Prime Time Sister Circles™: Evaluating a Gender-Specific, Culturally Relevant Health Intervention to Decrease Major Risk Factors in Mid-Life African-American Women

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Purpose: To evaluate the effectiveness of Prime Time Sister Circles™ (PTSC), a curriculum-based, culture- and gender-specific health intervention, in assisting mid-life African-American women to decrease the major risk factors of physical inactivity, poor nutrition and stress.

Methods: One-hundred-thirty-four African-American women were involved in 11 sites across the country in PTSC and comparison groups. PTSC uses a cognitive behavioral modality based on three theoretical approaches to reduce risk factors and promote positive health changes. Pretest and posttest (10 weeks, and six and 12 months) data were collected on various indicators.

Results: t test analyses demonstrated a statistically significant increase in the women’s involvement in physical activity at 10 weeks, and six and 12 months. A significant 10-week difference was found in the women’s diet, with them reporting eating more nutritious foods, t(77)=3.32, p<0.001. The women also indicated from pretest to 10 weeks, and six and 12 months that they changed what they ate to prevent disease (40.4%, 62.8%, 97.5% and 100%, respectively). A majority of the women at 10 weeks (62.7%) and 12 months (65.9%) reported utilizing stress management strategies. There was also a 60% increase in yearly mammograms and a 54% increase in blood pressures checks. Finally, 83.7% of the women at 12 months felt that the positive changes could be maintained over their lifetime.

Conclusions: This study demonstrates the effectiveness of PTSC in modifying health-related knowledge, attitudes and certain high-risk behaviors in mid-life African-American women.

Key words: African Americans ■ women’s health ■ risk factors ■ support groups

INTRODUCTION

According to the Centers for Disease Control and Prevention, (CDC), heart disease, cancer, diabetes, obesity and other chronic conditions now account for 70% of all deaths in the United States—and most of these are preventable. As the lead federal agency responsible for implementing disease prevention and control activities to improve the health of all Americans, the CDC has reported that a major determinant of health is lifestyle, exceeding the impact of genetics, the environment and access to care.1,3 As a result, the majority of negative health outcomes, particularly cardiovascular diseases (CVDs), diabetes and depression, are linked to preventable health-related behaviors.4,5

Guidelines from the American Heart Association, relative to the prevention of CVD, highlight the need for primary prevention of CVD through the identification and reduction of risk factors.6 Three of these extremely important and modifiable risk factors include physical inactivity, poor nutrition and inadequate stress management.6,6 In addition to increased morbidity and mortality related to lack of physical exercise and poor nutrition, there is also an association with more frequent visits to physicians, increased hospitalizations, longer hospital stays and increased need for medication.7 It has been estimated that poor diet, in conjunction with physical inactivity, leads to 300,000 deaths each year.8 Given the link between lifestyle and health outcomes, the CDC has urged that “promoting healthy lifestyles should be a
national priority, beginning in our schools and carrying into our work places, communities, and especially into our health care system.99

Chronic and acute negative psychological stress have also been documented to have a deleterious impact on morbidity and mortality rates especially, in relationship to CVD.10,11 Stress brings about changes in the body’s biochemical state, with increased secretion of epinephrine and corticosteroids. Stress induces increased palpitations and blood pressure in the body with mental manifestations such as anger, fear, worry or aggression. Higher levels of psychological stress may also lead to an increase in other negative behaviors such as overeating and increased smoking.12

Disparities in African-American Women’s Health Outcomes and Risk Factors

Disparities in risk factors and health status indicators are evident in many segments of the population based on age, income, gender, race and ethnicity. For example, overweight and obesity are more prevalent among African-American in comparison to Caucasian women.4 According to the American Heart Association, physical inactivity is more prevalent among women than men, among African Americans than Caucasians, among older than younger adults, and among the less affluent than among the more affluent.13,14

African-American women in particular endure an increased burden of illness and are dying at rates that are greater than any other group of women in this country. They continue to face major disparities in health outcomes, both physical and emotional. African-American women are more than twice as likely to have CVD and 30% more likely to die from it, three more times more likely to have diabetes and its ensuing complications and twice as likely to experience cancer deaths.5,9,12 There are also disparities in their emotional health, with African-American women having higher rates of emotional distress such as stress, depressive symptoms and panic attacks than Caucasian women.15-19 Approximately one-half of all African-American women experience depressive symptoms at some point during their lifetime. This is a rate that is twice that of all men, and 42% higher than Caucasian women, but only about 7% receive treatment.20 Stress is often cited by African-American women as a greater threat to their health than heart disease.21

African-American women are also at increased risk for poor health and negative health outcomes because they have the highest prevalence of major risk factors and comorbidities that contribute to both morbidity and mortality. African-American women are more likely to have multiple coexisting risk factors (e.g., overweight and obesity, inactivity, stress) and multiple comorbidities (e.g., high blood pressure, high blood cholesterol and diabetes), when compared to Caucasian women.22-24 The American Heart Association documented that even with the high risk and death rates and disparities in the prevalence of major risk factors, African-American and Hispanic women demonstrate the lowest risk factor awareness of any racial or ethnic group.24 They either have no, inadequate or misinformation.21,26 This is a major barrier to adoption of a healthier lifestyle.

