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A qualitative evaluation of a group phone-based weight loss intervention for rural breast cancer survivors: Themes and mechanisms of success

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Abstract

Purpose—Obesity is prevalent in breast cancer survivors and is a significant risk factor for recurrence and mortality. Weight management interventions for survivors have been diverse in design (in-person vs. phone-based, group vs. individual) and yielded varying weight loss results. Given these issues, participants themselves may provide insight into treatment-based factors that contributed to their weight loss outcomes. Here we report qualitative results from interviews with survivors in a group phone-based weight loss intervention, with the objective of identifying mechanisms that facilitated or hindered adherence and weight loss. We explored interest in paying for continued treatment as an indicator of dissemination potential.

Methods—Individual interviews were conducted with 186 rural, obese breast cancer survivors upon completion of a six-month weight loss intervention that produced clinically meaningful weight loss (> 5%) in 91% of participants. A thematic analysis of the interview data was performed.

Results—Five themes were identified as impacting adherence and success: 1) accountability, 2) importance of the group, with varying levels of connectedness, 3) dietary convenience, 4) difficulty maintaining intervention components that required more effort, and 5) importance of internal motivation to attributions of physical activity success or failure. Most were interested in paying to continue the program if it were extended beyond the study.

Conclusions—Key intervention components that participants attributed to their success included supportive group processes and convenience. Results highlight the group phone-based approach as a potential venue for disseminating an effective weight loss program for breast cancer survivors.

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Conflict of Interest

The authors have no conflicts of interest to declare. The researchers have full control of all primary data and agree to allow the *Journal of Supportive Care in Cancer* to review the data if requested.

Introduction

Among breast cancer survivors, obesity is a significant risk factor for breast cancer recurrence [1], disease-specific mortality [2], and overall mortality [2]. Survivors who are obese have a 1.3 increased relative risk of recurrence compared to normal weight survivors [3]. Most (50–80%) of breast cancer patients gain weight during treatment [4, 5] and as many as 68% of breast cancer survivors are overweight or obese [6]. Rural breast cancer survivors are particularly at risk; rural women are more likely to be obese [7] and less likely to exercise and have nutritious diets than their urban-dwelling peers [8].

Weight loss interventions for overweight/obese breast cancer survivors have been developed to address this issue and have yielded mixed results; some studies reported minimal to modest weight loss [9–12], while others reported clinically significant weight loss of 5% or more [13–22]. These interventions have been heterogeneous in design and treatment delivery method [23, 24], and patient experiences with intervention components and delivery are largely unknown. While most interventions targeted overall calorie reduction, their methods for implementing the diets varied; most required participants to plan and cook their own meals at home [9–12, 14–20, 25], whereas one facilitated preparing meals at home by providing structured, prescribed daily meal plans [21], and another study recommended prepackaged meals and provided protein shakes to participants [13]. Recommendations for moderate to vigorous physical activity have also been diverse, ranging from 90 minutes per week [11, 14] to 200 minutes per week [18] and targeted supervised, on-site sessions [11, 12, 14] or in the home environment [16].

These weight loss interventions in breast cancer survivors have been conducted in individual [17] or group-based formats [13] and delivered in-person [14, 17], over the phone [13], by mail [26], online [20], or mobile app [19]. Overall, the benefits of group versus individual therapy have been demonstrated in producing clinically significant weight loss among breast cancer survivors [27], and also obese adults [28] and researchers have suggested that participant group dynamics underlie these superior effects, however little research has been conducted in this area. In addition, weight loss results have varied across intervention delivery methods, from small effects observed with some mail-based interventions [26], to substantial effects in some phone-based interventions [13]. However, mechanisms that facilitate and hinder weight management success with distance-based interventions are largely unknown.

The variability in intervention design/delivery and mixed weight loss results suggest an existing lack of clarity in the literature on the mechanisms that are important to weight loss among breast cancer survivors [29], and patients themselves may provide insight into treatment-based factors that contributed to their weight loss outcomes. One small previous study conducted a qualitative analysis using one focus group with a subset of breast cancer survivors participating in a group-based weight loss intervention [30]. The participants identified social support from the group-based nature of the intervention and new skills that challenged counterproductive dietary beliefs and habits as some of the most helpful components.

