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Process Evaluation of Strong Hearts, Healthy Communities: A Rural Community-Based Cardiovascular Disease Prevention Program

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Abstract

Objective: To evaluate the implementation of a community-based cardiovascular disease prevention program for rural women: Strong Hearts, Healthy Communities (SHHC).

Design: Mixed-methods process evaluation.

Setting/Participants: 101 women from eight rural, medically underserved towns were enrolled in the SHHC program; 93 were enrolled as controls. Eligible participants were 40 years or older, sedentary, and overweight or obese. Local health educators (n=15) served as SHHC program leaders within each town.

Outcome Measures: Reach, fidelity, dose delivered, dose received, and program satisfaction were assessed using after-class surveys, participant satisfaction surveys, interviews with program leaders, and participant focus groups.

Analysis: Descriptive statistics, chi-square tests, thematic analysis.

Results: Intervention sites reported high levels of fidelity (82%) to the program; average attendance was 67%. Most SHHC participants were satisfied with their experience and reported benefits such as camaraderie and awareness building. Common recommendations included increasing class time, expanding exercise variety, and enhancing group discussion.

Conclusions and Implications: Designing programs that require reasonable time commitments from participants, while providing adequate opportunities for skill-based learning and group interaction remains a challenge for health promotion programs. Findings from this

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research have informed a second round of implementation and evaluation of the SHHC program in medically underserved, rural communities. (Word Count: 199)

Keywords

Program Evaluation; Rural Population; Women's Health; Cardiovascular Disease; Health Promotion

INTRODUCTION

Cardiovascular disease (CVD) remains the leading cause of mortality among U.S. adults, imposing a significant burden on healthcare resources and individuals' quality of life.¹ Despite advances in treatment and prevention, geographic and gender disparities in CVD persist.^{2–5} Residents of rural areas have a higher prevalence of cardiovascular disease (CVD) and associated risk factors (e.g. excess weight, poor diet, and physical inactivity) as compared to their urban counterparts.^{3,4,6,7} Rural women are particularly vulnerable due to socioeconomic and environmental disadvantage, such as limited access to nutritious foods, safe places to exercise, and preventive and specialty care.^{4,5,8–14}

There is strong evidence to suggest that lifestyle improvements in health behavior (e.g. diet) can significantly reduce the risk of CVD.^{1,15,16} Existing community-based lifestyle intervention programs have shown promise in changing women's health behaviors; however, few programs have specifically targeted rural, medically underserved populations or focused on CVD prevention.^{17–21} Furthermore, there has been limited assessment of implementation processes, which is essential for understanding program effectiveness and suitability for particular contexts.²²

Lifestyle intervention programs are often unavailable or financially inaccessible to women living in medically underserved rural areas. Additional challenges to program delivery may include transportation barriers, space constraints, and limited food and physical activity resources.²³ Offering low-cost programming to at-risk rural women may help reduce disparities in resource availability. Thus, there is a need for tailored intervention approaches that adequately address these challenges and evaluate implementation processes in rural settings.

Implementation evaluations typically include assessments of reach, fidelity, dose delivered, dose received, and satisfaction.^{22,24} Integrating quantitative and qualitative data from multiple sources is often recommended to provide a more comprehensive assessment of program implementation.²⁵ Qualitative methods, such as focus groups, are especially valuable as they allow participants' experiences to inform program modifications. By documenting successful and challenging aspects of program content and delivery, qualitative findings can help tailor intervention components to meet specific community needs.

The present study describes a mixed-methods process evaluation of a rural community-based CVD prevention program for midlife and older women. Attention was taken to include lesson topics and lifestyle intervention strategies to address rural-specific barriers to healthy living.^{26,27} Findings from this mixed-methods process evaluation will expand the literature

on program development and implementation among at-risk, rural populations and guide future program adaptations.

METHODS

This work was conducted as part of a community-randomized trial to reduce CVD risk among rural women in Montana and New York: *Strong Hearts, Healthy Communities* (SHHC).¹⁵ The program integrated core concepts from three nationally disseminated evidence-based curricula developed for rural areas: *Strong Women Strength Training* (SWST)²⁸, *Strong Women Healthy Hearts* (SWHH)²¹, and the *HEART Club*²⁹. Focus groups, key informant interviews, and community assessments conducted in partnership with local health educators informed the integration of curriculum components to ensure a robust, tailored intervention.^{15,26,27}

The SHHC intervention program was designed to act on multiple levels of the socioecological framework. Individual level components, including strength-training and aerobic exercise, were drawn from SWST and SWHH curricula, while nutrition education and behavioral strategies, including goal setting and stress management, were based on SWHH.

