORD Leaders received training in specific content areas related to healthy weight, such as calorie counting, low-fat eating, physical activity, serving sizes, portion control, cooking, and eating out. Behavioral strategies for weight loss, social support theory, and the stages-of-change transtheoretical model were also included in the training. Preexisting weight-loss materials and results from the focus groups informed training content and material and reflected the diverse skills of the WORD Leadership team, which included insider community knowledge and obesity expertise. Twelve WORD Leaders completed the training and were certified to facilitate WORD groups.

Intervention—WORD Group Participant Recruitment

WORD Leaders and the WORD Leadership Team made announcements at church events, distributed sign-up sheets at church, and posted flyers and posters in churches to recruit WORD group participants. Information about the intervention was also spread through word of mouth. Recruitment of WORD group participants began approximately 1 month before the intervention. Two weeks before the intervention, a WORD Health Day open to the whole community was held at a participating church to further advertise the program. The WORD Health Day consisted of vendors from different community-health representatives (i.e., local health department, cooperative extension), activities, and speakers. All adults aged 18 or older were allowed to participate in WORD groups. Selection criteria for WORD group participants eligible for program evaluation included (a) association with a participating church through membership or participation in a church activity, (b) adult age (18 or older), and (c) African American race. Potential treatment participants were asked to write down their name and phone number on sign-up sheets if they were interested in participating in a WORD group. Potential participants from churches in the community were then contacted by WORD Leaders or by WORD Leadership Team members to confirm their enrollment.

A total of 73 individuals representing four churches enrolled in the WORD program, with two churches (36 participants) in the treatment group and two (37 participants) in the control group. Participation rates of church attendees were approximately 42% in treatment churches and 31% in control churches.

Intervention—WORD Groups

The intervention was theory based and used concepts from stages-of-change theoretical model (Prochaska, Redding, & Evers, 2003), social cognitive theory (Baranowski, Perry, & Parcel, 2003), and social support models (Heaney & Israel, 2002). Theory was interwoven in the learning modules for each week. For example, each learning module asked participants what stage they were in for a particular behavior change (i.e., increasing physical activity), how their barriers to move to the next stage of change could be overcome, and how support from group members, family, or friends could help facilitate the behavior change process. In addition to a learning module (30 minutes), WORD group meetings consisted of measurements and mingling (10 minutes), a review of the previous week's topic (10 minutes), physical activity with an exercise tape (15 minutes), a Bible study about health (15 minutes), and prayer (5 minutes). Learning-module topics included calories, low fat, physical activity, fruits and vegetables, portion sizes, eating out, and healthy cooking. WORD Leaders followed a detailed training manual organized by topic in facilitating WORD groups.

Control

Of the two churches in the control group, one was recruited with the three original participating churches representing the community. This church received the intervention 1 month after the intervention arm of the study was completed. The second church was recruited from another community at a later time to have a comparable number of treatment and control churches and participants. This church was similar to the others in denomination and ethnicity. This second control church enrolled in the study after the

WORD Leaders had been recruited and trained, thus instead of receiving the intervention, participants from this control church were mailed a health magazine once a month for 3 months after the intervention arm of the study was completed. The health magazine was designed specifically for the WORD and included content that was included in the intervention. Health magazine contents included educational topics about physical activity, low-fat foods, portion size, and eating out in addition to Bible study and goal-setting guides.

Data Collection and Methods

Anthropometrics. Anthropometric measurements were collected from all participants at baseline and follow-up. Height was measured using a stadiometer. Weight was assessed with a Tanita scale (Jebb, Cole, Doman, Murgatroyd, & Prentice, 2000), and waist and hip-circumferences were measured using a measuring tape. Body mass index (BMI) was calculated from dividing weight in kg by height in meters squared (Dalton, 1997).

Health-Behavior Variables. Self-administered questionnaires were also delivered at baseline and follow-up to all participants. Physical activity was assessed through a 16-item checklist that measured frequency and duration of different types of activity. From the checklist, metabolic equivalent task (MET) hours per week were calculated (Campbell et al., 2004). Percentage of calories from fat was assessed through the National Cancer Institute Quick Food Scan based on frequency of intake of 16 foods (Thompson et al., 1998). Fruit and vegetable intake was measured by the National Cancer Institute's Fruit and Vegetable Scanner (Thompson et al., 2004). Gender, ethnicity, age, education, employment, marital status, and income were also assessed.