Little attention has been given to ways to disseminate weight loss interventions to cancer survivors in a cost-effective manner [23]. Patients may also provide valuable initial information regarding their interest in participating in and paying for weight loss treatment outside of a research study. Both qualitative feedback regarding patient interest in paying to continue treatment, as well as standardized assessment with established economics measures, such as willingness to pay for treatment services [31], would greatly inform future dissemination efforts. These assessments should be considered in the context of patients' financial resources, as well as the U.S. health insurance system, wherein most weight management services are not covered.

We have developed a distance-based intervention targeted to overweight/obese rural breast cancer survivors living in dispersed geographic regions with preliminary success [13]. Here we report on a qualitative analysis of individual process interviews with 186 overweight/obese rural breast cancer survivors, the vast majority of whom achieved clinically significant weight loss from participating in a 6 month weight loss intervention delivered via weekly group conference calls. The purpose of the current study was to identify potential mechanisms that facilitated or hindered continued adherence and weight loss success, and also to explore participants' interest in paying for continued treatment as a preliminary indicator of program engagement and dissemination potential.

Methods

Parent Study Overview

This study was conducted at the end of a 6 month weight loss phase of a larger 24 month weight loss maintenance trial among rural breast cancer survivors. The parent study was designed to compare continued group phone-based counseling versus mailed newsletters on weight loss maintenance subsequent to successful weight loss. Participants (N=210) were recruited in 8 cohorts from oncology centers in the Midwestern United States. A comprehensive description of the study design has been presented previously [32]. In brief, the intervention consisted of 3 phases: 1) a 6-month weight loss phase (0 to 6 months) where all participants received weekly group phone sessions, 2) a 12-month weight loss maintenance phase (6 to 18 months) in which participants were randomized to continued group phone sessions or a newsletter comparison condition, and 3) a 6-month no contact follow-up phase (18 to 24 months) to evaluate sustained effects. The study was approved by the University's Institution Review Board and informed consent was obtained from all participants.

Intervention Components

During the 6 month weight loss phase of the study (Phase I), participants met via conference call for one hour weekly. Participants were instructed to follow a structured meal plan which consisted of two whey-based protein shakes a day, two prepackaged portion-controlled meals (e.g., Lean Cuisine, Smart Ones) per day, and at least 5 fruits or vegetables per day. The study provided the protein shakes only. Snacks that were not fruits or vegetables as well as eating meals out were discouraged. These dietary guidelines were recommendations and not requirements, and group leaders guided and supported participants in tailoring these

dietary recommendations to fit their individual needs and preferences. Based on the American College of Sports Medicine's physical activity recommendation to promote weight loss [33], participants were instructed to gradually increase their physical activity, with the goal of completing 225 min/week of moderate-intensity physical activity per week by week 12. Brisk walking was the activity of choice for most participants. Physical activity topics addressed both basic educational strategies to ensure safety, monitor and regulate intensity, and increase exercise variety, as well as directly addressed common barriers to physical activity health behavior change, including issues related to the built environment in rural settings (lack of sidewalks, high winds, etc), motivation to engaging in physical activity, goal setting, self-efficacy, social support, enjoyment of physical activity, time constraints, and problem-solving. Self-monitoring and feedback was also a significant component of the program. Each week, participants submitted a self-monitoring report form to their group leaders that asked them to specify their daily consumption of prepackaged meals, protein shakes, meals out, fruits and vegetables, unplanned snacks, minutes of moderate to vigorous aerobic activity, and steps (measured via pedometer). During each weekly phone session, participants reported to the group whether they met nutrition and physical activity goals that they had set during the previous session. Every four weeks, participants completed a one-week daily food diary in which they recorded everything that they ate and the calories in the food they consumed.

Process Interviews

Process interviews were conducted individually with participants upon completion of the 6 month weight loss phase and before randomization to the maintenance condition. The process interview consisted of eight questions inquiring about participants' most and least liked aspects of the intervention and barriers and facilitators to their progress during the intervention. The questions addressed the intervention as a whole, as well as individual components of the intervention: diet, physical activity, self-monitoring, and group counseling sessions. Two additional questions inquired whether patients were willing and able to pay for the program if it were available in the future and how much they would be willing to pay to continue participating in the program. A final question asked for any additional comments or suggestions participants wished to provide. All questions were open-ended and exploratory in nature. Table I presents the questions.