As rural homes are often located along busy highways or in isolated areas with limited walkability, the program emphasized indoor physical activity options and provided at-home exercise support materials.²⁷ Similarly, class recipes included ingredients available in local food stores and nutrition information was tailored towards rural food preferences (e.g. wild game).^{26,30} The intervention was also designed to target the social environment (friends and family) and the built environment through the HEART Club civic engagement component.¹⁵ The primary outcome for the six-month intervention trial was change in participant body weight; secondary outcomes were changes in other cardiovascular disease risk factors.^{15,31}

SHHC was delivered to participants twice per week for an hour over six months (48 sessions), with additional out-of-class meetings as needed.¹⁵ To encourage consistent attendance, SHHC participants were offered a \$50 Amazon gift card for attending 90% of program classes and a \$25 Amazon gift card for attending 80–89% of classes. Supplementary Table 1 highlights the behavioral aims and intervention components covered during each phase of the SHHC program.

Recruitment and randomization were carried out at the town level. Towns eligible for participation were classified as Rural-Urban Commuting Area (RUCA) code 7 or higher and were designated as ‘medically underserved’.³² Towns were matched on population size and RUCA code, and randomized 1:1 to deliver the SHHC intervention program or an education-only minimal intervention control program.

Local health educators with extensive program delivery experience were chosen to serve as program leaders within each participating town. These educators were affiliated with Cooperative Extension offices or rural healthcare centers and were members of the local community. Leaders worked in pairs with coordinators or alone to recruit eligible women, assist with screening and data collection procedures, and facilitate program classes.

Coordinators were Extension paraprofessionals or healthcare center employees who were also well-connected to the community. Recruitment strategies included advertising at community venues (e.g. flyers, information tables), targeted direct mailing, newspaper ads, website posts, and word of mouth referrals. Eligible participants were 40 years of age, English-speaking, and currently sedentary, with a BMI ≥ 25 .

In addition to completing human subjects' ethics training, leaders received extensive training in study procedures and curriculum facilitation through in-person workshops and interactive webinars. Training sessions covered SHHC program background, foundational knowledge related to curriculum content (e.g. nutrition and physical activity recommendations), guidelines for program facilitation, and sample lessons. Leaders and coordinators also received a comprehensive guidebook, which included the full program curriculum and materials needed for facilitation. Weekly phone calls were held with leaders and coordinators throughout the intervention period to address any program-related questions or issues, as well as to encourage similar delivery of the intervention across sites.

Procedures and Measures

Implementation of the SHHC intervention program was assessed using a mixed-methods process evaluation design. Evaluation measures were adapted from Saunders et al.²⁴ and the Medical Research Council's guidance for process evaluation of complex interventions.²² Table 1 summarizes the measures and data collection methods used.

To assess fidelity, dose delivered, dose received, and reach, leaders were asked to complete an online survey after each program class. Checklists were used to indicate whether each lesson topic was covered and if class materials were used during facilitation. Fidelity scores for each curriculum component were assigned as follows: 0 = not covered, 1 = yes, covered but modified; 2 = yes, covered as prescribed. Dose delivered scores were assigned as follows: 0 = not covered, 2 = covered in any form (including adaptations or modifications). Component scores were summed and divided by the maximum possible fidelity or dose delivered score to obtain overall percent scores for each intervention site.

Dose received was defined as participants' exposure to curriculum content and the extent to which they found this content effective.²⁴ Total time spent in class during the program was used as a measure of curriculum exposure. To assess effectiveness, leaders were asked to respond to the following question on a 5-point Likert scale: "In your opinion, how effective was this class for participants?" Response options ranged from very ineffective (1) to very effective (5). Reach was assessed using attendance records from the after-class surveys. Measures of dose received and reach were subsequently averaged to create summary scores for each site.

To assess program satisfaction, SHHC participants were asked to complete an online survey after the intervention program ended. Survey measures included satisfaction with the program and benefits associated with participation. Questions related to program satisfaction and participation benefits were assessed on a 5-point Likert scale. Participants were also asked a series of open-ended questions about program perceptions and suggestions for improvement.