Need for Gender- and Culture-Specific Interventions

It is not sufficient for prevention and intervention efforts to simply educate African-American women with general health information to increase their knowledge about preventive techniques relevant to their lifestyle and beliefs. Interventions efforts aimed at this population must be gender-specific and culturally relevant for them to be accepted, understood and serve as adequate motivators to move women to act and sustain any lifestyle change. Numerous social and cultural barriers to a healthier lifestyle have been cited for minority women. Care-giving duties, lack of time and energy, not having a safe place to exercise and being too tired are the most commonly cited barriers to physical activity among African-American women.27 Findings from focus groups indicate that for African-American women, “sweating and messing up” their hair was also a deterrent to engagement in physical activity.28 Health concerns, lack of motivation and lack of a social network are also barriers to risk reduction in minority women aged >40 years.29

African Americans are more likely than Caucasians to rely on their informal social networks to meet their disease management needs, and social support is significantly associated with improved diabetes management among members of this population.30,31 Therefore, overcoming social and cultural impediments in advancing positive health outcomes may depend upon the establishment of a new sociocultural context for change, such as in support groups for disease prevention and health promotion, perhaps especially for nonmainstream groups, including minority women. In fact, some investigators have shown that attendance in peer support groups provides important external controls as does support from healthcare providers.32

Literature that specifically addresses the role of social support or support groups on reducing major health risk factors in minority women is limited.33 However, what exists overwhelmingly suggests the positive role of social support in increasing positive lifestyle changes in exercise,34,35 nutrition36,37 and stress management,38,39 and sustaining them in minority populations.

There is a pressing need for the development and evaluation of more gender- and culture-specific strategies to reach minority women. The need is exacerbated because of the high level of risk factors and mortality rates in this
population and the different constellations of their higher risks. The Prime Time Sister Circles™ (PTSC) intervention was designed and developed by Drs. Gaston and Porter specifically to meet this challenge.

**Prime Time Sister Circles Theoretical Framework**

The PTSC uses a cognitive behavioral modality to reduce the health risk factors of negative stress, inactivity and poor nutrition—all of which contribute to negative health outcomes. It is consistent with earlier work documenting the importance of social support and social circles in promoting positive health changes among African-American women. The conceptual framework for this intervention is an integration of three theoretical approaches: 1) the social-cognitive theory that emphasizes the importance of self-efficacy and empowerment through modeling, communication and role play; 2) the transtheoretical model that illustrates stages of behavioral change and how and why individuals adapt their behavior over time postulating a continuum of change that is influenced by an individual’s knowledge and motivation to change; and 3) the PEN (Person, Extended Family, Neighborhood) model that was initially used in African countries as a health-promotion/disease-prevention strategy for the individual that was then spread to her/his family and community. This model focuses on the integration of “health education, educational diagnosis of health behavior and cultural sensitivity.” These three models have a strong body of empirical evidence that documents their effectiveness in promoting positive health-related behavior changes. Further, all three approaches have been successfully utilized with minority women.

In addition to the behavioral modification framework underlying the three theoretical approaches previously discussed, the design and implementation of the PTSC were based on information derived from numerous focus groups conducted by the developers of the intervention and material incorporated within their text, *Prime Time: The African American Woman’s Complete Guide to Midlife Health and Wellness.* The PTSC intervention utilizes a curriculum-based approach to behavioral change that is low cost and short term. It incorporates a support group approach to addressing four key, modifiable health risk factors: 1) inadequate or misinformation about major illnesses, e.g., cardiovascular disease, diabetes, cancer, depression; 2) increased and/or unmanaged stress; 3) inadequate physical activity; and 4) unhealthy nutritional choices.

**Objectives of Present Study**

The PTSC was developed and delivered with the expectation that the intervention’s emphasis on gender, and culturally relevant material would be appealing and useful to the participants. The first step in evaluating the effectiveness of the intervention was to recruit mid-life African-American women to participate in the PTSC intervention and comparison groups. The study sought to evaluate the PTSC in terms of the participants’ outcomes and sustainability of results. Four major objectives guided this evaluation, including:

1. examination of the effectiveness of the PTSC as an intervention to help mid-life African-American women to change their health-related knowledge, attitudes and behaviors;
2. examination of whether there were significant pre-to-post differences in stress management, eating patterns and nutrition, and physical activity among women participating in the PTSC;
3. documentation of the barriers to engaging in physical activity among PTSC participants; and
4. documentation of the reported sustainability of the positive changes emerging from participating in the PTSC over a 10-week, and six- and 12-month period.