Participants were interviewed individually over the phone after they completed a 6-month in-person assessment visit where anthropomorphic and other quantitative measures were collected. Five interviewers were trained to take detailed notes of participant comments on a standardized interview data capture form and subsequently administered all interviews. After each round of interviews, the primary investigator (CAB) reviewed the detailed notes and met with each interviewer to help ensure the interviews and documentation were completed in a standardized manner. To limit the chance of eliciting biased responses due to social desirability effects, interviewers did not conduct interviews with participants from their own weight loss intervention groups.

Thematic Analysis Process

We conducted an inductive thematic analysis of the process interview data using the well-established thematic analysis process guidelines from Braun and Clarke (2006) [34]. An inductive thematic analysis approach was in accordance with the study's research purpose of identifying patterns across the data in patients' responses regarding mechanisms related to their progress during the intervention. We used this data-driven analysis method at a semantic level, with an epistemological assumption that patients' responses directly reflected their experiences and would allow us to identify and articulate their experiences during the intervention as related to their weight loss. The thematic analysis process was conducted as follows. Two investigators (TLF and NJS) who were not involved in administering the intervention reviewed the data in its entirety until they were familiar with the data as a whole. Following this process, they independently identified predominant codes that characterized common responses to each interview question. The two investigators met with a third investigator (CAB) who served as an independent evaluator to discuss any inconsistencies in the codes and come to a consensus. Following code identification, both investigators classified question responses from all interviews based on the codes. The third investigator identified high intercoder reliability and confirmed that they were sufficiently inclusive. Using the codes as a reference, both investigators independently identified themes that were present throughout the interviews, across all questions. The three investigators then met as a group a final time to discuss the major themes. The themes were very similar between the two investigators. A consensus was reached when all three investigators decided upon the final themes that best reflected the process interview content as a whole.

Results

Participant Characteristics

Out of 210 participants who enrolled in the study 91% (n=191) completed the six month weight loss intervention. Thirteen participants (6%) dropped out and 6 (3%) were removed from the study due to medical reasons. Of those who completed the intervention, 97% (n=186) completed the process interview.

Demographic characteristics of the participants are presented in Table II. Eighteen percent of participants were overweight (BMI of 27–29.9 kg/m²) and 82% were obese (BMI of 30–45 kg/m²). The mean age of the sample was 58.8 (SD = 8.2) and the majority of participants were Caucasian, representing the composition of the rural Midwest population. Median income was low: \$20,080 and most of the sample (75%) made less than \$40,000 per year.

Participants lost a mean of 13.0% (SD= 5.9) of their baseline body weight. The vast majority (91.3%) of participants lost 5% or more of their baseline body weight, and 71% of participants lost 10% or more of their baseline body weight.

Thematic Analysis

Five themes were identified across interview questions and cohorts (Table 3).

Accountability to the group and to self—Participants reported they felt accountable to the group and to themselves for their eating and physical activity during the study. Participants expressed how having to be responsible for their behavior and being held accountable for meeting these goals during the group sessions was a very helpful part of the program and motivated them to make dietary and physical activity changes. Participants also reported that this accountability mechanism helped them “get back on track” when they strayed from their goals. In addition, participants expressed that self-monitoring helped them stay accountable to themselves by keeping them “honest when you don’t want to be,” which influenced their dietary compliance.

Importance of the group, yet varying levels of connectedness—Participants reported they appreciated the group aspect of the program, particularly the normative group support, advice from the group leader and participants, information about nutrition, weight management, and health, and having shared weight loss goals. Participants reported that it was helpful hearing others were going through similar challenges and successes with weight loss, and that ongoing discussions about the weight loss process were useful when they felt they were “slipping” from diet and physical activity compliance. However, individuals also varied substantially in their connection with the group. Some participants commented that their groups formed “strong bonds” and that the group support was very helpful and important. Others expressed that group participation was unevenly distributed or that they themselves were not interested in some of the group discussion content. Some women stated that more group members needed to get involved and that “there is always someone who is more involved than everyone else.” Specifically, they viewed themselves as the primary individuals to carry the conversations. For example, they reported that they spoke more frequently and regularly than the others in their group. One specified that she felt responsibility as a participant to keep the group conversation moving and expressed concern that if she was quiet, no other members would step in to fill the conversational void. In contrast, other participants reported that they did not like when the other group members “shared too much” or spoke off topic and specified that some members spoke for too long and/or too frequently during the calls. Others acknowledged that they preferred to listen to the other group members and were not comfortable speaking regularly during the sessions.

