

Perceived Exercise Barriers and Facilitators Among Ethnically Diverse Breast Cancer Survivors

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About 2.9 million breast cancer survivors live in the United States and although Caucasian women have the highest incidence of breast cancer, African American and Hispanic/Latina women are more likely to be diagnosed with advanced disease and have higher mortality rates (American Cancer Society, 2011, 2012a, 2012b). Explanations for these disparities include differences in breast cancer risk factors such as physical inactivity (American Cancer Society, 2011, 2012a). Ethnic minority populations have grown substantially in the United States since the early 2000s (U.S. Census Bureau, 2011a, 2011b), which has resulted in an increased need for culturally sensitive breast cancer programs that include health-promotion components (e.g., exercise). Although the body of literature on breast cancer and exercise beliefs or behaviors has expanded in the past decade, most studies primarily have included Caucasian breast cancer survivors.

National percentages of breast cancer survivors meeting physical activity recommendations have ranged from 29%–37%, but physical activity often is not stratified by race and ethnicity (Bellizzi, Rowland, Jeffery, & McNeel, 2005; Blanchard, Courneya, & Stein, 2008). Some studies have found that African American breast cancer survivors are less likely to exercise than Caucasian or Hispanic breast cancer survivors (Irwin et al., 2004; Paxton et al., 2012; Smith et al., 2009).

Regular moderate physical activity among breast cancer survivors is associated with improvements in cardiorespiratory fitness, muscle strength, fatigue, depression, anxiety, and overall quality of life (QOL), and also is related to decreased mortality (Demark-Wahnefried & Jones, 2008; Ibrahim & Al-Homaidh, 2011; Irwin & Mayne, 2008). Exercise also protects against weight gain, a problem common among breast cancer survivors (Demark-Wahnefried & Jones, 2008). Because of the growing body of evidence on exercise benefits for cancer survivors, the American College of Sports Medicine and the American Cancer Society endorsed the

Purpose/Objectives: To determine whether women with breast cancer were meeting current physical activity recommendations and to describe perceptions of exercise self-efficacy, exercise benefits and barriers, and perceptions of environmental supports for physical activity by race or ethnicity.

Design: Cross-sectional survey.

Setting: Community wellness workshops held in various locations in central and eastern North Carolina.

Sample: 65 breast cancer survivors in treatment or post-treatment. Caucasian women comprised 46% of the sample followed by African Americans (34%) and Hispanics/Latinas (16%).

Methods: Descriptive statistics were used to determine the percentage of women meeting physical activity guidelines and for comparing exercise-related perceptions. Spearman's rho correlation coefficient tests were conducted to identify associations between physical activity and exercise-related perceptions.

Main Research Variables: Physical activity, perceived exercise self-efficacy, exercise barriers, and benefits.

Findings: Hispanic/Latina women were least likely to meet physical activity recommendations. Hispanic/Latina women were more likely than Caucasian and African American women to report lack of enjoyment from exercise, lack of knowledge on how to exercise, feeling self-conscious because of looks, and discouragement as exercise barriers.

Conclusions: In a sociocultural context, exercise beliefs need to be considered in the development of culturally responsive exercise interventions that may enhance the health of breast cancer survivors.

Implications for Nursing: Considering the increasing number of breast cancer survivors from diverse racial or ethnic backgrounds, a need exists for culturally competent nursing interventions aimed at increasing exercise. When educating breast cancer survivors, nurses should address sociocultural factors that may hinder or facilitate engagement in exercise.

Knowledge Translation: Most women were not meeting physical activity recommendations, particularly Hispanic/Latina women. Perceptions of exercise-related beliefs differed, although not significantly, across racial and ethnic groups. More perceived exercise barriers existed for Hispanic/Latina women compared to Caucasian and African American women, which may indicate sociocultural differences.

U.S. government's Physical Activity Guidelines, which include weekly engagement of 150 minutes or more in moderate-intensity aerobic activity (Rock et al., 2012; Schmitz et al., 2010).

