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The LIFE Project: A Community-Based Weight Loss Intervention Program for Rural African American Women

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Abstract

Obesity continues to be a significant health problem for African American women. While a number of obesity interventions target urban African American women, few target rural ones. The LIFE Project is a 10-week intervention designed to reduce obesity in this rural population. Two different interventions (spiritually-based and nonspiritually-based) were pilot tested, each utilizing a pretest, posttest design. Results demonstrated that both interventions led to significant reductions in weight, but the spiritually-based intervention led to additional improvements. The LIFE project also demonstrated that churches are appropriate settings to deliver health interventions to these women.

Keywords

weight loss intervention; African American; rural

Despite the well-known risks of being overweight and/or obese, the prevalence of obesity continues to grow, particularly among racial/ethnic minority groups.¹ Members of these groups also suffer disproportionately from the burden of many chronic illnesses where obesity is a major underlying cause.² Obesity is particularly problematic for African American women. Recent data show that 77.5% of non-Hispanic African American women are overweight and 49.6% of non-Hispanic African American women are obese.³ Moreover, the number of overweight and obese

African American women has increased dramatically over the past thirty years.

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While the number of overweight or obese African American women is high, these women tend to be more accepting of their weight and to not associate being overweight or obese with being unhealthy.⁴ Yet despite this acceptance of larger body sizes, some African American women are concerned about their weight and are involved in weight reduction interventions.⁵ Some findings^{6,7} indicate that when African American women enter into weight-loss programs, they initially lose weight but fail to keep it off long-term. In addition, results^{7,8} have shown that African American women tend to drop out of weight loss programs. Given the health dangers posed by overweight and obesity, and the enormous burden of risks to chronic illness, all African American women should be concerned about these conditions, and weight-reduction interventions must target this group and focus on retention.

This article summarizes the LIFE Project, a church-based, weight-loss intervention program that directly resulted from the input of rural African American women. LIFE was developed out of community residents' expressed need for a weight-loss intervention program focusing on nutrition and physical activity education to help them avoid chronic conditions such as diabetes that are related to overweight and/or obesity. While a number of obesity interventions target urban African American women, few target rural ones. Work thus far indicates that LIFE is an effective weight-loss intervention for rural African American women, a population underaddressed in the literature.

Background

Weight Loss Programs and African American Women

Several studies^{9–18} have addressed weight loss among African American women. The results of these studies show varying levels of successful weight loss among overweight and obese African American women. Several reported group level interventions that addressed various aspects of obesity in this population, including emotional and psychological aspects. Yet most employed small samples and were implemented on a small scale, suggesting the difficulties in effectively implementing large-scale weight loss programs in this population. Finally, most were implemented in large, urban, metropolitan areas such as Atlanta, Ga, Baltimore, Md, and Chicago, Ill,^{14–18} leaving a significant gap in the literature regarding successful weight-loss programs for rural African American women, a population significantly at risk for overweight and obesity, and with considerably fewer community resources to address weight loss.

Many of the weight-loss programs for African American women described in the literature were referred to as either church-based^{12,13,15,16,18,19} or faith-based.⁹ Church-based programs were conducted in churches, while faith-based programs included a spiritual component but were not conducted in a church setting. Some church-based programs included a spiritual component^{13,18} while others did not.^{12,15,16,19} Other programs^{10,11,14,17} were not conducted in churches nor did they include a spiritual component. Of the church-based programs, Project Joy¹⁸ and The WORD¹³ were of particular interest because of the integration of traditional behavioral, nutrition and fitness elements with a spiritual component, and their use of trained lay leaders or health advisors.

Project Joy,¹⁸ conducted in Baltimore, MD, tested three year-long intervention strategies: two active and one self-help (control). Curricula for the active interventions consisted of standard nutritional and physical activity components (standard), and standard components plus spiritual and church culture components (spiritual). Group sessions were facilitated by experienced health educators and lay educators. The control group received educational materials and pamphlets on topics such as healthy eating and physical activity, targeted information based on their personal screening results, and materials to allow for self-monitoring of personal goals. Of the 529 women enrolled, 35.5% were in the standard group, 50.5% in the spiritual group, and 14.0% in the control group. Fifty-six percent ($n = 294$) of the women completed one-year

follow-up biological measures. Standard (56.4%) and spiritual (59.6%) intervention group participants were significantly ($p < .05$) more likely to return for follow-up than were control (39.2%) group participants. The authors noted that although the standard intervention was designed without spiritual components, participants introduced spirituality into their sessions from the beginning without staff assistance. Consequently, the standard and spiritual interventions operated almost identically, and results were presented for both groups combined and compared to the control group.