Convenience of the diet—Another prevalent theme was the convenience of the diet. Participants reported that they liked the protein shakes and prepackaged entrees because they were “quick and easy” and required little food preparation time and forethought. Some liked that the prepackaged entrees decreased the burden of choosing what to eat: “[following the diet] took decision making out of the game” and many reported that the diet “made life easy,” which facilitated their adherence. Participants were generally enthusiastic about the protein shakes when they could add fruit and some appreciated that the prepackaged entrees taught them portion control. However, a third of participants reported that by months 4–6 of the intervention, the entrees and shakes became repetitious and “boring” and they wanted more dietary variety.

Aspects of the program that required more effort became tiring and hard to maintain—While participants were enthusiastic about aspects of the program that were

convenient and easy to follow, participants became tired of the intervention components that required substantial effort beyond what they were doing before entering the program, such as attending the hour-long sessions, completing daily self-monitoring, and daily physical activity. Participants reported that the weekly calls presented scheduling conflicts and others reported that the calls were too long. Participants also reported that daily self-monitoring—particularly when they were required to complete a daily food diary once a month—was time consuming, and easy to forget to do. Others reported that self-monitoring became “boring” or “overwhelming.” About half of participants found the physical activity difficult to maintain and some reported that increasing physical activity was the hardest part of the program. “It’s been a continuous struggle to make myself do it... [For] people who have been very inactive, it’s just always going to be hard.”

Importance of internal motivation to attributions of physical activity success or failure—Participants commented that increasing physical activity was their own responsibility, and most attributed their success or failures in reaching their physical activity goals to their internal motivation level. Some participants who were generally unsuccessful reported they did not know what would have helped them increase their activity and that “the encouragement was there.” These participants tended to view their motivation level as unamendable from the intervention. Although less predominant, some participants also described a variety of external barriers that made it difficult to maintain physical activity, including lack of time, scheduling conflicts, fatigue, lack of sidewalks and paved roads, a lack of exercise facilities in their rural towns, and extreme seasonal temperatures that made outside physical activity difficult. However, these external barriers were viewed as less influential compared to internal motivation.

Interest in Paying for Continued Treatment

Most participants (82%) reported that they would be willing and able to pay to continue participating in the program, depending on the price. Because the question was open-ended, participants reported a wide range of what they would be willing to pay from \$20 to \$200 per month. Many reported using commercial programs such as Weight Watchers as a reference point for what they would be willing to pay.

Discussion

The findings highlight participant-identified intervention mechanisms that were important to their success during a group phone-based weight loss intervention tailored for rural, obese breast cancer survivors, wherein 91% of participants achieved clinically meaningful weight loss. Participants perceived the group component of the intervention as important to their weight loss success, because the group provided an environment for both social support (encouragement, advice for addressing challenges, shared weight loss goal) and accountability in meeting dietary and physical activity goals. The superior weight loss benefits of group versus individual therapy have been documented [27, 28] and previous studies have found that level of group engagement [35] and conflict [36] were associated with weight loss during interventions for obese adults from the general population. Our

findings contribute to the existing literature in identifying multiple group process mechanisms that were important specifically to breast cancer survivors.

Our findings also indicate that group facilitation via phone is a potential approach for reaching geographically dispersed, rural survivors, and that phone-based group facilitation appears to cultivate the same important group mechanisms as in-person groups, such as peer accountability, information exchange, and support. However, the groups had varying levels of connectedness, suggesting that group facilitation by phone may require more nuanced facilitation skills to ensure equal participation and engagement across members. More group leader training and quality control monitoring may be required for group phone-based interventions compared to in-person approaches, and these factors should be accounted for when considering potential cost savings and dissemination. One possible approach may be to identify disconnected participants early on and intervene with an individual session or smaller group session with the group leader focusing on enhancing their group participation. Another possibility would be to periodically solicit process feedback from participants about their perceptions of the group dynamics and their comfort in participating to help guide the group leader with improving participation and cohesiveness.