Although solid evidence exists to promote exercise among breast cancer survivors, behavior change often is challenging. Determinants of motivation for increasing physical activity have been derived primarily from theories of behavior change (Pinto & Ciccolo, 2011). Self-efficacy, one's self-confidence to successfully engage in a behavior, is a central concept of several behavioral theories and is related to exercise among breast cancer survivors (Rabin & Pinto, 2006; Rogers, Markwell, Courneya, McAuley, & Verhulst, 2009). Beliefs about exercise benefits and barriers also may be involved with one's decision to exercise. If an individual expects to obtain benefits from exercise, they are more likely to exercise; however, the advantages typically need to outweigh the disadvantages. The process of weighing benefits and costs has been applied effectively in studies to increase physical activity in breast cancer survivors (Pinto & Ciccolo, 2011). An individual's environment is another factor relevant to exercise (Rogers et al., 2009). Although many investigators have explored exercise beliefs and behaviors of breast cancer survivors, most have focused primarily on Caucasian women. A need exists for additional exploration in diverse racial and ethnic breast cancer populations.

Exercise self-efficacy, benefits, barriers, and environment all have been identified as correlates to exercise behavior; therefore, these concepts guided exploration in the current study. Primary aims were to (a) determine whether women were meeting current physical activity recommendations; (b) describe perceptions of exercise self-efficacy, exercise benefits and barriers, and perceptions of environmental supports for physical activity by race and ethnicity; and (c) examine whether relationships exist between exercise beliefs and physical activity among multiethnic breast cancer survivors in active treatment (i.e., receiving chemotherapy or radiation) or post-treatment.

Methods

Study Participants and Procedures

Participants for this cross-sectional study were breast cancer survivors who attended community wellness workshops that focused on physical activity, nutrition, and emotional well-being. Workshops were conducted in collaboration with community partners who addressed needs of breast cancer survivors. The format and design of the workshops have been previously described (Spector, Battaglini, Alsobrooks, Owens, & Groff, 2012). Breast cancer survivors were recruited through word-of-mouth, flyers, e-mails, and news releases from partner orga-

nizations (e.g., community cancer centers, local health departments). At the workshops, participants received a fact sheet (available in English or Spanish) describing study details. Approval was obtained from the institutional review board at the University of North Carolina at Chapel Hill to waive written consent because of the low-risk nature of the questionnaires. After agreeing to participate, individuals were provided the questionnaires in either English or Spanish and were asked to complete them prior to beginning the workshop. Sixty-eight breast cancer survivors attended the workshops

Table 1. Sociodemographic Characteristics of Breast Cancer Survivors by Race (N = 65)

Characteristic	Caucasian (n = 31)	African American (n = 23)	Hispanic/ Latina (n = 11)
Age (years)			
25–44	2	2	5
45–64	20	15	5
65–75	9	6	1
Education			
Less than high school	–	–	2
High school or GED	7	8	3
Some college	10	3	3
Associate or bachelor's degree	10	10	1
Graduate or professional degree	4	2	2
Employment			
Full-time	8	11	4
Part-time	6	1	–
Retired	11	10	1
Unemployed	5	1	6
Self-employed	1	–	–
Insurance			
Private	19	15	1
Medicare	3	2	1
Private plus Medicare	7	2	1
Medicaid	1	3	1
Uninsured	1	1	6
Marital status			
Married	24	14	6
Divorced or separated	2	3	3
Single	2	3	–
Unmarried and living with partner	2		1
Widowed	1	3	1
Area of residence			
City	13	11	5
Suburban	8	4	2
Rural	9	7	2
Treatment			
Completed	22	14	10
Active	9	9	1

Note. Not all variables add to n value because of missing values, which ranged from 2%–6%.

and provided verbal consent to participate in the surveys. Data from 65 women are presented; three women from different racial and ethnic groups were removed from additional analyses because of the small number of respondents representing these groups.

Measures

Sociodemographic data were collected on age, race, education, employment, insurance status, marital status, area of residence, and treatment status (see Table 1).

Physical activity was measured using the short form of the **International Physical Activity Questionnaire (IPAQ)**. The seven-item, self-administered questionnaire is designed to assess physical activity in the past seven days. Total physical activity in minutes per week (i.e., walking, vigorous and moderate activity) was calculated to determine if participants met exercise recommendations. The IPAQ has undergone extensive reliability and validity testing among ethnically diverse individuals (Craig et al., 2003). When tested among individuals across 12 countries, the pooled reliability was 0.76 and validity between the long and short forms of the IPAQ was 0.67.

Perceived self-efficacy was measured through self-report using the five-item **Physical Exercise Self-Efficacy Scale**. The scale assesses how certain an individual perceives his or her ability to be when overcoming specific barriers to exercise, such as, "I can manage to exercise even when I have worries and problems." Responses are on a four-point Likert-type scale and range from 1 (very uncertain) to 4 (very certain). Item scores are added, and total scores range from 5–20. Higher scores indicate higher exercise self-efficacy. The scale significantly correlates with exercise behavior ($r = 0.33$) and has strong internal consistency (Cronbach alpha = 0.88) (Schwarzer & Renner, n.d.).