To gain further insight into program experiences, focus group discussions were held with participants following program completion. Focus groups were conducted via Zoom's audio conference platform (version 4.0, 2017), which allowed participants to dial in using in any landline or mobile phone. This methodology was utilized to accommodate travel constraints, minimize costs, and engage geographically dispersed participants.^{33–35} Participants were invited by program leaders to attend and received a \$25 Amazon gift card for their time. Semi-structured telephone interviews were also conducted with program leaders and coordinators at each intervention site. Telephone focus groups ranged from 60 to 90 minutes, while interviews lasted approximately one hour. All focus groups and interviews were facilitated by a trained interviewer and audio recorded.

Focus group and interview guides were designed to assess satisfaction with the SHHC program, with a focus on suggested improvements and modifications. The questions explored overall experiences facilitating and participating in the SHHC program, as well as experiences related to specific program components (e.g. physical activity). Questions also assessed the influence of the overall SHHC program on individual, social, and environmental aspects of health.

Participants provided written informed consent for all quantitative data collection procedures upon enrollment into the SHHC study. Oral informed consent was obtained from all participants and program leaders prior to conducting the focus groups and interviews. Study procedures and materials were approved by the Institutional Review Boards at Cornell University (file #1402004505) and Bassett Medical Center (file #2022).

Data Analysis

Quantitative data were analyzed using SAS (version 9.4, SAS Institute Inc., Cary NC, 2018). Participant characteristics and process evaluation survey measures were summarized using means and frequencies (%). Demographic differences between survey respondents and non-respondents, and focus group attendees and non-attendees were assessed using t-tests for continuous variables and chi-square tests of independence for categorical variables. Open-ended survey responses were qualitatively coded in NVivo (QSR International Pty Ltd. Version 11, 2018) using the descriptive coding framework described below.

Audio recordings of the focus groups and interviews were transcribed verbatim and also coded using NVivo. An initial descriptive coding framework was developed around relevant topics from the interview guides and iteratively revised to incorporate emergent themes. Descriptive codes were grouped into three main categories: positive aspects of the program, negative aspects of the program, and recommendations for improvement. These codes were organized to reflect participants' perspectives on the overall SHHC curriculum, as well as the physical activity and nutrition education components, specifically.

All coding decisions were systematically reviewed and discussed by three members of the research team and a subset of the transcripts were independently doubled-coded. Observed agreement and adjusted kappa values were 97.6% and 95.2% respectively, suggesting high inter-coder reliability. All analyses were conducted in 2016–2017.

RESULTS

A total of 194 women from sixteen rural towns (twelve in Montana; four in New York) were enrolled in the study.³¹ Of these, 101 women in eight towns (six in Montana; two in New York) received the SHHC intervention program. Intervention participants ranged in age from 41 to 81 years and were primarily non-Hispanic white (90%), married (67%), and either employed full-time (49%) or retired (24%). Table 2 presents the baseline sociodemographic characteristics of SHHC intervention participants.

Fifteen leaders and coordinators facilitated program classes across the eight SHHC intervention sites. Seven sites had leaders that co-facilitated with a coordinator while the eighth site only had one leader facilitating. All leaders (n=8) were female, non-Hispanic white, CPR certified, and had completed graduate-level academic training. All coordinators (n=7) were female, non-Hispanic white, and had completed some college.

Reach

On average, participants attended 67% of program classes (site range: 53% to 81%), which amounted to approximately 38 contact hours. Twenty of the 101 participants attended 90% of program classes and 25 participants attended 80–89% of classes, thus qualifying for a bonus Amazon gift card. No demographic differences were observed between participants with high attendance levels (≥ 80%) and those with lower attendance levels (<80%).

Fidelity and Dose Delivered

Program leaders across most sites reported high levels of adherence to the SHHC curriculum (overall fidelity = 82%). Site-specific fidelity scores ranged from 80% to 89%, with the exception of town 2 (fidelity=63%). Dose delivered scores for each site were slightly higher than fidelity scores (overall dose delivered = 87%), suggesting that most program components were delivered as prescribed with limited modifications. Details on fidelity and dose delivered are presented in Table 3.

Dose Received

As shown in Table 3, program classes lasted between 61 and 76 minutes for most sites, somewhat longer than the allocated 60-minute time period. Overall, leaders rated the effectiveness of class sessions quite highly (3.94/5), although site-specific ratings varied from neutral (3.25/5) to very effective (4.68/5).

Program Satisfaction: Mixed-Methods Questionnaire

A total of 74 SHHC participants completed the post-intervention satisfaction survey. Survey respondents were significantly older than non-respondents (n=27) ($p<0.01$, data not shown); however, no other demographic differences were observed (data not shown).