Interviews

WORD Leaders from the intervention arm of the study were interviewed to assess their perceptions of program satisfaction and efficacy. Questions included changes they observed their members make as a result of the project, why they thought members made those changes, personal changes as a result of the project, what they liked most and least about the program curriculum, and the possibility of sustainability in their church. Each interview lasted approximately 60 minutes.

ANALYSES

Focus Groups

Focus-group discussions were transcribed verbatim, checked for accuracy, and entered into a software program for the management of text data (i.e., NVivo 2.0). An iterative process based on grounded theory was used in a more detailed analysis of the text (Glaser & Strauss, 1967). Emerging themes and codes from initial analyses were reduced to its essential points, and then the core meaning of each reduction was interpreted. This process was iterative, in which rereadings of the text were conducted to refine codes, data reductions, and data interpretations. Coding decisions and emergent findings were discussed until an agreement regarding common themes and codes was

reached (Edstrom & Devine, 2001). To ensure validity of inferences, findings were discussed with the WORD Leadership Team; any disagreements were resolved through discussion. Data analyses included (a) identification of common themes, (b) development of categories of themes, (c) identifying convergence and deviation across groups, and (d) incorporation of findings in intervention development.

Intervention

Frequencies were examined for all variables, and *t* tests were conducted to examine significant baseline differences in variables between the treatment and control. Given prior literature (Ball, Crawford, Ireland, & Hodge, 2003) and the significant differences between baseline BMI, education, and income between treatment and control churches, these variables were controlled for in subsequent analyses. Multiple regressions were conducted using PROC MIXED from SAS 9.1 to examine significant differences between treatment and control in anthropometrics and health-behavior variables from baseline to 8-week follow-up. Intraclass correlation (ICC) because of nesting of participants within churches was accounted for in all analyses. The mean change of each outcome variable (anthropometrics and health behaviors) from baseline to 8-week follow-up was regressed against treatment assignment (treatment or control). Then a second series of multiple regressions were conducted with baseline BMI, education, and age in the model to account for baseline differences between treatment and control. Differences in outcome measures between treatment and control, within treatment, and within control over time were determined from the analyses. An intent-to-treat analysis was also done, in which the average of the percentage change of body weight was imputed for body-weight data missing at follow-up. Results from the intent-to-treat analysis did not differ significantly from results computed from analyses in which intent to treat was not done; thus, we report results for which the data was not imputed.

Interviews

Themes and codes were created from the substantive content of the transcripts, and an iterative process based on grounded theory was used in a more detailed analysis of the text (Glaser & Strauss, 1967).

RESULTS

Focus Groups

A total of 35 individuals participated in four focus groups; 66% of the participants were women. The mean age was 56 ± 15.8 , a little less than half (41%) were married, 76% had a high school education or less, and the majority was employed (58%). On average, the sample was obese ($BMI = 34.2 \pm 8.0$), and reported fair to good health (68%) on a scale from *poor* to *excellent*. The majority reported dieting (68%) and being successful at losing weight from dieting (57%). However, only 27% reported being *very sure* that they could lose weight. Regarding health behaviors' role in weight loss, a majority agreed that eating healthier food (more fruits and vegetables and fewer high-fat foods) would help control their weight (74%) along with exercise (64%). Almost all reported that taking care of their body as "God's holy temple" meant eating healthier

(91%) and being more physically active (82%). When asked who would be most helpful to them in trying to lose weight, family members ranked first (30%), doctor or health care provider second (23%), followed by spouse/partner (20%), close friends (10%), church friends/pastor (10%), other (3%), and no one (3%).

Both men and women mentioned the role of others in promoting or discouraging healthy weight and related health-behavior change. In the context of a health program, the role of others (social support, social pressure, competition) was expressed positively for health behavior change.

