Published in final edited form as:

J Cancer Surviv. 2014 March ; 8(1): 31–38. doi:10.1007/s11764-013-0307-5.

African American breast cancer survivors' preferences for various types of physical activity interventions: A Sisters Network Inc. web-based survey

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Abstract

Background—Needs assessments are essential to developing lifestyle interventions for minority populations. To our knowledge, no physical activity (PA) needs assessment studies have been conducted for African American (AA) breast cancer survivors. The purpose of this study was to determine the PA intervention preferences of AA breast cancer survivors and determine whether these preferences differ according to medical and socio-demographic factors.

Methods—AA breast cancer survivors (N = 475, Mean age = 54 years) were recruited using ads sent via email and social media sites. Preferences for the mode of intervention delivery were assessed via web-based questionnaires. Descriptive statistics were used to characterize their interests in PA interventions, and subgroup differences were assessed.

Results—About 49% (142/291) of the participants who completed the survey were obese and 54% did not meet the recommended guidelines for PA. Most (90%) participants reported that they

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Conflicts of Interest: The authors have no conflicts of interest to disclose.

Financial Disclosures: The authors have no financial disclosures.

could participate in PA, and many (67%) indicated that they were interested in receiving program materials. Participants expressed the greatest interest in email (50%) or web-based (48%) programs over mail (45%), group (39%), and telephone (10%). Women also expressed the greatest interest in participating in studies that promoted walking and resistance or strength training. Intervention preferences did not differ significantly ($P > 0.05$) across socio-demographic or medical factors.

Conclusion—Most AA breast cancer survivors can participate in PA, and many are interested in interventions that promoted walking and resistance training and were delivered via the email or web. The development of culturally sensitive interventions that provide activities consistent with preferences can assist AA breast cancer survivors to adopt and maintain a healthy lifestyle.

Implications for cancer survivors—Despite evidence that AA breast cancer survivors are at increased risk for poor breast cancer-specific outcomes they are underrepresented in clinical trials promoting positive health behaviors. In this study, we propose to assess their exercise preferences and receptivity to a culturally appropriate physical activity intervention developed in collaboration with the Sisters Network. Health promotion programs developed in collaboration with a community based organization may aid in the development of research tools and resources that AA breast cancer survivors are receptive to using.

Keywords

Breast cancer; African American women; cancer survivorship; cancer survivor; health disparities; physical activity

INTRODUCTION

Physical activity (PA) is associated with several benefits throughout the cancer continuum, including improvements in breast cancer-related symptoms, body mass index (BMI), and quality of life [1–3]. PA is instrumental in maintaining functional health, an important indicator of functional independence, cancer-specific, and overall survival [4, 5]. Despite the benefits of PA, African American (AA) breast cancer survivors are underrepresented in clinical trials promoting positive health behaviors, and many do not meet the current guidelines for PA [4, 6]. These data are alarming considering that AA breast cancer survivors have higher rates of recurrence and poorer cancer-specific and overall survival rates [7].

Before developing a PA intervention for AA breast cancer survivors, a needs assessment survey is critical. Previous needs assessment studies conducted among cancer survivors have typically sought to (a) determine whether survivors are receptive to participating in an intervention, (b) identify a preferred mode of delivery, (c) determine whether survivors prefer exercising alone or with others, and (d) identify specific exercises in which survivors are interested in participating [8–11]. Such studies were instrumental in developing interventions for diverse cancer populations.

Despite substantial evidence suggesting that AA breast cancer survivors are receptive to interventions promoting health behavior [12–14], to our knowledge, no studies have assessed the PA preferences of AA breast cancer survivors specifically. The literature

reported to date has focused primarily on non-Hispanic white populations. In an effort to advance research on minority cancer survivors and address health disparities, there is a need to study the PA preferences of AA breast cancer survivors. Previous studies assessing the PA preferences of AA have focused on patients with diabetes [15, 16]. Although diabetes and cancer are both chronic condition, the consequences are diabetes are manageable, whereas cancer and its treatment has numerous psychological and physiological consequences. Thus, there is a need to study the PA preferences of AA women with other chronic health condition. Studies that provide data on the PA preferences of AA breast cancer survivors may help to determine whether their preferences are comparable to other populations or whether they are distinct. Such studies may help to determine whether the PA preferences of AA breast cancer survivors are universal or whether there are subgroup differences within this population.