In addition to group dynamics, patients also identified convenience in following the diet and perceived burden of physical activity and self-monitoring as factors influencing their progress. These themes are consistent with the tenants of behavioral economics that suggest increasing convenience, decreasing effort, and emphasizing enjoyment are important factors in health behavior change [37, 38]. We provided protein shakes and recommended participants consume prepackaged entrees, in contrast to previous studies that required participants to plan and cook their own meals [9–12, 14–21, 25], and our efforts likely increased the convenience in adopting and maintaining the intervention diet. It is possible that these aspects of the diet may have also facilitated weight loss, as participants in the current study did lose more weight than has usually been observed in interventions with breast cancer survivors [9–12, 14–20, 22]. While the effects of different components of the diet on weight loss cannot be determined from the current data, this topic warrants future investigation, particularly given the predominance of this theme in the process interviews.

We targeted a high level of home-based physical activity, 225 minutes per week based on recommendations for weight loss maintenance [33], compared to 90–200 minutes/week [11, 12, 14, 18] from other weight loss trials in breast cancer survivors, some of which included supervised exercise which is not feasible or preferred in our rural setting [11, 12, 14]. However, we provided exercise DVDs and group phone sessions were focused on key factors related to physical activity behavior change, such as goal setting, motivation, problem-solving, social support, and self-efficacy. In addition, the intervention content was tailored to address barriers specific to rural communities, such as a lack of sidewalks and other environmental structures that facilitate physical activity, and addressed rural sociocultural norms that seldom support recreational physical activity [39], a key determinant of physical activity participation [39, 40]. However, despite this comprehensive focus and tailored intervention content, participants' perception of internal willpower as the primary deterrent to exercise adherence persisted. This may in part reflect cultural values common in the rural Midwest that emphasize hard work and personal responsibility, i.e. 'no

excuses' [41]; thus our rural participants may have been more inclined to attribute their physical activity success or failure to themselves as opposed to an outside source/barrier. Further tailoring of the intervention to deep structures representing cultural values may be warranted [42]. Physical activity engagement remains an important target for future research given that it is one of the strongest predictors of weight loss maintenance [33], and our findings highlight the importance of tailoring content to the population.

Consistent with the literature [43], many participants reported that self-monitoring was difficult to maintain throughout the intervention. Since this trial was launched, numerous web and mobile-phone based self-monitoring apps have become mainstream and provide a tool to lower time and effort requirements and provide more real-time feedback [44, 45]. However, uptake of mobile technology is lower among older adults [46] and individuals residing in rural areas [47], and additional research is needed to demonstrate strategies to enhance mobile app use among these populations with lower technology literacy.

Most participants expressed interest in paying for continued weight management treatment. Our preliminary findings are relevant particularly for rural, low-income survivors, as they generally have limited access to commercial weight loss programs [48] and have traditionally had varying levels of success with commercial and online programs [20, 49]. However, a systematic evaluation of survivors' interest and ability to pay for weight loss treatment is needed to better inform future dissemination efforts. For example, willingness to pay for a service is an economics measure that indicates the degree to which a group values a service; this measure is commonly used to inform the design of treatment funding models [31], and may be useful in weight management treatment dissemination planning efforts. In this regard, while most participants were interested in paying out of pocket, research is also needed to demonstrate to insurance companies return on investment from funding these types of programs.

One question that our study was not able to answer, but that future research should address in order to inform dissemination efforts, is whether weight loss programs should be tailored specifically for breast cancer survivors, or could be expanded to mixed survivor/non-survivor groups [23]. In a recent systematic review, Playdon et al (2013) suggest that including breast cancer survivors in community-based weight loss programs may be one way to disseminate weight management treatment to the growing number of survivors in need of these services [29]. While our study did not ask participants about the importance of being in a group with only survivors and no experimental studies have been conducted on this topic, future research could address both survivor preference for and comparative efficacy of survivor-only versus mixed weight loss groups.