Within the combined intervention groups, there were statistically significant changes in weight (-1.1 pounds, $p < .05$) and systolic blood pressure (-1.6 , $p < .05$). In the control group, significant gain in weight ($.83$, $p < .05$) was reported. Participants in the top decile for weight loss at one year in the combined intervention group demonstrated a significant decrease in weight (-19.8 pounds, $p < .05$), systolic blood pressure (-8.1 , $p < .05$) and diastolic blood pressure (-4.4 , $p < .05$); participants in the top decile of weight loss at one year in the control group demonstrated a significant decrease in weight (-7.0 , $p < .05$) only. The authors noted that modest to significant dietary behavioral changes with favorable biological changes suggest that community interventions at church settings, where there is continual support and reinforcement, have a reasonable chance of influencing the health of participants.

Kim et al.¹³ evaluated a faith-based weight loss intervention (The WORD) for overweight rural African American women and men in central North Carolina which incorporated the community-based participatory research (CBPR) approach. A two-group, delayed intervention design was used, with the church as the unit of assignment. The treatment group ($n = 36$; 25 women, 11 men) included eight weeks of small group sessions led by trained community members. The control group ($n = 37$; 27 women, 10 men) received the intervention one month after the intervention group was completed. At completion, mean weight loss was 3.6 lbs for the treatment group and 0.59 lbs. for the control group, a significant difference. However, the authors cited lack of randomization and purposive sampling as limitations, and stated that future studies should include a larger, more representative sample with a longer timeframe to test the intervention's full potential. They indicated, however, that the study offered promising preliminary results that a faith-based weight loss program using a CBPR approach could effectively be implemented in a rural, African American, faith community.

In general, several recurring features were evidenced among studies reporting successful weight loss among overweight and obese African American women. These features include delivery in a church setting or incorporation of a faith component; facilitation by a trained lay or community worker; a group, single-gender format; and a curriculum based on nutrition and physical activity education. Therefore, these features were considered in the design and implementation of the LIFE program.

The LIFE Project

The LIFE Project is a 10-week weight-loss educational intervention program for overweight/obese African American women living in rural areas of South Carolina, who have little access to weight-loss programs. It is a church-based, university-community collaboration developed with community input from its inception through to its final design. LIFE grew out of concerns expressed, and input provided, by participants in community forums conducted by the Outreach Core of the Center of Excellence in Partnerships for Community Outreach, Research on Health Disparities and Training (EXPORT) Project, a collaborative partnership between a land-grant university and a small, historically Black college designed to reduce health disparities in rural South Carolina. As part of EXPORT's mission, the Outreach Core held forums in four rural and semi-rural counties of South Carolina (Bamberg, Barnwell, Calhoun, and Orangeburg) to ascertain residents' perspectives on their health needs and on ways to effectively address them. Residents, mostly African American women, identified diabetes and hypertension as major

health issues, and obesity prevention and reduction as challenges to be overcome in order to effectively prevent and manage them. They cited education about proper nutrition and regular physical exercise as important strategies to prevent and reduce obesity, prevent and manage diabetes and hypertension, and improve overall health and well-being. They also identified difficulty communicating with health care providers as a major concern. Inclusion of the latter demonstrates the importance of including community members from the inception of any intervention in order to incorporate their concerns as fully as possible into the design. Indeed, the LIFE acronym itself emerged from these forums, reflecting the traditions of these rural, African American residents: L = Love, for self, family and God; I = Inspiration, from friends, God and family; F = Feedback; and E = Education, about dietary practices, daily physical activities, and discussions with health care providers (3Ds).

The curriculum was organized into components reflecting these three Ds, and was designed to be implemented in churches, as residents identified these institutions as easily accessible, familiar and comfortable. The researchers determined that spirituality would be a dominant curricular component, given the influence of the church in African American rural life and the positive features of a spiritual component found in the studies described previously. Thus, the intervention consists of a spiritually-based curriculum, with a nonspiritually-based curriculum serving as a control.