One of the greatest challenges in reducing the gap in cancer health disparities and minority enrollment in clinical trials is study recruitment. Partnering with national or community-based organization may help to harness sufficient support from vulnerable communities in an effort to reach recruitment goals. In addition, utilizing the internet as a recruitment tool has the potential to reach populations of women who are often underrepresented in health promotion studies. Internet-based surveys are cost-effective and enable researchers to collect data rapidly from a geographically diverse group of people [17, 18]. Recent data from the PEW Research Center indicate that approximately 71% of African Americans use the internet and 49% have access to broadband or high speed internet [19]. Despite the fact that these strategies are readily available and may have the potential to increase the reach of health promotion studies, few investigators in the field of cancer survivorship have considered such methods.

In this study, we initiated a collaboration with a national organization of African American breast cancer survivors (i.e., Sisters Network, Inc) to conduct a needs assessment study. Prior to developing the survey, a mutual collaboration was established the Sisters Network agreed on the final survey and the modality of data collection. The purpose of our study was to administer a web-based needs assessment survey designed to (a) determine the intervention preferences of AA breast cancer survivors and (b) determine whether the intervention preferences differ according to socio-demographic and medical characteristics. Our findings may help to increase the awareness of using web-based methods to recruit a vulnerable population of women for health promotion interventions and help to understand the needs of developing health promotion interventions for a national organization of African American breast cancer survivors.

METHODS AND MATERIALS

African American breast cancer survivors from the Sisters Network, Inc. were surveyed in this needs assessment study. The Sisters Network is the largest African American breast cancer survivorship organization in the United States. The Sisters Network is a national organization that contains 40 affiliate chapters in 19 states including: California, Florida, Georgia, Illinois, Indiana, Louisiana, Maryland, Michigan, Mississippi, Nevada, New Jersey, New York, North Carolina, Ohio, South Carolina, Tennessee, Texas, Virginia, and

Wisconsin. Breast cancer survivors in the Sisters Network maintain and are engaged on social network sites, via email, and local and national meetings.

Breast cancer survivors were recruited between May of 2012 and July of 2012 via multiple email blasts and posting of anonymous survey links on social media blog sites affiliated with Sisters Network. The email blast reached approximately 16,000 members in their database, which includes approximately 3800 breast cancer survivors as well as healthy AA women (~12,200). Links posted on Facebook, the Sisters Network Social Network Site, and Twitter reached approximately 6,800 healthy women and breast cancer survivors. Participants were directed to the online survey through a link that was powered by Survey Monkey. Eligibility criteria included (a) 18–80 years old at diagnosis, (b) diagnosed with operable invasive breast cancer, (c) not currently undergoing treatment (with the exception of hormone therapy), and (d) have no evidence of recurrent disease. For the purposes of this study, we focused exclusively on AA survivors and data belonging to women who did not meet our eligibility criteria were excluded ($n = 52$). A total of 475 women has Institutional Review Board approval was obtained prior to data collection and it was assumed that by reading the consent form on the initial survey web page and answering questions on the survey that these women consented to participate.

Measures

PA preferences were assessed using four closed-item questions and one open-ended question (i.e., exercises they were interested in doing) drawn from previous studies [9–11]. The specific closed-item questions were (1) Would you like to receive information about exercise (yes, no, and maybe)?; (2) Can you participate in an exercise program (yes, no, and maybe)?; (3) If you were to begin an exercise program, who would you like to exercise with (spouse/family member, friend(s), cancer patients, non-cancer patients, no preference, and please specify other)? (4) There are several ways of receiving information/advice about exercise programs, how interested would you be in receiving information in the following ways? (group-based programs, mailed information, over the internet, CD-ROM, telephone, face to face at the clinic, informative flyer, over email, and please specify other); and (5) what types of exercises would you be interested in doing? (open ended). With respect to intervention delivery, participants were allowed to express interest in multiple options.

PA was assessed via a self-administered instrument designed for the Women's Health Initiative [20] and was validated in the Women's Health Eating and Living Study [21]. Study participants were classified on whether or not they met current guidelines for physical activity, which equaled approximately 150 minutes per week of moderate to vigorous physical activity per week. This criteria was derived by the Centers for Disease Control for PA [22] and has been validated in previous studies [5, 23].