If you know that every week when we come out here, we're gonna have to weigh. You know that you don't want to be the one that comes out here with no success, you know . . . even if I just lost a half pound . . . you know, it's better than going out there facing everybody. . . . I know when I get ready to lose weight, I always like have a partner, and that way we encourage each other and, you know, call up, when you get to the point you feel like what's the use, then you can say encouraging words to each other.—Female, age 51

[It would be good to have a] game day where they have . . . men running against each other . . . a race like they get out there and they run. . . . Who can run the longest? Or who finishes a mile the fastest or something like that. Just to keep them competitive. It would help me and [my friend] because [he] would get out there, and I would run beside him and, you know, [if] he catch up to me, I'll keep running, and he's gonna say, "Well, I'm not gonna let [him] beat me tomorrow. You know what I'm saying. So he's gonna try to get out there and beat me every time. And get out there, it'll help me. It'll help him too. He'll get fast as we'll get stronger.—Male, age 20

Well, [a program] would pretty much encourage me, encourage someone else, especially when I reach my goal. And I reach my goal and I see that someone else is, maybe, struggling with the same situation that I was in. Come and go with me . . . in a program that would put you on the right track or help you on the right road or, once I achieve my goal, that would give enough thrill and enthusiasm to say, "Hey, come on, let's go up to the church and . . . we do this together.—Male, age 45

In contrast, the role of others was expressed as a barrier for healthy weight in a "real-world" setting, outside of an organized health program.

And sometimes it's who you are around. If I'm by myself, I don't tend to eat as much. But when I'm socializing with other people, I eat just because I see everyone else eat.—Female, age 46

Peer pressure. Our first battle is that. If, say, if the four of us go out to eat and I'm the vegetarian, and all of them come sit at the table, and they got fried chicken, and they got all their meats and none, for nothing about my veggies, my, just vegetables. And the first time either might say, "Man, you better get up from here—nobody want that food you're eating. You know, eat something that's good for you." And it may, if you're not strong enough, you gonna say, "Well, hey, maybe I'll try a piece." But, no, you shouldn't because that's not part of your lifestyle. So you all have enough faith and [are] strong enough to be able to say, "Well, look, you eat what you want and I'm gonna eat what I want."—Male, age 45

Thus, the role of others in obtaining and maintaining a healthy weight was context specific, whereby social support was positive when attending a health program and negative outside of a program setting. Besides the positive and negative roles of others, lack of time, inconvenience, and lack of knowledge about healthy cooking were the most

frequently mentioned barriers for healthy weight. Women in particular expressed how “unhealthy food” and overeating filled emotional needs.

I just rather be happy than hungry. That’s just the way I feel. I mean, I have people, I have clients that diet, and they’re just miserable. But they [are] hungry. I mean, you know, what kind of life is it to be hungry and unhappy? I rather eat and be happy.
—Female, age 38

Men often talked about the role of willpower and goal setting to maintain a healthy weight; many mentioned the importance of “push[ing] away from the table.” Men also talked about the importance of community resources (i.e., access to affordable gym equipment, transportation) in physical-activity facilitation. Some men said that their knowledge of weight’s relationships with health problems brought them out of denial about being overweight, and knowledge of nutrition and physical activity enabled them to work toward having a healthy weight.

For both men and women, religious and spiritual beliefs were intertwined with perceptions of weight control. Food was expressed as temptation, and eating too much conveyed greed.

It’d just be like, um, [having a] cookie here now. I know that I wasn’t supposed to eat it, but I took a tip of it and lay it back down. And I do eat potato chips, but I didn’t eat them. You see, there is temptation. I didn’t eat. I didn’t eat it.”—Female, age 77

Female participant, age 66: I think eating is not really the problem; it’s knowing how to eat and when to eat because we got to eat, and I think we can eat smaller servings instead of just eating a whole lot. Most the time we eat, go back and get another serving, go back and get another. But if we just eat a smaller serving, that helps us a whole lot.

Facilitator: Why do we keep on going back?

Female participant, age 66: Greed. We’re greedy. I’m not gonna waste. I’m gonna eat it.

Facilitator: Let me ask this: [Do] most of you know about portion sizes and measurements?

Female participant, age 37: Do we know about them or do we follow them? (group laughs)

Facilitator: You say that you know, but you don’t do. What is it that makes you not *do*?