Survey respondents attended 79% of program classes on average, while non-respondents had a significantly lower attendance rate of 37% ($p<0.001$, data not shown).

Most participants (72%) were very satisfied with the SHHC program. Specific program components (e.g. lesson content) were well- received and participants reported noticeable improvements in fitness and eating habits. Almost half of participants (46%) were very satisfied with their resulting health changes and over 80% said they would definitely recommend the SHHC program to other women they knew. (Supplementary Table 2)

Sixty-nine percent of participants reported aspects of the program they enjoyed, including camaraderie, peer accountability, and exposure to new foods. Ninety-three percent of participants reported aspects they did not enjoy, including insufficient time to cover class content, challenging strengthening exercises, and completing participant logs. Participants (82%) also identified several areas for improvement, such as increasing class length, restructuring program content, and allowing more time for discussion. (Supplementary Table 3)

Program Satisfaction: Qualitative Focus Groups and Interviews

A total of 46 SHHC participants attended the telephone focus group discussions. Focus groups ranged from 3 to 9 participants, with an average size of 5–6 per group. Eight leaders and seven coordinators participated in the post-program interviews. Thirty women who did not attend the focus group discussions responded to the satisfaction survey, while two participants who did not complete the survey were able to attend a focus group. Thus, 75% of SHHC participants were reached using both methods as compared to reaching 45% through focus group discussions alone.

Focus group attendees were more likely to hold college degrees as compared to non-attendees ($n=55$) ($p<0.05$, data not shown); however, no other significant demographic differences were observed. Program attendance rates were significantly higher among focus group attendees (80%) compared to non-attendees (57%) ($p<0.001$, data not shown). Satisfaction ratings from the post-program survey were comparably high among women who attended the focus group discussions ($n=44$) and those who did not ($n=30$).

Thematic findings from the focus groups and interviews are briefly described in the text and illustrated with quotes in Table 4.

Overall program.—Feedback regarding SHHC was predominantly positive, with the content described as thorough and well-planned. Most participants emphasized the benefits of camaraderie among group members, which motivated them to make positive lifestyle changes. Many leaders attributed the successful delivery of program components to support from their coordinator. Insufficient time to cover educational content was commonly viewed as a challenge among participants and leaders. Participants were also eager for more directive strategies for engaging family members in healthy lifestyle practices learned through the program. Among the most frequent recommendations was increasing class length by 15 to 30 minutes. Participants also felt that they would have benefitted from discussing specific nutrition topics (e.g. meal planning) earlier in the program. Leaders and coordinators further recommended increasing goal-setting guidance and regularly monitoring progress during class.

Physical activity components.—Participants, leaders, and coordinators all expressed enthusiasm for the in-class exercise sessions, commending the gradual progression of intensity, limited equipment requirements, and consistent frequency. Participants also benefitted from the support of and accountability to fellow group members. Most women enjoyed using the Fitbit trackers provided by the research team to monitor their daily step counts and ‘compete’ with fellow Fitbit users. However, many women struggled to keep up with fast-moving aerobic dance routines in class (e.g. Zumba) and preferred the slower paced walking videos. Leaders and coordinators also emphasized difficulties completing the floor-based strengthening exercises due to mobility constraints. Including a greater variety of easy-to-follow aerobics videos and enhancing the consistency of strength-training exercises were suggestions for improvement. Many leaders and coordinators also recommended adding more modifications to allow participants to complete exercises safely and effectively.

Nutrition education.—Participants appreciated the range of nutrition topics covered in class and found the sessions on meal planning, portion size, and nutrition labels particularly helpful. Many women credited the program for enhancing their awareness of healthy eating strategies and reinforcing existing knowledge. The class recipes and food demos encouraged many participants to use new ingredients when cooking at home. Most women expressed willingness to prepare recipes on a rotating basis to reduce the burden upon leaders and coordinators and provide a cost-sharing benefit to the program. Several women suggested the need for more prescriptive guidance on incorporating healthy eating habits into daily routines. Additional recommendations included allocating more time to discuss nutrition topics and tailoring meal planning strategies to rural areas where food access is often limited.

DISCUSSION

Understanding the implementation of lifestyle interventions for women is critical to improving intervention effectiveness and informing dissemination efforts, yet evidence from rural-specific contexts remains limited. The purpose of the current study was to evaluate the implementation of a CVD prevention program for rural women, *Strong Hearts, Healthy Communities* (SHHC).