The study participants' self-reported height and weight were used to compute their BMI. BMI was computed in a standard manner: weight in kilograms was divided by height in meters squared (kg/m^2). BMI risk categories were created to distinguish non-obese women ($\text{BMI} < 30 \text{ kg}/\text{m}^2$) from obese women ($\text{BMI} \geq 30 \text{ kg}/\text{m}^2$) and normal weight women from overweight and obese women.

All socio-demographic and medical data were self-reported by participants. We collected data on the following study variables: current age, education, marital status, treatment, time since diagnosis, stage at diagnosis, smoking status, alcohol intake, and the presence of comorbid conditions.

Statistical Analysis

Means and frequencies were used to characterize the study participants. Similarly, frequencies were used to describe the PA preferences of study participants. Sociodemographic and medical differences in preferences were assessed using a chi-square test of equal proportion. To determine whether exercise preferences differ by population subgroup, a paired t-test was used. All statistical tests for these questions were two-sided, and $P < 0.05$ was considered statistically significant. A qualitative text analysis was used to evaluate the responses to the open-ended question pertaining to type of preferred activities. Commonly used phrases or words describing exercise-related activities (e.g., walking, running, jogging, strength training, etc.) were identified, and their relative frequency (and percentage) were calculated each time they were mentioned. No statistical software was utilized to analyze the text. The women generally indicated one or more activities in which they were interested in participating. Responses to this open ended item were reviewed independently by the principal investigator and two co-authors. Recurrent topics, themes were independently coded and compared across the coders. Discrepancies in coding were resolved by reaching consensus to obtain consistency across themes.

RESULTS

Descriptive characteristics

The descriptive characteristics of study participants are reported in Table 1. The website was visited 760 times; 525 visitors identified themselves as breast cancer survivors, and 291 completed the entire survey. A total of 475 women provided usable data. Survey participants were on average 54 years old, 7 years from diagnosis (range = 0–40), and were diagnosed with stage II disease. More than half of the survivors reported having at least a college degree and having high blood pressure. Of the study participants, 49% were obese, and 54% did not meet current guidelines for PA.

Survey response characteristics

This study yielded a total of 475 valid responses from survey participants. Completers and non-completers did not differ with respect to any of the socioedemographic or medical characteristics assessed here (Table 1). Out of the 291 survey items included in this questionnaire, a total of 291 (61%) participants completed all survey items (see Table 2).

Exercise participation and interest in receiving information about exercise

Most (90%) participants indicated that they could (yes/maybe) participate in an exercise program, and this finding did not differ according to age, education, time since diagnosis, obesity status, or whether they were meeting the current guidelines for PA (all $P > 0.05$). Many (67%) women reported that they were interested (yes/maybe) in receiving information about exercise, and this finding did not differ according to age, education, time since

diagnosis, or whether they were meeting the current guidelines for PA (all $P > 0.05$). Also, a higher proportion of obese women (76%) than non-obese women (63%) expressed interest (yes/maybe) in receiving information about exercise ($P < 0.01$).

Delivery mode

Overall, most participants preferred to receive exercise information via email (50%) or web-based (48%) clinic based (36%) or telephone-based (10%) interventions (Table 3). Preferences for the mode of delivery did not differ significantly according to completion status, age group, time out from diagnosis, or whether they were meeting the guidelines for PA (all $P > 0.05$). However, a larger proportion of obese women (44%) than non-obese women (28%) expressed greater interest in clinic- and telephone-based interventions ($P < 0.05$). In addition, a larger proportion of women with no college degree expresses greater interest in telephone- and mail-based interventions ($P < 0.05$).

Preference for partners

Most (64%) participants did not have a preference for an exercise partner; however, less than 1% of participants wanted to exercise with non-cancer patients. Other options included a friend (14%), spouse or family member (13%), and cancer patients (9%). Preferences for partners did not differ according to age, education, obesity status, time since diagnosis, or whether they were meeting the guidelines for PA (all $P > 0.05$, data not tabled).