Female participant, age 57: We know. We just don’t do.

Female participant, age 57: Greed. Like in one diet, you [eat] half a cup of vanilla ice cream: What’s the point, you know?

The participants expressed that to overcome temptation, greed, and other barriers to healthy weight, one needed to have faith in God.

But that’s where the faith comes in to help us with that temptation.—Female, age 51

If you have faith serving the Lord, I think that if you’re willing, really looking for a healthy person that you will try to keep up . . . and you wouldn’t . . . just flop down and just eat anything.”—Male, age 44

Faith, it plays the biggest part of everything. If you got faith, you can overcome any obstacles. As far as your health goes . . . [if] a person puts God first, [then] anything that he do, he can succeed.”—Male, age 46

Faith in God gave the believer willpower and faith in oneself to make healthy changes. To obtain faith, one needed to practice spiritual disciplines, such as prayer and reading the Bible. The Word of God (the Bible) was viewed as spiritual food to

empower one against physical food and the temptations associated with fleshly appetites and desires.

You can't really have that much faith in God if you don't get into the Word and read and know what it's all about. If you read, you turn your plate down and fast, do your health and everything, God will grant these things to you. And you got to learn how to give it to Jesus—to turn it over to him.—Female, age 53

And His Word is just like . . . food . . . you got to read His Word . . . His Word will give you the faith to control yourself and govern yourself to what you suppose to do, because if you don't believe in what He says, you can't believe in yourself.—Male, age 45

In Christianity, we like to meditate on the Word of God. We learn to, in his words it teaches how to maintain our weight, what to eat. There's a lot of food that we shouldn't eat that we do eat. And we come to meditation, most of us do.—Male, age 46

Results from focus groups were used to inform the structure of the intervention. A small-group format was implemented to facilitate social support, as was a lay-health-advisor model to promote healthy behaviors in congregations and communities outside of the “health program” context. Data from the focus groups were also essential in developing the intervention's curriculum. Exercises concerning the link between emotions and foods were included, and one session was devoted to healthy cooking. The connection between faith and health was integrated throughout the curriculum via the inclusion of a health Bible study in every session, which facilitated discussion of how to apply knowledge of positive-health-behavior change through increasing faith in God.

Intervention Results

Participant Characteristics

Participants in the treatment and control groups were well matched by gender, race/ethnicity, employment, income, and marital status (see Table 1). However, baseline BMI, education, and age significantly differed between the treatment and control groups. The treatment group was older, had a higher average baseline BMI, and a lower proportion of those completing a bachelor's education or more. Thus, these variables were controlled for in subsequent analyses.

There was a total of 12 dropouts, so 61 participants were available for analysis (treatment $n = 27$, control $n = 34$). Dropouts were more likely to be female and reported family emergencies, scheduling conflicts, and unexpected job demands as reasons for dropping out of the program. Dropouts did not differ by intervention group. No adverse effects were reported.

Of the 73 intervention participants, 52 were women (treatment $n = 25$, control $n = 27$). The sample was 100% African American. The mean (SD) age was 54.1 ± 13.3 years (range 23-83). The majority of those in the treatment group had a high school education or less, whereas slightly more than half of the control-group participants reported having at least a bachelor's degree. Most were employed and married. Forty-one percent of the treatment group reported an income of less than \$20,000 compared to 13% of the control group. On average, participants were obese, with treatment participants having an average BMI of 39.8 (7.9) and control participants having an average BMI of 34.7 (8.4; World Health Organization, 1998). Regarding health behaviors, participants engaged in 205.4 ± 169.7 METs of physical activity, consumed $48.9\% \pm 12.8\%$ of their calories from fat, and ate 3.5 ± 2.6 servings of fruits and vegetables a day.