The **perceived exercise barriers scale** is a 16-item scale. Respondents are asked, "How often do the following prevent you from getting exercise?" and examples of responses could include: lack of interest in exercise, lack of time, or lack of skills. Responses are on a five-point Likert-type scale and range from 0 (never) to 4 (very often). Item scores are added, and total scores range from 0–64. Lower scores correspond to lower perceived exercise barriers. The **perceived exercise benefits scale** is a 10-item scale. Respondents are asked, "If I participate in regular exercise or sports, then . . ." and examples of responses include: "I will feel less depressed and/or bored," "I will improve my health." Responses are on a five-point Likert-type scale and range from 0 (strongly disagree) to 4 (strongly agree). Item scores are added, and total scores range from 0–40. Higher scores indicate higher perceived benefits. Significant negative correlations have been found between physical activity and

the barriers scale ($r = -0.22$), and significant positive correlations ($r = 0.24$) were found for the benefits scale (Sallis et al., 1989).

Seven items from the **Environmental Supports for Physical Activity Questionnaire** assessed neighborhood characteristics related to social or safety issues. Questions related to a person's neighborhood (i.e., area within one-half mile or a 10-minute walk from one's home). Validity and reliability testing have revealed satisfactory reliability for these items (0.47–0.73), but only slight agreement was found when perceptions were compared to geographic information system technology (Kirtland et al., 2003). Kappa statistics ranged from –0.02 to 0.22, with the highest agreement found for safety or crime, trust of neighbors, and streetlights.

Statistical Analyses

Descriptive statistics were used to generate frequencies and percentages for sociodemographic characteristics and individual scale items, which were stratified by race. Descriptive statistics also were used to determine the percentage of women meeting physical activity guidelines and mean minutes per week spent exercising. Means and standard deviations were calculated on total scale scores for perceived exercise self-efficacy and perceived barriers and benefits. Kruskal-Wallis tests were conducted to test for significance between mean scores. The seven items from the Environmental Supports for Physical Activity Questionnaire were analyzed using percentages. Physical activity data were non-normally distributed; therefore, Spearman's rho correlation coefficient tests were conducted to identify associations between minutes of physical activity per week and exercise beliefs. All analyses were performed with SPSS®, version 19.0.

Results

Completed IPAQ data were collected from 63 of the 65 participants. The majority of women were not meeting physical activity recommendations. Among Caucasian and African American women, 27% were meeting recommendations compared to 22% of Hispanic/Latina women. Mean number of minutes spent in total physical activity per week was 127 minutes (SD = 130) for Caucasian women, 125 minutes (SD = 140) for African American women, and 94 minutes (SD = 124) for Hispanic/Latina women.

Overall, perceived self-efficacy was high for most women, with African American women reporting the highest total self-efficacy ($\bar{X} = 15.3$, SD = 3.69) followed by Caucasian women ($\bar{X} = 14.6$, SD = 4). Hispanic/Latina women had the lowest reported total exercise self-efficacy ($\bar{X} = 13.9$, SD = 5.24). No significant differences existed between the three groups ($p = 0.88$).

Perceived barrier scores were relatively low across groups. African American women had the lowest total score for barriers ($\bar{X} = 19.9$, $SD = 10.4$), followed by Caucasian women ($\bar{X} = 21.2$, $SD = 10.7$) and Hispanic/Latina women ($\bar{X} = 27.2$, $SD = 15.5$). Although common barriers varied slightly by race, no significant differences existed among mean scores ($p = 0.49$). The three most commonly perceived barriers for Caucasian and African American women were lack of self-discipline, lack of time, and lack of energy. Hispanic/Latina women reported feeling self-conscious of looks, lack of self-discipline, and lack of enjoyment from exercise as their three most common barriers.

Perceived benefit scores were high across racial and ethnic groups. Hispanic/Latina women had the highest perceived exercise benefits score ($\bar{X} = 34.8$, $SD = 6.4$) compared to African American ($\bar{X} = 33.4$, $SD = 9.1$) and Caucasian women ($\bar{X} = 30.6$, $SD = 9.7$). Differences between mean scores were nonsignificant ($p = 0.2$). A common perception among 90% of all women was that regular exercise will improve heart and lung fitness, improve overall health, and reduce risk of disease. Data

on perceived exercise barriers and benefits are presented in Table 2. Of the 65 women, four did not complete the questionnaire.