Exercise types

Participants were most interested in interventions that promoted walking (range = 32%–43%) and resistance training (range = 24%–45%). Some of the responses to the open-ended question related to resistance activities included “building muscles,” “circuit training,” “muscle strengthening,” “toning arms,” “thighs,” “tummy and buttocks,” “firming,” and “weightlifting.” The relative level at which participants ranked each activity was not significantly different according to subgroup. However, a larger percentage of women who were younger than 50 years and of women who were diagnosed within the past 5 years preferred cardiovascular-type exercises than did older women and women who diagnosed 5 years ago. In addition, more women who were meeting the current guidelines for PA preferred resistance training and Zumba than did those who were not meeting current guidelines for PA.

DISCUSSION

To our knowledge, this is one of the first web-based needs assessments studies to assess the PA intervention preferences for AA breast cancer survivors and use a web-based needs assessment survey to do so. The population that we recruited was younger than that observed in other studies and it appears that they have similar exercise preferences older AA women. These data provide meaningful evidence that AA breast cancer survivors have similar interests in and preferences for PA interventions. The differences in their PA preferences according to socio-demographic or medical factors were minimal in this population.

In our study, we found that the majority of women were interested in interventions that promoted walking and resistance activities. Previous studies conducted among other cancer populations (e.g., bladder, ovarian, endometrial, and breast cancer) as well as AAs with diabetes have indicated that walking is the preferred activity [8–11, 15, 24]. Surprisingly, many women expressed interest in resistance training, and among women who were meeting the current guidelines for PA, resistance training was the preferred activity. Responses to the open-ended question included “firming” or “toning muscles,” “circuit training,” “weightlifting” and “strength training.” Resistance training may be an ideal exercise for this population as a means of improving strength as well as reducing excess body fat. Their preferences for resistance training activities are in accordance with the Centers for Disease Control and Prevention PA guidelines, which suggest that adults should participate in resistance training and stretching at least 15 minutes per day at least 2 days per week [25]. Providing survivors with resistance bands and study materials to promote their use is an inexpensive way to increase PA among this population. Our data regarding their choice of exercises differ from the data reported in previous studies in that this question was open-ended. Thus, we were able to capture specific activities in which AA breast cancer survivors are interested. More research is needed to determine whether the preferences identified in this study resemble those of AA women not affiliated with the Sisters Network.

The women in our study were interested in the web-, email-, and mail-based interventions. These data differ from those reported in recent studies conducted among non-AA cancer survivors. Previous studies showed that breast [8, 11] and endometrial [26] cancer survivors preferred clinic based counseling sessions or group-based interventions led by an expert at the medical facility. Of note, many women in the present study were extremely/very interested in mail-based programming (i.e., printed materials), which is similar to the findings of a recent study conducted among kidney cancer survivors [27]. Our data differs from many of the previous studies, which were conducted before social networking sites were available or popular. It could be that our population is more Internet savvy and spend their leisure time on the Internet. We are not sure why the women here are less interested in a telephone based intervention. Previous studies that include telephone-based delivery methods have been successful [6, 28–31]. Also of note, in the present study, more obese women than non-obese women expressed interest in clinic-based interventions. These women could have anticipated that extensive face-to-face counseling in a clinical setting will be needed for long-term weight reduction. An ideal intervention could encompass a combination of approaches to ensure that high-risk populations engage on multiple levels. Including multiple modes of delivery may improve adherence to a PA intervention and maintenance of PA.

In the present study, most women did not have a preference for an exercise partner, and the proportion of women reporting this lack of preference was substantially higher than that reported in other studies [11, 26, 32]. The reasons for this discrepancy are not clear. Rogers et al. [8] questioned whether women who did not express a preference would be receptive to various exercise programs or whether their lack of preference reflects a “lack of interest or motivation.” When planning interventions for women who appear uncertain about their interest, the suggestion posed by Rogers et al. [8] to examine motivation, stage of readiness, and self-efficacy should be considered. Equally important was that few (<1%) survivors

expressed interested in participating with a non-cancer patients. The nature of having access to a national organization such as the Sisters Network could be reasons for not wanting to exercise with non-cancer patients. Alternatively, these data could also suggest that survivor-specific classes and/or individual-level interventions are actually needed. For a population of women with high rates of obesity and very low levels of activity, a support system seems ideal to help women develop a regular routine of exercise. Support systems may enhance the adherence to a distance-based intervention as well as help women maintain activity levels over time. More research is needed to clarify whether their lack of preference for a partner is indeed a desire not to have a partner to exercise with.