The LIFE curriculum was also patterned after Project Joy in that its curriculum included both nutritional and physical activity information, spiritual and nonspiritual versions, and was delivered by community facilitators. The spiritually-based and nonspiritually-based curricula included the same content on diet, daily activities, and discussions with health providers, but appropriate biblical scriptures were added to each session of the spiritually-based curriculum (see Figure 1).

Methods

Sample

The LIFE Project was initially piloted in three rural counties of South Carolina. This article presents data from one county, chosen because recruitment there was most successful. Over a 2-month period (spring 2006), a convenience sample of 35 African American women was recruited from two churches by a county extension educator, who was also an EXPORT community representative. One church was designated for piloting the spiritual curriculum ($n = 24$); the other was designated for piloting the nonspiritual curriculum ($n = 11$). Recruitment strategies included posting flyers and making announcements, as well as meeting with small groups at the selected churches to discuss the purpose of the study and to enlist participation. Participants met the criteria for inclusion if they were female, 25–64, self-identified as African American or Black, not pregnant or breast-feeding, and agreed to attend all scheduled sessions. To examine the effectiveness of both curricula on weight loss and health-related behaviors among rural, African American women, a within-group pre-test, post-test design was utilized. All participants signed consent forms prior to commencing the intervention.

Measures

For all participants, pre- and post-intervention physiologic and survey data were collected during the first and last sessions. Physiologic measures were height (measured using a portable stadiometer), weight (measured using a portable scale with a digital display in pounds (maximum weight capacity of 440 lbs) with participants wearing light clothing and no shoes), and blood pressure (measured utilizing a digital automatic sphygmomanometer, which included two contoured arm cuffs: standard (fits arms 9" to 13" in circumference) and large (fits arms 13" to 17" in circumference). Using height and weight data, Body Mass Index (BMI)

was calculated based on a table supplied by the National Heart Lung and Blood Institute.²⁰ Four surveys also were administered at first and last sessions: 1) a Demographic Questionnaire (DQ), 2) the Yale Physical Activity Survey (YPAS), 3) the NIH Fat Screener (NFS), and 4) a Communications with Physicians Questionnaire (CPQ).

DQ consists of 10 items, and includes sociodemographic questions about educational level, date of birth, self-reported weight, self-reported height, perception of general health, marital status, employment and household/family income.

YPAS is a comprehensive survey designed to measure physical activity in older adults (ages 60 and higher). It surveys 27 activities, covering a wide range such as household work, yard work, caretaking, exercise, and recreational activities. Participants estimate how much time is spent on each activity, ranging from low to high intensity, in a typical week during the previous month. The time for each activity was then summed over all activities to create a total time summary index, expressed as hours per week, for each participant. Test-retest reliability coefficients for YPAS generally have been good^{21,22} and concurrent validity has been established.

NFS is a 17-item assessment instrument designed to estimate an individual's usual intake of percent energy from fat. It asks about consumption of foods that were the most important predictors of variability in percent energy from fat among adults in the USDA's 1989–91 Continuing Survey of Food Intakes of Individuals (CSFII). Responses range from “never” to “2 or more times per day.” The frequency reported categorically was converted to the number of times consumed per day—generally, the midpoint of the frequency range. The proportion of margarine and butter added to foods that was regular fat was estimated as part of the calculation of percent energy from fat intake. Each participant's percent energy from fat score was estimated by applying regression coefficients to the number of times each food item was consumed per day. NFS has been reported as reliable and valid.²³

CPQ was developed at the Stanford Patient Education Research Center and consists of three items that assess how often individuals communicate with their health care providers. Responses range from “never” to “always” (coded from 0 to 5). Each participant's score is the mean of the three items. A higher score indicates better communication with health care providers. Test-retest reliability has been reported as .89.²⁴

Procedures

The primary researcher's University Institutional Review Board approved the research protocol. Two churches similar in congregation size and in number of African American female members, and having adequate facilities/resources to hold the educational sessions, were chosen for the pilot. Letters of agreement and support were secured from both. The county extension educator was trained in both curricula and led all sessions, ensuring consistency of presentation content and delivery style across sites. Each session lasted approximately 90 minutes, with additional time allocated for discussion and sampling of healthy foods. At the first weekly session of each group, each participant was given a notebook containing slides and handouts for all the sessions. The research team attended the first and last sessions of each group to administer and collect surveys, to assist with the collection of physiologic data, and to answer questions from participants.