Only 20% of Hispanic/Latina breast cancer survivors reported that their neighbors are somewhat to very physically active, compared to Caucasians (48%) and African Americans (42%) (see Figure 1). More than 75% of all women felt their neighborhoods were somewhat to very pleasant for walking. With regard to neighborhood safety, fewer Hispanic/Latina women perceived their neighborhoods as safe compared to African American and Caucasian women. Trust in neighbors was high for Caucasian women and low for Hispanic/Latina women. Neighborhood lighting at night was an issue for the majority of women, with only 20% of Hispanic/Latina women rating lighting as good to very good. With respect to traffic, 46% of African American women felt it was moderate to heavy in their neighborhood compared to 59% of Caucasians and 80% of Hispanic/Latina women.

Results of Spearman's rho correlation tests for physical activity levels and exercise beliefs by race and ethnicity are shown in Table 3. Again, of the 65 women, four did

Table 2. Perceptions of Exercise Barriers and Benefits Among Breast Cancer Survivors by Race (N = 61)^a

How often do the following prevent you from getting exercise?	Caucasian (n = 30)			African American (n = 20)			Hispanic/Latina (n = 11)		
	n	\bar{X}	SD	n	\bar{X}	SD	n	\bar{X}	SD
Feeling self-conscious of looks	3	0.58	0.91	—	0.74	0.87	6	2.1	1.4
Lack of interest in exercise	6	1.62	1.34	3	1.63	1.01	4	2.1	1.2
Lack of self-discipline	16	2.5	1.24	7	2	1.21	5	2.3	1.42
Lack of time	9	2	1.39	4	1.7	1.12	2	1.3	1.22
Lack of energy	8	2.03	1.06	6	2	1.03	4	2.1	1.51
Lack of company	7	1.57	1.36	2	1.2	1.15	4	1.64	1.63
Lack of enjoyment from exercise	7	1.52	1.21	3	1.45	1.19	5	1.82	1.47
Discouragement	1	0.97	0.95	2	1.26	1.05	4	2	1.56
Lack of equipment	3	1.07	1.28	3	1.17	1.15	2	1.2	1.48
Lack of good weather	2	1.41	1.02	1	0.94	0.97	1	1.27	1.27
Lack of skills	1	0.9	1.01	1	0.79	0.98	2	1.55	1.21
Lack of facilities or space	3	1	1.13	1	0.89	0.99	1	0.91	0.94
Lack of knowledge on how to exercise	2	0.97	1.05	2	0.9	1.12	4	1.6	1.35
Lack of good health	6	1.27	1.28	3	1.4	1.14	2	1.18	1.17
Fear of injury	3	0.76	1.18	—	—	—	2	1.09	1.38
Minor aches and pains, or minor injuries	7	1.47	1.33	5	2	1.08	1	1.18	1.25
If I participate in regular exercise, then I will . . .									
	n	\bar{X}	SD	n	\bar{X}	SD	n	\bar{X}	SD
Feel less depressed	21	2.86	1.53	13	2.95	1.39	5	2.45	1.51
Improve my self-esteem	22	3.07	1.19	17	3.33	0.97	7	3	1.33
Meet new people	22	3	1.19	16	3.37	1.07	7	3.5	1.07
Lose weight or improve my shape	24	3.21	1.1	18	3.42	0.96	8	3.2	1.03
Build up my muscle strength	23	3.25	1.14	17	3.53	1.02	8	3.36	0.73
Feel less tension and stress	23	3.14	1.03	17	3.37	1.26	9	3.3	0.95
Improve my health or reduce my risk of disease	26	3.28	1.09	16	3.68	1.29	9	3.6	0.7
Do better on my job	16	2.55	1.18	13	3.06	1.09	10	3.4	0.52
Feel more attractive	19	2.86	1.09	15	3.11	1.29	9	3.6	0.7
Improve my heart and lung fitness	26	3.38	1.08	18	3.74	1.08	10	3.9	0.32

^a Of the 65 total participants, four did not complete the questionnaire.