Survey Monkey and othe web-based survey systems are valuable tools that can be used to reach high-risk populations. Although, use of the web is associated with response bias, its an time efficient way to recruit study participants from diverse geographical locations [17]. In our study, a link to our survey was embedded within emails and conversations posted on social marketing sites. Although the response rate wasn't as high as we expected, a large number of AA breast cancer survivors were recruited in a relatively short period of time. Our collaboration with the Sisters Network ensured that we were successful in our efforts. Despite indication that many of these women were highly educated, they have high rates of obesity and inactivity that resemble those of women of low socioeconomic status [33]. At this point in time, there is a need for data on minority cancer survivors to expand our understanding of their PA preferences and ultimately strategies to design effective interventions in these populations.

Several weaknesses of our study should be addressed. Primarily, these data were collected via a web-based survey among a group of women who belong to a national organization. As a result, selection bias and recruitment bias may limit generalizability of the study findings to the larger number of AA breast cancer survivors. In addition, web-based survey faces a significant concern for non-response bias. Such challenges are not unique to web based surveys, telephone based survey and mail surveys do tend to face significant challenges of low response rate. Web-based survey approaches are becoming more popular as a survey tool as it allows rapid assessment, and a feasible tool to generate information from difficult to reach population. In addition the web-based survey is self-administered and the information entered is directly recorded, thus minimizing interviewer bias and data entry error.

Preferences for email- or web-based interventions could be attributed to the method by which we collected our data or recruited participants for the needs assessment survey. In particular, we used multiple email blasts and posts on social media sites. Our method of communicating with the members of the Sisters Network could have skewed our responses. Other studies that utilize focus groups, nominal group techniques, and mail-based survey approaches are needed to validate our results; such approaches will help to disentangle the mode of communication from their preferences. Additionally, most of the women in our study were college educated, and younger in age and this observation could be partially explained as internet usage/access gap tends to be correlated to age, education and income level; thus, our findings may not be generalizable to other populations of AA breast cancer survivors. Furthermore, our study may have been underpowered for subgroup analyses.

Despite these weaknesses, our study also had several strengths, including the fact that it was one of the first and largest studies to describe the intervention preferences of AA breast cancer survivors and one of the first studies to include open- and closed-ended questions. It should also be noted that a substantial number of women in our study are under the age of 50 years. Women diagnosed with early-onset breast cancer may be at greater risk for recurrence and comorbid conditions than those diagnosed at later ages.

AA breast cancer survivors are underrepresented in studies assessing health behaviors and preferences for lifestyle intervention; yet many are capable of joining an exercise study and receptive to participating. Our data suggest that web- or email-based approaches may be the best channel to reach these women. However, larger samples and the use of different data collection techniques are needed to confirm our results. That being said, web-based interventions offer several advantages including broad reach and the ability to tailor and adapt intervention materials in a timely fashion. The development of such studies may have long-term implications for this population and may lead to the development of a research tool that can be adapted and disseminated to large populations of AA breast cancer survivors at little to no cost.

Acknowledgments

We wish to thank the women of the Sisters Network Inc for participating in our study and Scientific Publication at MD Anderson for editing our manuscript.

Funding: This research was supported in part by National Cancer Institute grant 5K01CA158000 to RJP and by MD Anderson's Cancer Center Support Grant (CA016672).

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Table 1

Descriptive Characteristics of African American breast cancer survivors by survey completion status

Variable	Non-Completers N=182	Completers N=291	P-diff
Mean Age (SD) [n=473]	53.6 (9.9)	54.0 (10.0)	0.712
Age group, n (%) [n=473]			0.607
< 50 years old	63 (34.6)	105 (36.1)	
50 to 59 years old	65 (35.7)	95 (32.7)	
60+ years old	54 (29.7)	91 (31.2)	
Mean Age at diagnosis, (SD)	46.6 (10.2)	46.7 (9.4)	0.910
Mean years since diagnosis, (SD) *	7.0 (7.1)	7.3 (7.0)	0.308
< 5 years			0.345
Stage, n (%) [n=437]			0.737
I	60 (35.7)	93 (34.6)	
II	69 (41.1)	120 (44.6)	
III	36 (23.2)	56 (20.8)	
* Marital Status, n (%) [n=473]			0.971
Married	88 (48.4)	143 (49.1)	
Education, n (%)			0.721
< College graduate	92 (50.5)	139 (47.8)	
College Graduate	90 (49.5)	152 (52.2)	
Lifestyle behaviors			
Mean Body Mass Index (SD) [n=473]	29.9 (5.8)	30.4 (6.0)	0.345
% Obese	77 (42.3)	142 (48.8)	0.169
Total minutes/week of PA * [n=308]	-	174.6 (178.7)	-
% Meeting guidelines for PA	-	135 (46.4)	-