**METHODS**

**Participant Recruitment**

In order to address the study’s objectives, a multisite quasi-experimental study was undertaken. Data were collected and analyzed from a diverse set of PTSC groups, which were implemented in various areas across the country including Illinois; Washington, DC; Florida; and Maryland. The 10 PTSC and two comparison groups were conducted in 11 sites including: four churches, a state health education center, a mental health center, a community center, a hospital, a feminist bookstore, a predominantly African-American college and a social club. Most of the women were recruited at the sites where the PTSC groups were held. Part of the study design included discussions with and buy-in from the directors of the programs in the settings (e.g., the pastors, the administrators/CEOs or faculty directors) to achieve use of their space and support for the program objectives. An important part of the recruitment process was the participants’ involvement in a workshop conducted by the mid-life African-American female co-leaders of the project that focused on the health status of African-American women and strategies of prevention to change the statistics. The workshop also focused on the interaction of emotional, behavioral, physical, spiritual, racial and gender factors on overall health.

Eligible participants were African-American/black women aged >35 years.

Participation was voluntary in both the intervention
and comparison groups. Both groups were recruited in the same manner as described above. The women in both groups were similar in terms of age, socio-economic, marital and child status.

**PTSC intervention groups.** There were 106 participants in the 10 PTSC structured intervention groups, with 8–13 women per group. The groups met for 90 minutes for 10 weeks. Each group was led by a facilitator (s) who had prior experience in group facilitation. The facilitators, with the exception of one, were midlife African-American women. In the first group session, each member was given a pretest, discussed and signed a group contract, and set a specific goal related to nutrition, physical activity and stress management.

Each woman was given a copy of the Gaston and Porter (2001) book, *Prime Time: The African American Woman's Complete Guide to Midlife Health and Wellness*, to use as the course text; a curriculum/workbook; and $10 per session to defray transportation or child care costs. Over the course of the 10-week intervention, the women received information related to spirituality, self-esteem, prioritizing themselves first, stress, nutrition and exercise, cardiovascular disease and diabetes from the facilitators and consultants (Table 1). Expert consultants were utilized for sessions on stress management, nutrition and exercise, and women were taught specific cognitive behavioral strategies and skills to help them develop and implement an individualized health plan in the targeted areas.

**Comparison groups.** There were 28 women in the comparison group. They received the copy of the Gaston and Porter text but did not receive a curriculum, facilitator, expert consultants or stipend.

**Instruments and Procedures**

The external evaluator, in collaboration with the PTSC developers, reviewed the literature and selected instruments consisting of a variety of quantitative measures. Additionally, a qualitative protocol, designed by the evaluator, was utilized to collect more in-depth information.

**Perception of overall health.** Using a single item, respondents were rated, on a Likert-type scale, their health in comparison to other women their age. Their responses could range from 1 ("poor") to 4 ("very good").

**Health and wellness (self-care).** A 13-item instrument, adapted from a 2002 American Association of Retired Persons’ (AARP) survey, was given to assess self-care behaviors. These items were given at pretest and posttests, with slight modification in the instructions at the posttest administration. On the pretest measure, women reported behaviors they had engaged in within the past 12 months; on the posttest measures, they were asked to indicate the behaviors they regularly engaged in since participating in the PTSC. Sample activities included: a) had your blood pressure checked, b) ate more healthy foods, c) tried to manage your stress, and d) discussed improving your health with someone. We found moderate alpha reliability with this measure at baseline ($\alpha=0.71$).

**Nutrition and eating patterns.** A 19-item nutrition measure was used as a pre-/postmeasure of the women’s daily or weekly nutritious foods and eating habits (e.g., “I always eat a multicolored salad, cut-up red or green bell peppers or carrots for lunch”). This measure was taken from Gaston and Porter.44 Items on this measure were summed to yield a total nutrition score, with higher scores indicating better nutrition habits. The overall reliability of this measure was somewhat low ($\alpha=0.62$) at baseline. In addition, two items were used to measure whether the women reportedly incorporated healthy eating habits into their lifestyle in general and changed what they ate to prevent disease since participating in PTSC.

**Health attitudes and importance of self-care.** The women were given a seven-item inventory to rate the level of importance they placed on engaging in selected health-related behaviors. This instrument was given as a pretest and a posttest. The women responded to the items on a four-point Likert-type scale, with responses ranging from 1 (“not at all important”) to 4 (“very important”). Sample items that the women rated in terms of importance to staying healthy included: 1) reducing stress, 2) being spiritual and, 3) eating balanced meals. In this inventory, the women could receive a total attitude score ranging from 7–28, with higher scores indicating more favorable healthcare attitudes. This measure had good alpha reliability ($\alpha=0.89$) at baseline.

**Other measures.** A variety of other questions were asked related to health-related knowledge, attitudes and behaviors. Additionally, the participants’ perceptions of PTSC intervention (e.g., format, content, material), their ability to maintain any positive changes, challenges and selected demographic information (e.g., age, marital status, education, etc.) were collected.