Table 1. Characteristics of WORD Participants at Baseline

Characteristic	Treatment	Control	Total	<i>p</i> Value
Demographic measures				
Gender (women)	69%	73%	71%	.739
Ethnicity (African American)	100%	100%	100%	.293
Age	57.7 (11.5)	50.9 (14.2)	54.1 (13.3)	.034
Education				.0001
High school or less	64%	33%	46%	
Some college	33%	14%	25%	
Bachelor or more	3%	53%	29%	
Employment (employed)	64%	76%	70%	.273
Marital status (married)	70%	51%	60%	.118
Income				.076
< \$20,000	41%	13%	26%	
\$20,000-\$29,000	29%	20%	19%	
\$30,000-\$49,000	26%	23%	25%	
≥ \$50,000	15%	43%	30%	
Anthropometric measures				
BMI (kg/m ²)	39.8 (7.9)	34.7 (8.4)	37.2 (8.5)	.009
WHR	0.89 (0.08)	0.86 (0.09)	0.87 (0.09)	.092
Waist girth (cm)	113.4 (14.5)	101.3 (14.7)	107.3 (15.7)	.001
Hip girth (cm)	127.5 (14.9)	118.6 (16.7)	123.0 (16.4)	.019
Health behavior measures				
Physical activity (METs)				
Total	163.7 (147.3)	245.8 (181.9)	209.4 (168.4)	.040
Moderately vigorous recreation	53.6 (69.8)	98.8 (107.0)	76.8 (93.0)	.040
Calories from fat (%)	47.8 (10.8)	49.9 (14.7)	48.9 (12.8)	.627
Fruit/vegetable intake (servings)	3.6 (2.3)	3.4 (3.0)	3.5 (2.6)	.802

NOTE: Values are expressed as mean ± standard deviation or percentage (%). WORD = Wholeness, Oneness, Righteousness, Deliverance; WHR = waist-hip ratio; MET = metabolic equivalent task.

Anthropometrics

From baseline to 8-week follow-up, the treatment group, on average, lost 3.0 (0.87) more pounds compared to the control group (see Table 2), significant at $p = .001$. There was also a significant difference in hip circumference change, with the treatment group, on average, having a 2.5 (1.1) cm ($p = .04$) greater decrease in hip circumference than the control group. The mean change of weight (−3.6 [0.64] pounds) and hip circumference (−3.6 [0.84] cm), in addition to waist circumference (−4.4 [1.1] cm), was also highly significant within the treatment group ($p < .01$). Controlling for baseline BMI, education, and age decreased the magnitude of the difference between the treatment's mean weight loss and the control's mean weight loss (treatment lost 2.8 ± 0.89 more pounds than the control), but the weight-loss results remained highly significant ($p = .003$). Controlling for baseline BMI, education, and age also decreased the magnitude and significance of the difference between the treatment group's mean hip circumference and the control group's mean hip circumference over time (−3.4 [0.86] cm; $p = .05$). However, the mean change in weight (−3.5 [0.65] pounds), waist circumference (−3.7 [1.1] cm), and hip circumference (−3.4 [0.86] cm) within treatment group

Table 2. Effect of the WORD on Anthropometric Measures and Health Behaviors

	Treatment	Control	Control- Treatment	<i>p</i> Value for Between-Group Comparison
	Mean Change (<i>SE</i>)	Mean Change (<i>SE</i>)	Mean Change (<i>SE</i>)	
Anthropometrics				
Weight (lbs)	-3.6 (0.64)**	-0.59 (0.59)	-3.0 (0.87)	.001
Waist (cm)	-4.4 (1.1)**	-1.8 (1.0)	-2.6 (1.5)	.08
Hip (cm)	-3.6 (0.84)**	-1.1 (0.78)	-2.5 (1.1)	.04
Health behaviors				
Total physical activity (METs)	1.5 (2.7)	-3.1 (2.4)	4.6 (3.6)	.21
Recreational physical activity (METs)	3.5 (1.6)*	-2.8 (1.4)	6.2 (2.2)	.01
Calories from fat (%)	-6.6 (4.3)	-3.0 (3.9)	-3.6 (5.8)	.54
Fruit and vegetable servings	0.01 (0.59)	-0.31 (0.52)	0.31 (0.79)	.69

NOTE: Values represent mean changes (standard errors); each regression model tested the effect of the treatment over time on anthropometrics and health behaviors. WORD = Wholeness, Oneness, Righteousness, Deliverance; MET = metabolic equivalent task.

* $p < .05$ difference from baseline within group. ** $p < .01$ difference from baseline within group.

remained significant at the $p < .01$ level after controlling for baseline BMI, education, and age (see Table 3).