Completers are characterized as those persons who completed all survey items. Non-completers initiated the survey, but did not complete all items. SD= standard deviation; PA = physical activity; Differences in continuous variables were assessed with one-way Analysis of Variance (or

*Wilcoxon Rank Sum test), whereas, categorical variables were assessed with Chi-square test of association.

* Sample size varies due to missing data

Table 2

Survey completion rates by survey section

Survey Section	Number of items	Cumulative number of Participant Responses (%)
Medical and demographic	10	473 (100%)
Body size items	4	473 (100%)
Smoking and alcohol intake	2	473 (100%)
Exercise preferences	9	445 (94%)
Sedentary behavior	16	345 (73%)
Psychosocial correlates of sedentary time	32	345 (73%)
Physical activity	9	308 (65%)
Psychosocial correlates of physical activity	91	294 (62%)
Quality of life	41	291 (62%)

Table 3

Survivor Interest in Various Intervention Topics and Modes of Delivery and Differences in Intervention Preferences Based on Completion Status and Sociodemographic Factors

	Survivors who were intereste d	Completion Status			Education				Education				F
	%	No M(SD)	Yes M(SD)	t	Not College Grad M(SD)	College Grad M(SD)	t	<50 years M(SD)	50 – 60 years M(SD)	60+ M(SD)			
Mode of Delivery ²													
Clinic based	36	3.3 (1.4)	3.1 (1.5)	1.31	3.1 (1.5)	3.3 (1.5)	1.06	3.2 (1.5)	3.2 (1.4)	3.0 (1.5)	1.26		
Group based	39	3.1 (2.9)	3.0 (2.8)	0.62	2.9 (2.7)	3.1 (1.4)	1.35	2.9 (1.4)	3.2 (1.3)	2.9 (1.4)	1.20		
Telephone based	10	4.3 (1.1)	4.2 (1.2)	0.96	4.0 (1.3)	4.3 (1.1)	2.65*	4.1 (1.2)	4.2 (1.2)	4.3 (1.1)	1.29		
Informative flyer	35	3.0 (1.4)	3.0 (1.3)	0.03	2.9 (1.3)	3.1 (1.3)	0.86	3.0 (1.3)	2.9 (1.3)	3.0 (1.3)	0.24		
Mail based	45	2.9 (1.6)	2.6 (1.6)	1.83 [^]	2.5 (1.6)	2.9 (1.6)	3.06*	2.7 (1.6)	2.7 (1.7)	2.7 (1.6)	0.01		
CD-ROM	35	2.6 (1.7)	2.7 (1.8)	0.76	2.6 (1.7)	2.7 (1.7)	0.64	2.9 (1.7)	2.5 (1.7)	2.6 (1.8)	2.39 [^]		
Email based	50	3.0 (1.5)	2.8 (1.5)	1.64	2.8 (1.4)	2.9 (1.5)	0.84	2.8 (1.4)	2.8 (1.5)	3.0 (1.5)	1.12		
Internet based	48	2.7 (1.6)	2.5 (1.6)	1.17	2.5 (1.6)	2.6 (1.6)	0.50	2.4 (1.5)	2.5 (1.6)	2.8 (1.7)	2.53 [^]		

Note: percentages are based on the number of survivors who indicated they were either extremely or very 338 interested in a particular topic of intervention or mode of intervention delivery. M = Mean, SD= Standard Deviation; Range of scores was from 0= extremely interested to 5 = not at all interested;

* p <.05,

** p<.001,

^ p<.10.