**Qualitative assessments.** Focus groups were held with the participants of two of the PTSC groups to obtain some in-depth qualitative data in selected areas of concern such as barriers to completing goals. They were also used to serve as an important tool for fine-tuning the conduct of the PTSC intervention. The external evaluator met twice with each group. A semi-structured interview-protocol was used at each site that lasted approximately 60–90 minutes.

**PROCEDURES**

The pretest-posttest data were collected via a paper-and-pencil survey that included the measures described above. These surveys were distributed and collected by the external evaluator or the PTSC site-based manager. No identifying information was included on the survey. Participants created a code number (using their mother’s maiden name and the last four digits of their Social
Security number) to allow the evaluator to link participants’ pre- and posttest instruments.

**STATISTICAL ANALYSES**

Initially, descriptive statistics were calculated for each variable under investigation to permit the investigators to gather a summary and snapshot of the findings. To address the research questions, paired t tests were conducted to examine significant change from baseline to postintervention. Data from the qualitative assessments were examined and synthesized in terms of the most typical responses or emergent themes.

**RESULTS**

**Participants, Follow-Up Response Rates and Evaluation Sites**

A total of 134 women (106 intervention, 28 comparison) completed the pretest survey and 106 women (83 intervention, 23 comparison) completed the posttest 10 weeks later. This yielded a respectable response rate of 78.3% for the intervention group and 82.1% response rate for the comparison group at 10-week posttest. Four intervention groups were targeted for six-month follow-up, and five of the groups were targeted for 12-month follow-up. More groups were targeted for 12-month follow-up to compensate for possible increased attrition over the year. The specific groups identified for follow-up were targeted because they represented the initial groups that were recruited and participated in the study from the beginning of program implementation. Forty-two (N=42) women in the group completed the six-month postintervention survey, yielding a six-month response rate of 77.7%. The 12-month response rate was 88.1% with 52 women (45 intervention, seven comparison) completing the postintervention survey.

The mean age of the women, at pretest, was 54.4 (SD=9.46). Most of the women had college degrees (66.7%), annual salaries of ≥$40,000 (60.3%), were employed full-time (54.0%), were currently (42.5%) or previously married (36.2%) and had children (79.9%). The women in the intervention and comparison groups were similar in terms of demographic characteristics. While there was some attrition of women across the three postintervention testing periods, the demographic profile of the women at 12-month posttest was still quite similar to that at pretest (Table 2).

**Baseline Assessments**

The participants’ responses on the baseline measures are reported below. Due to the small sample sizes within the 12 groups, the data did not permit statistical testing for differences across the groups. However, the data suggest that the groups were fairly similar at baseline.

**Respondents’ health rating and satisfaction with health.** The majority of the women in both the intervention group (63.8%) and comparison group (81.5%) rated their health as “good” to “very good” in comparison to most other women in their age group. In a related question, the women were asked to indicate, overall, how satisfied they were with their health. Most of the women in the intervention (69.5%) and comparison group (60.7%) indicated that they were either “somewhat satisfied” or “very satisfied.”

**Prior 12-month self-care behaviors.** At baseline, the women were given a variety of self-care behaviors and asked to indicate if they had engaged in these behaviors over the past 12 months. Findings indicated that a majority of the women in the PTSC intervention groups reported that they had not engaged in certain self-care behaviors over the past year, including: a) not having their blood pressures checked (53.8%), b) not having their cholesterol checked (63.1%), c) not having a mammogram (59.2%), d) not performing self-breast examinations (61.9%), e) not trying to control their weight (62%), f) not trying to manage their stress (58.2%), g) not eating more healthy foods (58%), h) not getting information on simplifying their life to have more time for themselves (59.1%), and i) not changing what they ate to prevent disease (59.6%). This baseline information certainly suggested the need for more health-related intervention programs for this population.

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**Table 1. Prime Time Sister Circles’ curriculum**

<table>
<thead>
<tr>
<th>Week</th>
<th>Primary Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The goals and objectives of the PTSC, discussion of the group process, signing of the group contract, making commitments and the pretest</td>
</tr>
<tr>
<td>2</td>
<td>Individual goal setting in each target area: exercise, nutrition and stress, spirituality, prioritizing self</td>
</tr>
<tr>
<td>3</td>
<td>Attitude and anger</td>
</tr>
<tr>
<td>4</td>
<td>Stress management (includes stress expert)</td>
</tr>
<tr>
<td>5</td>
<td>Physical exercise (includes fitness expert)</td>
</tr>
<tr>
<td>6</td>
<td>Nutrition (includes nutrition expert)</td>
</tr>
<tr>
<td>7</td>
<td>Chronic illnesses and risk factors for prevention of heart disease, stroke, diabetes</td>
</tr>
<tr>
<td>8</td>
<td>Chronic illnesses and the power of prevention</td>
</tr>
<tr>
<td>9</td>
<td>Review of progress on goals and review of individual plans to maintain changes</td>
</tr>
<tr>
<td>10</td>
<td>Celebration, graduation, posttest, review of maintenance of changes</td>
</tr>
</tbody>
</table>
Barriers to engaging in physical exercise. Given the findings from previous studies which demonstrate that African-American women are less likely to engage in physical activity than Caucasian women, the evaluation study sought to gather some baseline data related to this issue. In particular, the survey asked the women to indicate the extent to which 10 situations frequently reported in the health literature posed a “major reason/barrier,” “minor reason/barrier” or “not at all a reason/barrier” for not participating in a regular exercise program. The major barriers cited by PTSC participants for not exercising were: lack of time (39.4%), lack of energy (28.2%), stress (14.5%), health problems (11.8%) and lack of support from their significant other (10.0%).