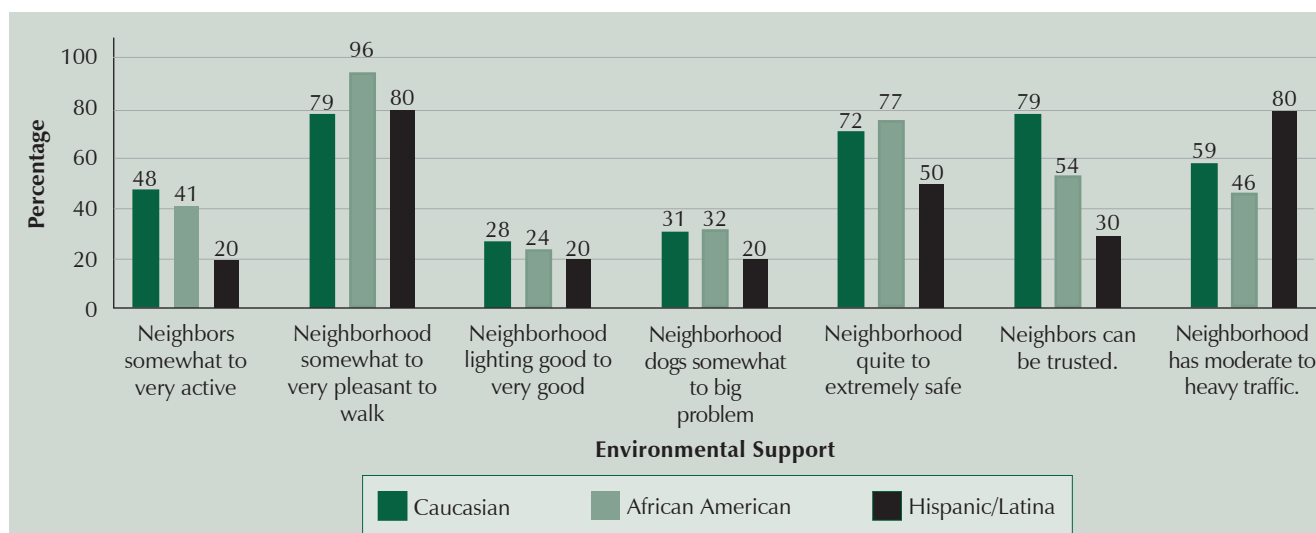


Figure 1. Percentages of Perceived Environmental Supports for Physical Activity by Race

not complete this questionnaire. Among the entire sample, a statistically significant moderate positive correlation existed between minutes per week spent in physical activity and total exercise self-efficacy ($rs[61] = 0.32$; $p = 0.01$). For the self-efficacy subscales, significant moderate correlations were found between physical activity and confidence in ability to exercise when worried ($rs[29] = 0.37$; $p = 0.05$) and when busy ($rs[29] = 0.49$; $p < 0.01$) among Caucasian women. Although all correlations were positive for self-efficacy measures across racial and ethnic groups, no additional statistically significant findings existed.

A significant moderate negative correlation between minutes spent in physical activity and total exercise barriers ($rs[52] = -0.3$; $p = 0.03$) occurred among Hispanic/Latina women, but not among Caucasians or African Americans. For Hispanics/Latinas, significant strong negative associations occurred between physical activity and lack of self-discipline ($rs[8] = -0.7$; $p = 0.05$) and between physical activity and fear of injury ($rs[9] = -0.73$; $p = 0.03$). Although associations between total exercise barriers and physical activity were not significant among Caucasian women, significant moderate associations occurred for lack of self-discipline ($rs[28] = -0.38$; $p = 0.04$), lack of time ($rs[28] = -0.4$; $p = 0.04$), lack of skill ($rs[28] = -0.42$; $p = 0.03$), and lack of knowledge ($rs[28] = -0.43$; $p = 0.02$). No associations existed between physical activity and total exercise benefits; however, a significant strong correlation existed between physical activity and “feeling less depressed and/or bored” ($rs[9] = 0.8$; $p = 0.01$) among Hispanic/Latina women.

No significant correlations were found on any exercise belief measures among African American women. In addition, no significant correlations occurred between physical activity and sociodemographic characteristics

(e.g., education, employment) or between physical activity and perceptions of environmental supports (data not shown).

Discussion

This study explored exercise behaviors and beliefs among multiethnic breast cancer survivors who attended community wellness workshops. Although others have reported physical activity levels among diverse breast cancer populations and perceived exercise barriers among Caucasian and African American breast cancer survivors (Hong et al., 2007; Ottenbacher et al., 2011; Smith et al., 2009), few studies have addressed exercise beliefs among Latina/Hispanic survivors or, in general, perceptions about environmental supports for physical activity among breast cancer survivors. This study provides additional information that may be useful for designing culturally sensitive interventions aimed at motivating ethnically diverse breast cancer survivors to exercise.