Previously published findings highlight the effectiveness of the SHHC intervention in reducing CVD risk factors as compared to the control program.³¹ Results from this process evaluation offer additional insight into program implementation in rural settings.

High fidelity scores (>80%) were observed across all but one intervention site, a level of fidelity comparable to other lifestyle interventions for adults.^{36–39} This supports the use of community health educators in delivering lifestyle interventions in rural areas. Despite strong positive feedback about the program, average attendance (67%) was lower than anticipated (>75%).²¹ This may be attributable to the program duration and dose (twice per week for six months); however, the provision of an attendance bonus may have buffered this impact. Attendance for the first three months of the SHHC program averaged 81%, which is similar to or higher than other programs of a similar duration, which report attendance rates between 75–80%.^{21,40}

Overall, SHHC participants were highly satisfied with the program and would readily recommend it to other women in their community. Similar to previous studies among rural women, participants discussed the benefits of peer support and social interaction in keeping themselves accountable and motivated.^{12,26,41} Despite long commutes and busy schedules, women looked forward to the weekly classes and willingly set aside time to attend. Self-monitoring with Fitbit trackers was another effective strategy to promote daily activity. This supports existing research highlighting the feasibility of automated fitness trackers among older adults and women.^{42,43}

Most recommendations were related to the integration of program components rather than contextual challenges (e.g. limited space and financial constraints), suggesting that the SHHC program adequately addressed rural-specific barriers to implementation. These findings echo results from previous StrongWomen program evaluations, which reported sufficient funding and resources for program delivery.^{28,39} However, several participants felt that some program recipes and meal planning strategies should better account for the high cost and limited availability of healthy food in rural areas.

Key recommendations included increasing strength training and exercise variety, changing the order of curriculum components, and allocating more time for instruction. Future iterations of the SHHC program should include additional aerobic exercise DVDs, consistent strength training schedules, and earlier introduction of nutrition education topics (i.e. within the first month). If possible, lessons should be extended or streamlined to allow for richer group discussions and more time to cover program content. While many SHHC participants expressed willingness to attend longer sessions, it may be unrealistic to expect this time commitment from all individuals.

Limitations

Some limitations of this research should be noted. Firstly, the SHHC program was specifically designed to reduce CVD risk among midlife and older rural women who were sedentary and overweight/obese. As such, findings from this process evaluation cannot be generalized to other rural populations or lifestyle intervention programs. Secondly, measures of fidelity and dose were only assessed by leaders, which may have positively biased the results. However, independent observations could have also introduced bias if program leaders behaved differently while being observed (e.g. more or less adherent to the curriculum).⁴⁴ Although self-report assessments may have limited validity, they do offer several advantages including cost and time savings.⁴⁴ Lastly, it is possible that participants who chose to attend the focus group discussions felt more positively about the program. Although no differences in satisfaction ratings were observed among attendees and non-attendees who completed the survey, about one-quarter of SHHC participants did not respond. These non-respondents had lower attendance rates, which may indicate differential perceptions of the program.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Designing programs that require reasonable time commitments from participants, while providing adequate opportunities for skill-based learning and group interaction remains a

challenge for health promotion programs. Recommended strategies for ensuring high fidelity and participant satisfaction include involving local health educators as program facilitators and offering face-to-face group classes. Although online or telehealth approaches are often recommended for rural locations, in-person sessions were an effective way to engage SHHC participants. Future process evaluations should compare self-reported fidelity measures with independent observations to better understand and minimize bias. In addition, future multilevel intervention studies should examine how context may influence program implementation by including a multilevel process evaluation to better capture how the program was operationalized at the social and community levels. Results from the present evaluation have guided improvements to the SHHC program for a second phase of implementation, including tailoring and reordering program components to better accommodate participant time constraints and learning needs. Furthermore, these findings will help inform the design and implementation future health promotion interventions for medically underserved, rural populations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Strong Hearts, Healthy Communities (SHHC) Process Evaluation Measures and Data Collection Methods