Health Behaviors

Compared to control participants, treatment participants reported 6.2 (2.2) METs greater recreational physical activity from baseline to follow-up ($p = .01$). There was also a significant change in mean recreational physical activity over time within treatment group (3.5 [1.6] METs, $p < .05$). These relationships remained significant at the $p < .05$ level after controlling for selected demographic characteristics (i.e., baseline BMI, education, and age), with treatment participants reporting 6.4 (2.2) greater METs of recreational physical activity compared to the control group over time and 3.8 (1.7) greater METs of recreational physical activity within treatment group over time.

Interview Results

WORD Leaders reported that the project was a success. One WORD Leader said, "People was sincere in what they were hearing . . . people think a lot about their health now . . . the program opens up eyes to these kinds of things." Another said, "Overall, it was a good program. We got a lot out of it. It was one of the best programs we had. People who never participated, participated in this one." Desire to improve health, feeling better, and the program's faith orientation were reasons that WORD Leaders believed their group members made positive changes in health.

Since the program was based on the Word, it helped—it was more powerful. The people of God see the necessity of doing better to work for the Lord . . . faith that God would help them and that the body is as important as the soul to God.

Table 3. Effect of the WORD on Anthropometric Measures and Health Behaviors Controlling for Baseline BMI, Education, and Age

	Treatment	Control	Control-Treatment	<i>p</i> Value for Between-Group Comparison
	Mean Change (<i>SE</i>)	Mean Change (<i>SE</i>)	Mean Change (<i>SE</i>)	
Anthropometrics				
Weight (lbs)	-3.5 (0.65)**	-0.72 (0.69)	-2.8 (0.89)	.003
Waist (cm)	-3.7 (1.1)**	-1.9 (0.97)	-1.9 (1.4)	.20
Hip (cm)	-3.4 (0.86)**	-1.1 (0.80)	-2.3 (1.2)	.05
Health behavior				
Total physical activity (METs)	2.3 (2.7)	-3.2 (2.3)	5.5 (3.6)	.13
Recreational physical activity (METs)	3.8 (1.7)*	-2.6 (1.4)	6.4 (2.2)	.01
Calories from fat (%)	-5.9 (4.2)	-1.4 (3.7)	4.5 (5.5)	.43
Fruit and vegetable servings	0.10 (0.60)	-0.42 (0.52)	-0.52 (0.79)	.51

NOTE: Values represent mean changes (standard errors); each regression model tested the effect of the treatment over time on anthropometrics and health behaviors and controlled for baseline BMI, education, and age. WORD = Wholeness, Oneness, Righteousness, Deliverance; MET = metabolic equivalent task.

* $p < .05$ difference from baseline within group. ** $p < .01$ difference from baseline within group.

WORD Leaders also reported making personal changes in their own health habits, particularly in the area of nutrition. They attributed these personal changes to the training that they received to deliver the curriculum: "Some of the things we went over made me take a look at myself . . . made me feel more stronger in faith, understanding, believing . . . in helping counsel people about overweight." Regarding the curriculum, WORD Leaders commented positively on the clear organization and presentation of materials and the spiritual components of prayers and Bible studies. For improvement, WORD Leaders recommended less text, more hands-on activities, and more examples concerning application. All WORD Leaders interviewed said that they anticipated that the program would continue if they "talked it up" and encouraged others to become involved; they said that the exercise- and health-oriented Bible study components of the study would be the most likely aspects of the project to continue.

DISCUSSION

The WORD intervention resulted in significant weight loss ($3.00 \text{ lbs} \pm 0.87$) from baseline to 8-week follow-up in treatment participants compared to control participants. Although this weight loss was significant, it was relatively modest compared to other African American church-based weight-loss interventions. McNabb et al. (1997) reported a 10-lb weight loss in their treatment group compared to a 2-lb gain in the control after 14 weeks. Kumanyika and Charleston (1992) reported a weight loss of 6 lbs in their treatment group after 8 weeks; there was no control group in their study design. In both studies, participants were African American women, and the intervention

consisted of weekly small-group meetings led by either a health professional alone or in conjunction with a lay facilitator.