Data Analysis

Descriptive statistics were used to organize and summarize the data. The data were checked for normality and found to be skewed. Therefore, for pre-to post-intervention comparisons,

Wilcoxon Signed Ranks Tests were used. The level of significance for all statistical procedures was set at .05.

Results

Although 35 women were recruited, two participants in the nonspiritual group had to be dropped from the analysis due to incomplete data, as did five women in the spiritual group. Thus, the final sample size was $N = 28$: $n = 9$ in the nonspiritual group, and $n = 19$ in the spiritual group.

Participants in the nonspiritual group had a mean age of 52.44 years ($SD = 12.08$). Around 56% had college or graduate degrees, 33.3% were high school graduates or had completed some college, and 11.1% had not completed high school. Fifty percent were married, about 38% never married, and 12.5% were widowed. Most (87.5%) reported their health status as “good” to “excellent,” while 12.5% reported their health status as “fair.” About 38% were employed full-time, 37.5% were retired, and 25.0% were home-makers or unemployed. Twenty-five percent reported annual household income as less than \$10,000, 50.0% reported income in the \$10,000 – \$49,999 range, and 25.0% reported income $\geq$ \$50,000.

Participants in the spiritual group had a mean age of 49.84 ($SD = 7.39$). Around 21% had college or graduate degrees, over two-thirds (68.4%) were high school graduates or had completed some college, and 10.5% had not completed high school. Over two-thirds (68.4%) were married, 10.5% never married, 10.5% were separated, and 10.6% were either widowed or divorced. Most (77.8%) reported their health status as “good” or “very good,” while 22.2% reported their health status as “fair.” Two-thirds (66.7%) were employed full-time, 5.6% were retired, and 27.8% were employed part-time. Around 11% reported annual household income as less than \$10,000 per year, most (83.3%) reported income in the \$10,000 to \$99,999 range, and 5.6% reported income $\geq$ \$50,000.

Within-Group Comparisons

Within group comparisons were performed on the pre-and post-physiologic measures by group using Wilcoxon Signed Ranks Tests (see Table 1). Results for the nonspiritual group ($n = 9$) indicated statistically significant reductions in weight ($Z = -1.96, p = .05$) and in systolic blood pressure ($Z = -2.31, p = .02$). Results for the spiritual group ($n = 19$) indicated statistically significant reductions in weight, in systolic blood pressure and in BMI ($Z = -2.77, p < .01$; $Z = -1.97, p = .05$; and $Z = -2.55, p = .01$, respectively), and a clinically significant reduction in diastolic blood pressure ($Z = -1.92, p < .06$).

For psychosocial data comparisons, Wilcoxon Signed Ranks Tests were used to assess pre-to post-changes within groups for percent energy from fat, physical activity, and communication with physicians. For the spiritual group, statistically significant improvements were found in physical activity (pre mean=19.27 ($SD=2.61$), post mean=30.99 ($SD=3.79$); $Z = -2.74, p < .01$) and in communication with health care providers (pre mean=3.32 ($SD=0.29$), post mean=3.94 ($SD=0.28$); $Z = -2.06, p = .04$). No other statistically significant changes were demonstrated.

Qualitative Data Results

In the final, post-test session of the curriculum, participants in both groups were asked for their verbal and written feedback concerning the content, delivery and relevance of the LIFE project. Their responses were overwhelmingly positive. They reported that they understood the content, learned new information, and that they particularly enjoyed the participatory physical activity demonstrations with the trainer and the food preparation demonstrations—trying out familiar

ethnic foods prepared in new, healthy ways. They also reported enjoying the group format and coming together weekly. Many expressed sadness that the groups were ending. One group began making plans to continue physical activity components of the LIFE Project by arranging to walk together around their church.

Discussion

The LIFE project was developed out of community residents' expressed need for an educational weight-loss intervention program which included information about diet, daily physical activities, and discussions with health care providers. Inclusion of the latter was a departure from other weight loss interventions, but demonstrates the importance of including community members from the inception of any intervention in order to incorporate their concerns as fully as possible into the design. It also recognizes the link between personal lifestyle behaviors, the health care system, and individuals' need to be able to talk to health care providers in order to manage their health and medical concerns.