Measure	Definition *	Method of data collection	Data collected	Personnel collecting data
Reach	Proportion of individuals participating in the intervention (<i>participation rate</i>)	After-class survey	Attendance at SHHC classes	Program leaders
Fidelity	Extent to which intervention is delivered as planned (<i>quality</i>)	After-class survey	Adherence to curriculum components for each SHHC class	Program leaders
Dose Received	Amount of intervention delivered, in any form (<i>completeness</i>)	After-class survey	Delivery of curriculum components for each SHHC class	Program leaders
Dose Received	Extent to which participants are exposed and receptive to the intervention (<i>exposure</i>)	After-class survey	Effectiveness of SHHC classes for participants Total time spent in class during the SHHC program	Program leaders
Program Satisfaction (quantitative)	Participant satisfaction with the intervention and program staff	Post-intervention survey	Satisfaction with the SHHC program Participation benefits Recommendations	Participants
Program Satisfaction (qualitative)	Participant satisfaction with the intervention and program staff	Participant focus groups; Program leader interviews	Experiences participating in and facilitating the SHHC program	Participants & program leaders

* Adapted from Saunders et al. 2005

Table 2:

Sociodemographic Characteristics of Strong Hearts, Healthy Communities Intervention Participants

Characteristic (n (%))	Overall (n=101)	Survey respondents (n=74)	Focus group attendees (n=46)
Age [mean (SD)]	59.0 (9.4)	60.6 (9.4)	58.9 (9.1)
BMI [mean (SD)]	34.9 (6.1)	35.3 (6.3)	35.7 (6.0)
Race/ethnicity			
Non-Hispanic white	91 (90.1)	67 (90.5)	44 (95.6)
Hispanic	1 (1.0)	0 (0.0)	0 (0.0)
Other	4 (4.0)	4 (5.4)	1 (2.2)
Not reported	5 (4.9)	3 (4.1)	1 (2.2)
Education			
High school graduate or less	22 (21.8)	15 (20.3)	10 (21.7)
Associate degree or some college	30 (29.7)	22 (29.7)	11 (23.9)
College degree	28 (27.7)	21 (28.4)	11 (23.9)
Post graduate/professional degree	14 (13.9)	12 (16.2)	12 (26.1)
Not reported	7 (6.9)	4 (5.4)	2 (4.4)
Income			
<\$25,000	24 (23.8)	19 (25.7)	5 (10.9)
\$25,000-\$49,999	23 (22.8)	18 (24.3)	13 (28.2)
\$50,000-\$74,999	16 (15.8)	10 (13.5)	9 (19.6)
\$75,000	25 (24.7)	18 (24.3)	14 (30.4)
Not reported	13 (12.9)	9 (12.2)	5 (10.9)
Marital Status			
Married	68 (67.3)	51 (68.9)	36 (78.2)
Unmarried couple	2 (2.0)	0 (0.0)	0 (0.0)
Divorced	9 (8.9)	6 (8.1)	4 (8.7)
Widowed	14 (13.9)	12 (16.2)	5 (10.9)
Separated	1 (1.0)	1 (1.4)	0 (0.0)
Never been married	1 (1.0)	1 (1.4)	0 (0.0)
Not reported	6 (5.9)	3 (4.0)	1 (2.2)
Employment Status			
Employed	50 (49.5)	35 (47.3)	26 (56.5)
Self-employed	11 (10.9)	6 (8.1)	3 (6.5)
Retired	24 (23.8)	23 (31.1)	12 (26.1)
Homemaker	6 (5.9)	3 (4.0)	3 (6.5)
Out of work	1 (1.0)	1 (1.4)	0 (0.0)
Unable to work	4 (4.0)	3 (4.0)	1 (2.2)
Not reported	5 (4.9)	3 (4.0)	1 (2.2)

Table 3.

Process Evaluation Results by Strong Hearts, Healthy Communities (SHHC) Intervention Site (n=8)

Site	Fidelity ^a	Dose delivered ^b	No. of classes attended ^c (%)	Class length (min)	Total Class hours	Class effectiveness ^d
Town 1	85.4%	87.9%	29 (61.1)	62	30	4.17
Town 2	62.6%	68.9%	26 (53.5)	61	27	3.25
Town 3	83.0%	87.2%	35 (72.9)	63	37	3.77
Town 4	86.6%	92.8%	34 (70.1)	93	53	4.68
Town 5	80.2%	86.1%	27 (56.9)	61	28	4.11
Town 6	83.0%	88.5%	35 (73.4)	62	36	3.68
Town 7	88.3%	91.8%	34 (71.0)	74	42	4.26
Town 8	89.4%	92.1%	39 (81.3)	76	49	3.91

^aRepresents the percentage of curriculum components delivered in complete form (*as prescribed*)^bRepresents the percentage of curriculum components delivered in any form (*as prescribed or modified/adapted*)^cRepresents the average number and percentage of classes attended by SHHC intervention participants^dRepresents the average class effectiveness on a scale of 1 (*very ineffective*) to 5 (*very effective*)

Table 4.