The current study had several limitations. First, while the interviewers took detailed notes of participant responses to the interview questions, the interviews were not audio-recorded and thus could not be transcribed and analyzed in this format. It is possible that interviewers may have unintentionally summarized these responses using their own code words during data collection; however we used five interviewers to and provided on-going training and oversight to decrease the risk of uniform unintentional coding during data collection. Also, participants' responses may have been subject to social desirability bias if they wished to

present a positive impression to the study team. However, the interviewers were not involved with the patients' group counseling sessions and participants provided a combination of positive and negative comments. In addition, we were unable to reach the 6% of participants who dropped out; therefore our findings do not apply to the minority of women who did not sufficiently engage in the program. Finally, our findings pertain to an initial weight loss intervention phase and do not provide information related to the more difficult stage of weight loss maintenance [50].

The current study is unique as a qualitative investigation of treatment-related mechanisms important to breast cancer survivors who achieved clinically meaningful weight loss. Future group-based weight management interventions for survivors should focus on cultivating group processes related to accountability and cohesiveness, as well as utilizing strategies that increase convenience in adopting health behaviors, while also addressing sociocultural barriers to physical activity to counter patients' perceptions that poor internal motivation is the main driver of physical inactivity. Participants' interest in paying for continued weight management services, as well as their strong engagement during the intervention and accompanied clinically significant weight loss, highlight a potential venue for long-term treatment that may influence longevity and quality of life in this population. Future research is needed in order to best inform dissemination efforts.

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Table I

Process Interview Questions about the Weight Loss Intervention

Question Number	Question Topic	Question Text
1	Intervention as a whole	What has been the most helpful part of this program for you?
2	Diet	What have you liked or not liked about the diet aspect of the program, the shakes, entrees, and fruits and vegetables?
3	Physical activity	How have you done with the physical activity goal? How might we better help participants meet the physical activity goals?
4	Self-monitoring	What have you liked or not liked about the self-monitoring aspect of the program, the data you send us and the monthly food logs?
5	Group counseling sessions	What have you liked or not liked about the weekly calls? What confidential suggestions do you have for how to make the group calls more helpful, either with the structure of the call or for the group leader?
6	Interest in paying for future services	We are interested in keeping this program going and serving more women. If this program was not offered as a research study, would you be willing and able to pay for the sessions and materials? How much would you be willing to pay?
7	Additional comments	Is there something important that I missed, or do you have any other comments you would like to add?

Table II

Participant Characteristics (n = 186)

Demographic Variable	M (SD) or %
Age	58.8 (8.2)
BMI	33.9 (4.4)
Marital Status	
Married/Cohabiting	82.8%
Race/Ethnicity (Caucasian)	98.9%
Socioeconomic Status	
Personal income < \$40,000	75%
Age at Diagnosis	54.3 (8.4)
Time since treatment (years)	3.3 (2.4)
Stage	
0	8.0%
I	41.4%
II	34.5%
III	16.1%
Treatment Received	
Lumpectomy	50.6%
Mastectomy	49.4%
Radiation	69.5%
Chemotherapy	67.2%
Anti-hormone Therapy	73.6%
% Weight Loss	13.0 (5.8)
>5% weight loss	91.3%
>10% weight loss	71%

Table III

Process Interview Themes

Theme Number	Theme	Common Points
1	Accountability to the group and to self	Being accountable to the group motivated participants to stay “on track” Participants felt accountable to the group and to themselves
2	Importance of the group, yet varying levels of connectedness	Group support was important to participants’ weight loss progress Some groups “bonded well” and group support was “a big deal” Some individuals were more invested than others
3	Convenience of the diet	“[The diet] was easy to follow and convenient.” The diet required minimal cooking and decision making
4	Components of the intervention that required more effort were more difficult to maintain	Physical activity was difficult to maintain, especially for individuals who were not previously active Self-monitoring requirements of the program became tiresome and took too much time
5	Physical activity success or failure was primarily attributed to internal motivation	Some participants did well and cited motivation as key to their success Some participants reported they lacked motivation and that physical activity goals were their “downfall”