This study showed that a weight loss program that incorporates components from programs aimed at urban African Americans can be implemented successfully in rural, predominantly African American churches. Participant recruitment was accomplished within a relatively short period of time (2 months) with a high retention rate (>95%). This study also provides evidence that community residents can and will engage in designing weight loss interventions and that African American women will participate in these programs, resulting in improvements in weight and blood pressure. The LIFE Project proved to be particularly effective in addressing the physical and physiological effects of obesity, as both the nonspiritual and spiritual groups demonstrated significant reductions in weight and systolic blood pressure. It is unclear why only the spiritual group showed significant reductions in BMI, physical activity, and communication with physician, although it is possible that because the nonspiritual group had fewer participants than the spiritual group (9 compared to 19), the different outcomes surfaced solely in the larger group. That both groups successfully achieved reductions in weight and systolic blood pressure has substantial implications for African American women at risk for overweight and obesity, as well as for the chronic disorders associated with each, including diabetes, essential hypertension, cardiovascular disease and cerebrovascular disorders.

The LIFE Project appears to be an effective weight-loss intervention for rural African American women, a population underaddressed in the literature. This finding is consistent with previous studies showing reductions in weight loss in urban African American women following intervention programs, suggesting that given an appropriate intervention program, African American women, whether urban or rural, will lose weight. Results from the LIFE Project show that certain features, particularly the social interaction made possible through the group process, is perhaps as important as the curricular content. Furthermore, the LIFE Project supports other findings that churches can be desirable settings for implementing such interventions.^{12,13,15,16,18,19} Women in both groups appear to accept and enjoy the LIFE Project. Because of the unequal numbers of participants in the two groups, as well as the small numbers in each group, it was not feasible to analyze the effects of the spiritual compared to the nonspiritual curriculum. All the women were clearly enthusiastic and appreciative of the program, as evidenced by positive remarks given during the post-testing and by their expressed desire to continue meeting. In each group, the women indicated they would like to see the program continued in their community, stating that there is little support and few community resources to address wellness.

Conclusions

Research demonstrates that African American women face many challenges in maintaining a healthy weight, yet the research literature shows relatively few successful weight loss programs geared toward them, even though this population is significantly overweight and/or obese compared to other ethnic and gender groups. The weight loss programs for African American women which have proven to be effective primarily have been conducted in urban areas. There has been little empirical evidence of effective weight loss strategies geared toward rural African American women, a group with fewer community resources than their urban counterparts. Thus, the lack of empirical data for this population speaks to the importance of the LIFE Project, an intervention program that was developed with input from rural women themselves and that included components from successful intervention programs implemented in urban settings.

Findings from the LIFE project support other findings^{12,13,15,16,18,19} that show churches as important community-based institutions that can house and facilitate community health improvement programs, including weight loss interventions. Church members can be mobilized to enhance recruitment and also to support one another as participants. However, whether its benefits can be sustained longitudinally remains to be determined. Kumanyika⁶ found that African American women participating in weight loss studies initially lose weight but often fail to maintain that weight loss.

Lessons learned from the LIFE Project, such as involving community residents from the onset, can be applied to other churches to improve their capacity to facilitate health intervention and improvement programs. LIFE can also be expanded to other community institutions familiar to and used regularly by community residents, such as barbershops and beauty shops. In addition, local research institutions and health departments can be connected more directly as well. Future research should incorporate longitudinal components, such as short-and long-term follow-up measures, and include procedures to ensure translation of findings back to the community for widespread dissemination and use.

Additionally, the social/environmental factors that encourage or discourage obesity in rural African American women should be addressed as should methods of mobilizing community resources to assist these women to make lifestyle changes that will help them to attain and maintain a healthy weight. A more in-depth understanding of their perception of body weight and of weight loss, and the role social-interaction plays in the weight-reduction process, would also help to prepare the foundation for interventions for this population that are focused on achieving a healthy weight and maintaining it over time. Finally, further research is needed to learn more about the factors that contribute to overweight and obesity in other rural populations.

Limitations

Although this study provides important information about a lifestyle intervention to achieve weight reduction among overweight and obese rural, African American women, it has limitations that limit generalizability of its findings, such as small sample sizes. A stage of readiness to change measure should be incorporated to provide greater understanding of how women progress from disinterest in weight loss to participation in a weight loss program to sustaining their weight loss.