Lessons Learned from the Strong Hearts, Healthy Communities Program: Focus Group (n=46) and Interview (n=15) Responses

Theme 1: Positive Aspects of Overall Program		
Subtheme	Respondent	Selected Quotes
Thorough and organized content	Leaders/coordinators and participants	"I just thought it was a fantastic program...as far as how it was organized and the content material...you know, it covered a wide range of topics...and it was all very well put together and very well done." (Participant_MT_01)
Group camaraderie	Participants	"...in the beginning, I thought there was no way I could do this twice a week for six months. And then, it was just so much fun! I hated it if I had to miss one! Just the support...it really provided the motivation I needed to make changes." (Participant_MT_01)
Dedication of leaders and coordinators	Leaders/coordinators and participants	[Leaders were] very supportive! If anyone seemed like...they were having trouble with anything, they'd always stop and check with you to make sure that everything was okay. (Participant_NY_08) "Having a...co-leader was...amazing, and I would not have been able to do it without her." (Leader_MT_05)
Theme 2: Negative Aspects of Overall Program		
Subtheme	Respondent	Selected Quotes
Insufficient class time	Leaders/coordinators and participants	"So often there wasn't time to go through the curriculum...and even when we could go through the curriculum...there just wasn't enough time...to make it really meaningful or powerful to them." (Leader_MT_03)
Limited social influence and support	Leaders/coordinators and participants	"I think the friends and family part of it would have been much bigger in our community if we stressed to them how much they needed to be doing this at home. It wasn't just come to the class and do it, but try to bring it home with you...this is not a two day a week lifestyle change, it's a seven day a week lifestyle change." (Coordinator_MT_06) "I don't know how effective it [social support content] was for the women...a lot of them have stress in their lives that I can't even relate to...A big problem for our participants was that their husbands, or their families, refused to eat healthy... so they ended up having to make two dinners. And so it's always this constant difficulty for them." (Coordinator_MT_03)
Theme 3: Recommendations for Overall Program		
Subtheme	Respondent	Selected Quotes
Extending class time	Leaders/coordinators and participants	"...the class was not long enough, [laugh]...it was supposed to be an hour...but, it was just not enough time. Most of the time it averaged I would say an hour and a half...and it didn't seem to bother them. So, I think if you're going to have the education piece and the exercise bit...you definitely need to have more than just an hour." (Leader_MT_04) "One of the things I would see as a change in the program would be to have more time for the discussion groups... When we got into having a half-hour of aerobic exercise and then fifteen minutes of strength training, it didn't really leave any time to discuss all the stuff that was in the book." (Participant_NY_07)
Reorganizing content	Leaders/coordinators and participants	"The food portion...such as meal planning and...dealing with family, that was more towards the end of the curriculum...that would be a great thing just to start out with. That way they're trying to make those changes from

Theme 1: Positive Aspects of Overall Program

Subtheme	Respondent	Selected Quotes
		<i>the beginning.” (Coordinator_MT_04)</i>
<i>Emphasizing goal setting</i>	Leaders/coordinators	<i>“...I think that the goals are very important. But we didn’t follow through with the goals! To me if I was changing the curriculum, every week we would have had a goal. You set your goals, and you...look at your neighbor and say, “Here’s my goals.” Then you follow back up on them.” (Leader_MT_02)</i>

Theme 4: Positive Aspects of Physical Activity Components

Subtheme	Respondent	Selected Quotes
<i>Exercise enjoyment</i>	Leaders/coordinators and participants	<i>“I’m just glad you introduced us to the walking videos...in the winter, to go outside and walk ... I guess you could do it, but if it’s icy or something you’re not going to. And those videos they really give you what you need, and by the time you’re done that thirty minutes doesn’t seem like thirty minutes!” (Participant_MT_03)</i>
<i>Peer support and accountability</i>	Participants	<i>“And I know it’s a lot easier to do lunges and squats with that group than it is when I’m [laugh] by myself, I’m like, „Oh yep, seven, I’m done.”” (Participant_MT_02)</i>
<i>Fitbit usage</i>	Participants	<i>“My motivation was the Fitbit...because I have been dealing with my illness for two years, and it pulled me out of a... slump, because it gave me a reason to move...and I did not, honest to God, quit until I hit that ten thousand steps, every day, and...it was the greatest thing.” (Participant_MT_01)</i>