Targeted Areas for the PTSC Intervention Group

The effectiveness of the PTSC was evaluated in terms of the women’s self-reports of changes in their health-related knowledge, attitudes and behavior.

Reported knowledge changes. There were several specific areas in which all or most of the participants reported acquiring “a lot” of new knowledge and understanding since participating in the PTSC intervention. The women reported at 10 weeks, and six and 12 months that participation in the intervention had given them additional knowledge and skills to help them achieve their health-related goals. For example, at 10 weeks, >90% had a “a lot” better understanding of major diseases affecting African Americans, the role of diet and nutrition in health, and self-care and health promotion. More than 80% at 10 weeks had “a lot” better understanding of risk factors for major diseases affecting African Americans and the interaction of physical and emotional factors. By six months, all these areas of knowledge had decreased to a range of 61.9–88.1% and at 12 months to a range of 73.1–82.7% (Table 3).

Reported attitude changes. There were statistically significant differences in the participants’ health-related attitudes postintervention. The women had more favorable

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Pretest (N=134) %</th>
<th>Posttest 12 Months (N=52) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school or less</td>
<td>2.3</td>
<td>8.1</td>
</tr>
<tr>
<td>High school diploma</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td>Some college/technical</td>
<td>28.5</td>
<td>32.4</td>
</tr>
<tr>
<td>College graduate</td>
<td>66.7</td>
<td>59.5</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>11.2</td>
<td>16.2</td>
</tr>
<tr>
<td>Divorced</td>
<td>20.1</td>
<td>18.9</td>
</tr>
<tr>
<td>Separated</td>
<td>5.2</td>
<td>16.2</td>
</tr>
<tr>
<td>Married</td>
<td>42.5</td>
<td>32.4</td>
</tr>
<tr>
<td>Not married, with live-in partner</td>
<td>3.7</td>
<td>5.5</td>
</tr>
<tr>
<td>Single, no live-in partner</td>
<td>17.2</td>
<td>10.8</td>
</tr>
<tr>
<td>Employment Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>50.7</td>
<td>65.7</td>
</tr>
<tr>
<td>Retired</td>
<td>18.7</td>
<td>31.4</td>
</tr>
<tr>
<td>Not employed</td>
<td>4.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Personal Yearly Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;$20,000</td>
<td>8.7</td>
<td>12.9</td>
</tr>
<tr>
<td>$20,001–30,000</td>
<td>15.9</td>
<td>12.9</td>
</tr>
<tr>
<td>$30,001–40,000</td>
<td>15.1</td>
<td>3.2</td>
</tr>
<tr>
<td>$40,001–50,000</td>
<td>15.1</td>
<td>29.0</td>
</tr>
<tr>
<td>&gt;$50,001</td>
<td>45.2</td>
<td>41.9</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>79.9</td>
<td>89.2</td>
</tr>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35–44</td>
<td>18.0</td>
<td>10.8</td>
</tr>
<tr>
<td>45–55</td>
<td>36.1</td>
<td>29.7</td>
</tr>
<tr>
<td>≥56</td>
<td>45.9</td>
<td>59.5</td>
</tr>
<tr>
<td>Mean Age</td>
<td>54.4 years; SD=9.46</td>
<td>57.3; SD=10.3</td>
</tr>
<tr>
<td>Group Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>86.2</td>
<td>86.4</td>
</tr>
<tr>
<td>Comparison</td>
<td>13.7</td>
<td>13.4</td>
</tr>
</tbody>
</table>
attitudes regarding the importance of health, health promotion and disease prevention at 10 weeks \([t(95)=3.54, \ p<0.001]\), six months \([t(33)=27.81, \ p<0.001]\) and 12 months \([t(31)=9.59, \ p<0.001]\) postintervention than they did at preintervention. A majority of women also reported at 10 weeks (86.8%), six months (76.2%) and 12 months (83.7%) that they had developed "a lot" more positive attitudes about their ability to control their health outcomes since participating in the PTSC intervention. Inspection of the emergent themes from the qualitative data indicate that attitude change was evident in the women's statements regarding being more motivated to watch diet and cholesterol, feeling inspired to work harder and learning to put self first and to congratulate self more frequently.

**Reported behavioral changes.** In this evaluation, behavioral or self-care changes were examined in terms of engaging in physical activity, improved dietary habits and better stress management. Data were also gathered on other behavioral changes such as controlling one's weight, talking to someone about one's health, better prioritization of one's health and taking a specific preventive action to control disease.