Participant recruitment into each of the intervention groups was an issue for the LIFE project. Since recruitment was voluntary and centered in churches, one church was able to recruit more participants. This resulted in a size difference between the spiritual and the nonspiritual groups. Although there did not appear to be any retention issues for either group, there were issues related to incomplete data for both, as some participants did not answer all questions in each survey. These issues must be addressed in future testing. The LIFE Project clearly shows

overall health benefits, but as all of the participants were church-goers, it may be that the women in the nonspiritual group were quite similar to the women in the spiritual group, and that the inclusion of scriptures in the spiritual group did not make a big difference. Thus, not only does this potential factor need further study with a larger sample, further recruitment efforts should address how to incorporate rural, African American women with no religious affiliation into a weight loss and wellness program, both to address their health care needs and to better test the difference in effectiveness, if any, between the spiritual and nonspiritual curricula. Moreover, further work is needed to ascertain potential differences in using the same curriculum in spiritual and nonspiritual settings (eg, a church and a beauty shop).

Implications for Practitioners

Findings from this study contribute to filling a gap in obesity-related research and suggest important directions for the planning of weight loss interventions for adult African American women who live in rural areas. Researchers should continue designing studies that will provide insights into the possible links between church affiliation or religion/spirituality and the health of rural African American women, with especial focus on healthy eating and physical activity practices. Based on LIFE Project findings of weight loss and blood pressure reductions in a group setting, further research should explore how group dynamics, whether church-affiliated or not, can empower participants to make and sustain healthy behavioral changes.

In conclusion, the benefit that African American women, both rural and urban, can gain from maintaining a healthy weight is evident. Given the burden of health disparities borne by this population, researchers and practitioners must continue to develop and implement weight loss programs for them and to disseminate findings about successful strategies. The LIFE Project clearly addressed these needs in rural African American women; however, further development of the project and application of its curriculum to other populations are needed.

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Session	Topic	
	Nonspiritual	Spiritual
1	Orientation, Pretests	Orientation, Pretests Scriptures: II Cor. 5:17; I Cor. 6:19; Phil. 4:13
2	Daily Activity: Physical Fitness	Daily Activity: Physical Fitness Scriptures: Rom. 12:2; Eccles. 4:9-10
3	Daily Activity: Building a Personal Plan	Daily Activity: Building a Personal Plan Scriptures: John 10:10; I Cor. 10:13; Prov. 3:5-6
4	Daily Activity: Making a Good Plan Better	Daily Activity: Making a Good Plan Better Scriptures: Col. 3:2; Phil. 3:13-14; Prov. 19:20
5	Dietary Practices: Understanding the Food Guide Pyramid and a Balanced Diet	Dietary Practices: Understanding the Food Guide Pyramid and a Balanced Diet Scriptures: Gen. 1:29; Ezek. 4:9; Daniel 1:12, 15
6	Dietary Practices: Portion Sizes and Overeating	Dietary Practices: Portion Sizes and Overeating Scriptures: Ps. 16:5; I Cor. 10:31; Matt. 17:20
7	Dietary Practices: Cooking Methods	Dietary Practices: Cooking Methods Scriptures: III John 1:2; Prov. 3:5-6
8	Dietary Practices: Fast Foods	Dietary Practices: Fast Foods Scriptures: Matt. 6:31, 33; Ps. 32:8; Matt. 6:16-18
9	Discussions with Healthcare Providers	Discussions with Healthcare Providers Scriptures: Jer. 30:17; Prov. 19:20
10	Wrap-up, Posttests, Feedback	Wrap-up, Posttests, Feedback Scriptures: II Cor. 5:17

Source: Author

Figure 1.
LIFE Project curriculum outline.

Table 1

Wilcoxon Signed Ranks Tests for Differences Between Pre- and Post-Physiologic Measures by Group

<i>Group</i>			
Measures	Pre Mean (SE)	Post Mean (SE)	Z-statistic
<i>Nonspiritual (n = 9)</i>			
Weight	161.62 (16.44)	158.76 (15.51)	-1.96*
Body mass index	28.16 (2.78)	27.02 (2.31)	-1.60
Systolic BP	151.00 (8.36)	135.33 (5.96)	-2.31*
Diastolic BP	84.44 (1.77)	83.67 (2.08)	-0.70
<i>Spiritual (n = 19)</i>			
Weight	216.73 (9.82)	215.38 (10.09)	-2.77**
Body mass index	37.71 (1.81)	36.59 (1.77)	-2.55*
Systolic BP	157.28 (7.56)	153.31 (6.50)	-1.97*
Diastolic BP	93.78 (3.82)	90.56 (2.74)	-1.92

*
 $p < .05$.**
 $p < .01$

Source: Author