Theme 5: Negative Aspects of Physical Activity Components

Subtheme	Respondent	Selected Quotes
<i>Complex aerobic routines</i>	Leaders/coordinators and participants	<i>“In the aerobic dance, they’re moving across the floor in different directions...and people would get a little discombobulated... you’re not really working out, you’re just trying to stay where you’re supposed to be...people weren’t able to follow that quite as easily, so it got a little off-track.” (Leader_MT_02)</i>
<i>Inconsistent and difficult strength training</i>	Leaders/coordinators	<i>“So, for weights... when we were following the curriculum it was sporadic, so you might do... bicep curls, squats, and lunges today, but then we didn’t do those three things again over the next month. And so, those women unless they were doing them at home, didn’t gain any benefit from just doing their reps that one day.” (Coordinator_MT_02)</i>

Theme 6: Recommendations for Physical Activity Components

Subtheme	Respondent	Selected Quotes
<i>Improving variety and consistency</i>	Leaders/coordinators and participants	<i>“It would be nice to get into a pattern...if we’re meeting on Tuesdays and Thursdays, we’re going to go through and we’re going to do all of these exercises...maybe we have to whittle it down a little but we’re going to do all of them twice a week, so that way they get a consistent benefit.” (Coordinator_MT_02)</i> <i>“I guess there could have been a little more variety... We bought some videos ourselves, and a lot of us had different ones... Maybe that could have been something... a few time have members bring in the videos they like...Just to mix it up a little.” (Participant_MT_06)</i>
<i>Modifying strength exercises</i>	Leaders/coordinators	<i>“And some of them weren’t willing...to get, or able to get down on the ground, so having alternatives for those folks, I mean even though the goal is to give them the confidence that if they...did fall or anything, they could get</i>

Theme 1: Positive Aspects of Overall Program

Subtheme	Respondent	Selected Quotes
		<i>back up and to try to build some of that...balance and coordination."</i> (Leader_NY_07)

Theme 7: Positive Aspects of Nutrition Education

Subtheme	Respondent	Selected Quotes
<i>Awareness of healthy strategies</i>	Participants	<i>"It just makes you more aware, and you're...reading labels more...thinking more about...portion size...and what you're eating...those kinds of things...so, yes, it was worthwhile!"</i> (Participant_NY_07)
<i>Exposure to new foods</i>	Participants	<i>"You know, they made a lot of snacks that I enjoyed, that I wouldn't have thought about eating...that were really quite good, and I probably wouldn't have tried them if I would have just read the recipe...but after trying them I definitely would have made some of them."</i> (Participant_MT_06)

Theme 8: Negative Aspects of Nutrition Education

Subtheme	Respondent	Selected Quotes
<i>Extensive preparation time</i>	Leaders/coordinators	<i>"...they took so much of our time to prepare... we were having to use what would have regularly been office time and after hours" time... so that we could get them to the class every night."</i> (Leader_MT_04)
<i>Limited applicability</i>	Leaders/coordinators	<i>"I think we gave out a lot of information, and I think we needed to be a little more proactive... we just gave out information, but there wasn't a whole lot of accountability, so it was like "Here's this, do what you will with it" ...So a lot of people they close their binders, they go home, that's the end of it."</i> (Leader_MT_02)
<i>Inadequate food access</i>	Leaders/coordinators and participants	<i>"In a rural area... we don't quite have access to all the healthier type foods... When you go into the big cities the produce department is humungous...in my community, it's probably about a twenty-foot section [laugh] that's about four-foot deep...And it's expensive, a lot of fresh produce around here is expensive."</i> (Participant_MT_03)

Theme 9: Recommendations for Nutrition Education

Subtheme	Respondent	Selected Quotes
<i>Sharing food preparation</i>	Leaders/coordinators and participants	<i>"...we're going to continue in September, start up again, just cause summer's busy, and they were willing to <bring snacks>... Especially now that the funds aren't there...that'll be excellent for our group."</i> (Coordinator_MT_04)
<i>Increasing discussion time</i>	Participants	<i>"...we all knew a lot of the information but when somebody would say, "Oh! This has really worked for me!"... there was a lot of ideas on getting your water intake...some people were really struggling with that... and I don't know, we got a lot from each other"</i> (Participant_MT_06)