There were significant changes in physical activity from pretest to posttest. For example, on average, at pretest, the women reported participating in aerobic exercise only 1.91 days per week; at 10 weeks posttest, the women reported participating in aerobic exercise, on average, 3.97 days per week \([t(84)=4.65, \ p<0.001]\), 2.48 days at six months \([t(30)=2.02, \ p<0.05]\) and 3.21 days at 12 months \([t(42)=3.05, \ p<0.01]\). The women also reported increased engagement in strength building exercise from preintervention (1.53 days per week) to 10 weeks postintervention (2.53 days per week), \(t(75)=3.30, \ p<0.01\). While this significant increase did not remain at six months, by 12 months there was a significant increase in the number of days the women reportedly engaged in strength-building exercise in comparison to their reported engagement at preintervention \([t(34)=2.45, \ p<0.05]\).

Postintervention changes in the women's nutrition and eating habits were examined two ways. Nutrition changes were measured in terms of the women's reports of daily or weekly selections of more healthy foods from a list of options provided to them. Overall lifestyle changes in diet were assessed by the women's responses to questions which asked them if they had incorporated healthy eating habits (in general) and changed what they ate to prevent disease since participating in PTSC. There was a significant difference from pretest \((M=10.60, \ SD=3.87)\) to 10 weeks posttest \((M=12.68, \ SD=3.26)\) in the women's daily to weekly eating behaviors based upon the number of nutritious foods that they reported eating from the list of options provided \([t(77)=3.32, \ p<0.001]\), although this effect was not statistically significant at six and 12 months. In terms of the women's reports of overall lifestyle change related to their diet, at 10 weeks, and six and 12 months postintervention—62.8%, 97.5% and 100%, respectively—the women reported that since participating in the PTSC, they changed what they were eating to prevent disease. This is in contrast to pretest data indicating that in the 12 months prior to participating in the PTSC, only 40.4% of the women indicated making a change in what they ate to prevent disease. Additionally, at 10 weeks, and six and 12 months postintervention, 71.6%, 61.9% and 78.4%, respectively, of the women reported that as a result of participating in the PTSC, they had incorporated healthy eating habits into their lifestyle "a lot" (Table 3).

<table>
<thead>
<tr>
<th>Table 3. Targeted areas of change for the PTSC intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percent Reported Change &quot;a Lot&quot;</strong></td>
</tr>
<tr>
<td><strong>10 Weeks</strong></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td><strong>Reported Knowledge Change—Disease and Risk Factors</strong></td>
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<tr>
<td>Better understanding of major diseases affecting blacks</td>
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<tr>
<td>Better understanding of the role of diet and nutrition in health and disease prevention</td>
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<tr>
<td>Better understanding of risk factors for major diseases and conditions affecting blacks</td>
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<tr>
<td>Better understanding of the interaction of physical and emotional factors</td>
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<tr>
<td>Better understanding of self-care and health promotion</td>
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<tr>
<td><strong>Reported Behavior Change—Stress Management, Nutrition and Exercise</strong></td>
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<tr>
<td>Utilized stress management strategies</td>
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<tr>
<td>Prioritized their health before care of others</td>
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<tr>
<td>Incorporated healthy eating habits</td>
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<tr>
<td>Engaged in regular exercise</td>
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<tr>
<td>Changed diet to prevent disease</td>
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<tr>
<td><strong>Reported Attitude Change</strong></td>
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<tr>
<td>Developed more positive attitudes about their ability to control their health outcomes</td>
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The posttest data for stress management indicated that most of the women were attempting to utilize better stress management strategies. At 10 weeks postintervention, 64.5% of the women reported that they tried to better manage their stress, and 61.7% reported obtaining information to help them better “simplify” their lives. However, managing stress and continuing to utilize the stress management strategies were more difficult behaviors to maintain as indicated by the results at six months (39%). Interestingly enough, by 12 months, 66.0% of the women reported utilizing stress management strategies (Table 3).

Encouraging African-American women to “prioritize self” was a key feature embedded in the PTSC intervention. At 10 weeks postintervention, 70.7% of the women reported that “a lot” of the time they had started to prioritize their own health first before caring for others. At six and 12 months, most (59.5% and 65.3%, respectively) of the women continued to report that they were prioritizing their own health (Table 3).

In terms of other self-care behaviors after participation in the PTSC, at 12 months' follow-up, most of the participants reported change from baseline. For example, at baseline, <50% of the women reported that within the past year they had their blood pressure checked (46.2%), had a mammogram (40.8%), tried to better control their weight (38%), or tried to better manage their stress (41.8%). Twelve months later, 100% of the participants had changed their behavior in all four areas.