There may be several explanations for why the WORD produced a lower average weight loss than previous church-based interventions for African Americans, but the most critical factor is likely the short, 8-week time frame of the program. Previous weight-loss interventions have reported maximum weight loss at 24 weeks (6 months; Avenell et al., 2004a, 2004b). Thus, the weight loss produced in an 8-week time span of the WORD could have reflected a small proportion of the program's potential effectiveness. Moreover, the WORD was a minimal-intensity weight-loss intervention that was delivered solely by lay health advisors (WORD Leaders). Other weight-loss interventions have been delivered by health professionals or by lay facilitators in conjunction with health professionals (Kumanyika & Charleston, 1992; McNabb et al., 1997). Therefore, both intervention intensity and duration was less, yet a medium intervention effect was achieved. Trade-offs between intensity, duration, and reach must be made if weight-loss programs are to be disseminated widely beyond the clinic setting. Finding the right combination that ensures positive weight-loss outcomes yet achieves high participation and sustainability is critically important. Finally, a 2- to 3-lb weight-loss difference between intervention and control participants with this minimal intervention is quite promising and, on a population basis, would have important public health benefits.

What distinguishes the WORD from previous African American, church-based weight-loss interventions is the incorporation of the church's faith culture in the program, the delivery of the intervention by lay health advisors alone, and its CBPR approach. Although the specific tailoring of the program by the community's religious faith was not tested, program evaluations by WORD Leaders identified the incorporation of faith's relationship with health as a key reason for the program's positive reception and effectiveness. The use of the lay-health-advisor model enhanced the possibility of program sustainability through building on natural social networks within the faith community in an economical way. The CBPR approach also oriented program development, with program feasibility and sustainability as an important focus.

Besides contributing to program sustainability, using a CBPR approach facilitated the organization of community representatives to promote health. From the program, preexisting networks were strengthened and new ties were formed. In-depth interviews with WORD Leadership Team members revealed evidence of greater community cohesiveness, particularly between churches that had not interacted with each other in a considerable way before: "A part of us were from different denominations and didn't get a chance to see each other . . . [so] we got a chance to expound on the spiritual side and we were giving each other respect." Perhaps this increased sense of community cohesiveness will lead to greater community organizing in the future. Equipping community members to be WORD Leaders through training may have also increased community capacity. In in-depth interviews, WORD Leaders reported that they felt more confident in themselves, and better able to help others: "[The program helped me] to be a better leader, community person, and Christian."

There are several limitations to the study. Although the study design adequately tested the program's effects on selected outcomes by including a control group and controlling for baseline differences between treatment and control in analyses, the lack of randomization and subsequent differences in baseline characteristics between groups leaves open the possibility that treatment effects occurred because of demographic characteristics. However, these were controlled for in the analysis, which minimizes this limitation. The purposive sampling in one rural, African American faith community

also limits the external validity of this study; these results may be unique to this particular community. Given these limitations, however, this study offers promising preliminary results that a faith-based weight-loss program using a CBPR approach is effective in a rural, African American faith community. Future CBPR-based weight-loss studies engaging a larger and more representative sample with a longer timeframe need to be conducted to test the WORD's full potential.

Implications for Practice

The WORD is a pilot study that gives some insights into what may be achieved with a brief, 8-week, culturally relevant, faith-based weight-loss program. Future weight-loss programs may benefit from coordinating intervention activities by working collaboratively with church members to plan and deliver these programs. In our partnership, we engaged partners to bring forth each partner's unique expertise. We found that our partners were interested in serving as lay health advisors to promote healthy weight in a rural, faith-based setting. The program's faith-based foundation also promoted program acceptance and perceived effectiveness. Faith-based versus faith-placed interventions have been debated recently (DeHaven, Hunter, Wilder, Walton, & Berry, 2004). "Faith-placed" sees the church as a setting where the program is adapted to fit into, whereas "faith-based" sees the church as an organic entity with cultural norms and social structures from which health programs can be built and integrated. Future interventions in churches may benefit from taking a faith-based approach that embraces how faith informs health-related perceptions, beliefs, and behaviors and then explicitly applies this understanding in developing and implementing interventions.

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