Table 4

Survivor Interest in Various Intervention Topics and Modes of Delivery and Differences in Intervention Preferences Based on Lifestyle Characteristics

	Survivors who were interested	Years out from diagnosis			Obesity Status			Physical Activity Status			
		%	<5 Year M(SD)	5 Years M(SD)	t	Non- Obese M(SD)	Obese M(SD)	t	Meeting Guidelines M(SD)	Not Meeting Guidelines M(SD)	t
Mode of Delivery ²											
Clinic based	36	3.2 (1.5)	3.2 (1.4)		0.53	3.4 (1.4)	3.0 (1.5)	2.66*	3.0 (1.5)	3.2 (1.4)	-1.09
Group based	39	3.0 (1.4)	3.0 (1.3)		-0.32	3.1 (1.4)	2.9 (1.3)	1.21	2.8 (1.5)	3.1 (1.4)	-1.73^
Telephone based	10	4.2 (1.2)	4.2 (1.2)		0.11	4.4 (1.1)	4.0 (1.2)	2.81*	4.0 (1.3)	4.3 (1.1)	-1.41
Informative flyer	35	3.0 (1.4)	3.0 (1.3)		-0.45	3.0 (1.3)	3.0 (1.4)	0.07	3.0 (1.3)	3.0 (1.4)	1.14
Mail based	45	3.0 (1.5)	3.0 (1.4)		-0.06	3.1 (1.5)	2.9 (1.4)	1.42	3.0 (1.5)	2.9 (2.6)	0.75
CD-ROM	35	3.0 (1.5)	3.0 (1.5)		-0.07	3.2 (1.5)	2.9 (1.5)	1.88^	3.1 (1.5)	3.0 (1.6)	0.26
Email based	50	2.8 (1.5)	2.9 (1.5)		-0.90	2.9 (1.5)	2.8 (1.5)	0.72	2.6 (1.4)	2.9 (2.6)	-1.72^
Internet based	48	2.7 (1.4)	2.9 (1.4)		-1.67^	2.9 (1.5)	2.7 (1.4)	1.65	2.6 (1.4)	2.8 (1.5)	-1.37

Note: percentages are based on the number of survivors who indicated they were either extremely or very interested in a particular¹ topic of intervention or ²mode of intervention delivery; M = Mean, SD= Standard Deviation; Range of scores was from 0= extremely interested to 5 = not at all interested;

* p < .05,

** p < .001,

[^] p < .10.

Table 3

Number of women interested in specific exercises by population sub group

Physical Activity	Age Group			Obesity Status		Years out from diagnosis		Physical activity status		Education	
	<50 Years n = 158	50 TO 59 Years n = 153	60+ Years n = 134	Non-Obese n = 235	Obese n = 210	< 5 Years n = 206	5 Years n = 239	Not meeting n = 165	Meeting n = 143	< college grad n = 210	college grad n = 232
Walking	41%	37%	31%	34%	36%	34%	33%	43%	32%	37%	37%
Strength training, toning, weights, or stretching	39%	39%	24%	32%	32%	32%	31%	32%	45%	31%	36%
Aerobics (including water)	21%	12%	28%	12%	19%	15%	15%	17%	20%	12%	19%
Yoga/Thai Chi	18%	10%	13%	13%	12%	14%	13%	13%	15%	9%	16%
Zumba	14%	13%	4%	9%	11%	12%	8%	8%	15%	8%	13%
Cardio	19%	4%	6%	10%	10%	16%	6%	7%	14%	13%	10%
Running/jogging	6%	10%	0%	7%	4%	8%	5%	4%	10%	4%	7%
Low impact	4%	5%	7%	4%	4%	5%	5%	7%	4%	5%	5%
Treadmill/elliptical	2%	9%	6%	6%	6%	4%	7%	5%	6%	6%	6%
swimming	4%	3%	2%	2%	5%	4%	2%	4%	4%	2%	4%
Biking	6%	4%	4%	6%	6%	4%	6%	5%	5%	4%	6%
Plates	6%	2%	1%	3%	1%	4%	1%	2%	3%	2%	3%
Boxing/kickboxing	2%	1%	0%	1%	1%	1%	1%	0%	2%	<1%	2%
Dancing (including line)	3%	8%	8%	9%	3%	5%	7%	8%	6%	4%	8%

Responses were open-ended and were not mutually exclusive. Participants often reported interest in multiple activities. The responses represented the relative frequency of the number of times each activity was reported. Activities reported but not mentioned here were tennis, sit and be fit, chair cardio and chair exercises.