Sustainability of Positive Changes
At six and 12 months, the participants were asked about the sustainability of positive changes made as a result of participating in the PTSC intervention. Most of the women did maintain “some” to “most” of the positive changes at six months (72%) and 12 months (79%). Most of the participants felt that they could maintain some of the positive changes over their lifetime. At six months, 66.7% of the participants reported “definitely yes” that they could maintain some of the positive changes, while 83.7% of the participants at 12 months reported similarly.

At 12 months, the women were asked to rank three areas (managing stress, improving nutrition, increasing physical activity) in terms of 1 (“most difficult”) to 3 (“least difficult”) in terms of their ability to maintain the positive change since participating in the PTSC intervention. The highest proportion of women ranked increasing physical activity most difficult, next most difficult managing stress, and improving nutrition third most difficult.

Emergent themes from the open-ended data indicate that the women reported engaging in a variety of strategies to sustain positive outcomes. These included in their words: “taking care of myself first;” “reading about health constantly;” “meeting with the sisters, discussing issues, being motivated by their support;” and “taking more control of my life.”

Comparison Group Results
No significant pretest/posttest changes occurred within the comparison groups. It should be noted that the small number of comparison groups and sample size likely contributed to the nonsignificant findings. Thus, the major findings reported and discussed focus on trend changes (from pretest to 12-month posttest) for the women in the PTSC intervention group.

DISCUSSION
This article discusses the PTSC, an innovative, theory-driven, curriculum-based support group health intervention targeting mid-life African-American women. The PTSC was designed to build upon the emergent literature regarding the influence of lifestyle on health outcomes with African-American women by incorporating gender-specific and culturally appropriate issues within the curriculum. Considerable attention was given to addressing issues often faced by African-American women during mid-life. At this stage of PTSC intervention development, we were principally interested in gaining information regarding the acceptability of the PTSC intervention to the participants and the feasibility of implementation. We were also interested in acquiring some preliminary data on the effectiveness of the PTSC, based on the participants' self-reports.

Participant Recruitment, Attendance, Drop Out Rates and Follow-Up
Previous researchers have noted that it can be difficult to recruit and retain minority populations into health research. Therefore, assessing the acceptability of the PTSC intervention to our target participants was a major area of interest. The ability to recruit and retain a large proportion of the women in our study, especially at 10 weeks, and six and 12 months postintervention, was extremely encouraging. Our recruitment and response rates compare quite favorably with rates reported by other intervention and prevention programs targeting minority populations. Once the women attended the first session and signed the contract, they were considered members of the group. The drop-out rate was <20% once the sessions started, and weekly attendance averaged between 80-90%. The weekly stipend of $10 has to be assessed as a variable in the high attendance rate. However, during the qualitative evaluation, the women indicated that the money was important only because it was the first time “anyone has ever paid me to take care of myself.” In fact, many of the women stated that they should have paid the developers to participate in the group. The articulated unimportance of the money might also have been a function of
the middle-class status of most of the women.

Thus, it appears that the PTSC intervention was inherently appealing to our target population. This is supported by the participants’ reports of relatively high levels of satisfaction with the intervention. Focus group data indicate that the participants consistently reported positive experiences within their circles, and they enjoyed meeting with other African-American women who shared similar life experiences and who were concerned about their health. The women reported making adjustments in their schedules to attend the 10-week sessions, and many circles continued to meet on a regular basis after the formal intervention had ended.

It is not clear why the positive changes waned at six months and increased between 6–12 months. We can speculate that the prevalence estimates waned at six months over the Thanksgiving and Christmas holidays and increased again as the PTSC resumed the meetings and support from the group enhanced their positive behaviors.

Follow-up response rates. All of the women in the targeted intervention and comparison groups were mailed instructions to complete and mail in their six- and 12-month surveys in postage-paid, preaddressed envelopes. In order to increase anonymity, the women were asked to use no identifying information except the code that each had developed. None of the women were paid or offered other incentives to complete and mail in the surveys, but the response rate was an impressive 77.7% at six months and 88.1% at 12 months. The return rate seemed to verify the women’s statements about the unimportance of the money as a motivating factor in their attendance.

Impact of the Intervention

Based upon the participants’ self-reports, this study demonstrates the effectiveness of a culture and gender-specific support group intervention—PTSC—to modify certain high-risk health behaviors in mid-life African-American women. Significant improvements were self-reported at various intervals (10 weeks, and six and 12 months) in stress management, physical activity and nutrition. Both qualitative and quantitative data document that the PTSC was effective in assisting the participants to: increase their knowledge of risk factors for physical and emotional illnesses (e.g., cardiovascular disease, diabetes, cancer and depression); positively change their attitudes about the necessity of prioritizing their health; and incorporate and implement new or underutilized strategies for managing their stress, improving their diet and increasing their physical activity.

Another significant improvement in the area of self-care was the increase in the number of women who had a mammogram (from 40% at baseline to 100% post-PTSC) and had their blood pressures checked (from 46% at baseline to 100% post-PTSC). These data are extremely important because most of these women were college educated, knew the importance of these exams and had access to them. However, prior to the PTSC, they were not following the recommended schedule for screening. A majority of the women—67%—indicated that they believed that they could sustain most of their positive changes for the rest of their lives.

The utilization of an integrated approach and a group format, were major factors in the study’s success. It allowed us to build on some of the women’s personal and cultural strengths, beliefs and habits while giving them the time and support to examine and replace behaviors that were often destructive to their health. The Social Cognitive Theory’s emphasis on self-efficacy is consistent with a belief that many African Americans have—and that was quite evident in these women—that with faith, any barrier, internal or external, can be overcome. Each woman was encouraged to share stories related to prevailing against formidable obstacles (e.g., racism, sexism, poverty, neglect/abuse, disappointing personal and professional relationships, and illness that had been placed in her path. The stories served as reminders of past victories and helped them to see each other as role models in certain areas.

The Transtheoretical Model was facilitated by the weekly individual check-in, the confidentiality contract and the expectation of self-disclosure encouraged by the majority of the women’s ability to go through the stages of change at their own pace. As other studies have documented, this model was particularly useful in helping the women to develop individualized physical activity programs. Women were supported and encouraged as they moved from denial and/or ignorance about their health issues to acknowledgement of what they needed to do to maintain their positive changes.

Many of the women, because of their age and/or social role, are considered matriarchs or authority figures within their families and communities. They are major sources of information and often catalysts for change. The PEN model built on this cultural legacy. The women reported numerous post-PTSC anecdotes of their roles in making healthy changes in their immediate and extended families’ and churches’ menus and levels of planned physical exercise.

Several previous studies have reported at least modest positive changes in physical activity and diet in African-American women. However, none of these studies focused on stress management as a key variable in helping women to implement and sustain positive changes in health behaviors. The relationship between negative stress and chronic disease (e.g., the association between cardiovascular disease and depression) has been well documented. Chronic stress has also been identified as a major factor in the development and maintenance of negative health habits (e.g., disordered eating (compulsive, emotional or restrictive) and sedentary behaviors). Several of these studies...
focused on or had significant numbers of African Americans. The comments made by the women during the qualitative evaluation of this study documented the importance, maybe even necessity, of including stress management techniques in a health promotion program.

Limitations
Although, this study had quite respectable response and retention rates, the generalizability of the study’s findings may be limited because of the small sample sizes and the nonrandom nature of the women’s recruitment and assignment to the intervention and comparison groups. Additionally, given that the participants were mostly college-educated, middle-income women, these findings may not be generalization to less-educated, poor women. Another limitation is the exclusive use of self-report data, which are always susceptible to social desirability bias; and in this instance, the bias might have been intensified because of the possibility of peer pressure.

Implications and Future Directions
Gender-specific and culturally appropriate intervention programs emphasizing health promotion and disease prevention in a support group setting offer an invaluable opportunity to provide information and prevention strategies which can encourage African-American women to engage in healthier lifestyles and, ultimately, to improve their health outcomes. Few opportunities exist for mid-life African-American women to share their health-related successes and challenges, have their life experiences validated, and acquire some problem-solving and self-care skills. The PTSC women reported their enjoyment in sharing their life experiences and appreciated the opportunity to both give support and to receive support from other African-American women in their age cohort. The women who participated in the PTSC also consistently reported that they had increased their health-related knowledge, acquired more positive health-related attitudes and changed their behaviors to incorporate healthier lifestyles.

The data obtained from the PTSC provide important information about an underserved and neglected population—African-American women in mid-life who are at high risk for chronic illnesses. The importance and utility of health promotion and disease prevention interventions which are culturally sensitive and gender-specific and have useful implications for clinicians and researchers are documented. This project also demonstrates the positive interactive impact of a program—PTSC—on health knowledge, attitude and behaviors when it includes stress management strategies along with effective activities to increase physical activity and improve nutrition.

Our next step is to engage in a more rigorous investigation of the effectiveness of the PTSC intervention by: including more comparison groups, randomizing the women into intervention and control groups, and utilizing objective measures of health outcomes in addition to self-report data. A concerted effort is also needed to ensure that the PTSC and comparison groups have balanced diversity in terms of the socioeconomic status of the women. Research is also needed to determine whether positive biological changes (e.g., weight, body mass index, abdominal circumference, blood pressure levels and blood lipid levels, and glucose) are made and maintained as a result of participating in the PTSC intervention. A comprehensive nutrition profile is also needed for the women to determine exactly what they are eating. More research is also needed to determine whether certain sites (e.g., churches, health centers), because of their relative stability, have the ability to institutionalize this process and make it available to current and future consumers. Finally, in response to an ever-increasing demand, studies should be undertaken to determine if adapted versions of PTSC intervention can be used with younger and non African American women and men. The investigators are planning to address these and additional issues in the future. Through this work, we hope to contribute to the limited body of knowledge on effective intervention strategies for health promotion and disease prevention to improve the health outcomes of mid-life African-American women.

REFERENCES
ginia University; 2000.