In the current sample, a lower percentage of women were meeting physical activity guidelines compared to other multiethnic breast cancer survivor study groups. Paxton et al. (2012) reported that 52% of Caucasian breast cancer survivors met physical activity guidelines compared to 37% of Hispanics and 32% of African American survivors. Smith et al. (2009) found that 41% of Hispanic women met physical activity guidelines, followed by Caucasian women (37%) and African American women (24%). Although the percentage of African American women meeting physical activity guidelines in the current study (27%) was similar to that reported by Smith et al. (2009), the current study's sample fell well below recommendations.

Perceived exercise self-efficacy scores were higher for Caucasian and African American women compared to Hispanic/Latina women, but the differences were nonsignificant. However, two submeasures of exercise self-efficacy were significantly and positively correlated with physical activity, but only among Caucasian women. That indicates that higher levels of confidence on these two self-efficacy measures were associated with higher levels of physical activity. Higher levels of exercise self-efficacy related to increased physical activity behaviors among older Caucasian breast cancer survivors (Loprinzi, Cardinal, Si, Bennett, & Winters-Stone, 2012). Hispanic/Latina women in the current study were less confident in their ability to exercise when worried, depressed, or tense compared to Caucasian and African American women. Loprinzi et al. (2012) found that exercise self-efficacy was significantly associated with physical activity despite participants' perceptions with regard to feeling stressed, depressed, anxious, or busy. Results from another study revealed that low exercise self-efficacy was prevalent among a multiethnic, low-income group of healthy women (Collins, Lee, Albright, & King, 2004). Self-efficacy is important to address when promoting exercise among breast cancer survivors. It may be particularly important to address the psychological needs of Hispanic/Latina women as they relate to exercise when considering their lower self-confidence ratings for exercising when depressed or stressed. Exercise improves depression and anxiety among breast cancer survivors (Brown et al., 2012; Mehnert et al., 2011), which should be discussed with women reporting low exercise self-efficacy when emotionally distressed.

When developing exercise interventions for breast cancer survivors, considering exercise barriers is essential. Although overall mean scores for exercise barriers were low among the women in the current study, some

barriers were commonly reported (e.g., lack of self-discipline). Because lack of self-discipline is related to lower physical activity levels, it may be a crucial barrier to address. Lack of self-discipline may be challenging to overcome, but can be addressed through realistic goal setting and social support. Among predominantly Caucasian cancer survivor groups (including breast cancer survivors), lack of time or being too busy is one of the highest-rated exercise barriers (Courneya et al., 2005; Ottenbacher et al., 2011; Rogers et al., 2008). Interestingly, in the current study, only about 20% of African American and Hispanic/Latina women indicated that lack of time was a barrier compared to 31% of Caucasian women. King et al. (2000) reported that among healthy ethnic minority women, lack of time because of family obligations and work (as well as lack of motivation) was among top-rated exercise barriers. Exercise interventions must address time-related barriers by educating women about how to incorporate regular exercise into their schedules in an efficient manner.

Lack of enjoyment from exercise was rated by almost half of Hispanic/Latina women and by about one-quarter of Caucasian women as a barrier to physical activity. Strategies that may help overcome this barrier involve exploring physical activities women have enjoyed in the past or have thought might be interesting to try, as well as providing demonstrations of a range of exercises, some of which might have more cultural appeal than others. Certain aerobic activities such as dancing may be more culturally appealing to some groups. Hovell et al. (2008) reported on an effective exercise intervention using Latin dance. Few women reported lack of equipment or lack of a facility or space to exercise as barriers, a contrast to findings from Ottenbacher et al. (2011), which indicated that those were significant barriers among breast cancer survivors. It could be that for women who are physically active, walking is the primary form of exercise; therefore,

Table 3. Associations Between Minutes of Weekly Physical Activity and Participants' Exercise Beliefs (N = 61)^a

Variable	Caucasian (n = 30)		African American (n = 20)		Hispanic/Latina (n = 11)	
	Spearman's Rho	p	Spearman's Rho	p	Spearman's Rho	p
Total exercise self-efficacy	0.32	0.08	0.31	0.18	0.47	0.2
Exercise self-efficacy items						
Exercise when worried	0.37	0.05*	0.4	0.08	0.38	0.32
Exercise when depressed	0.24	0.21	0.33	0.15	0.34	0.37
Exercise when tense	0.1	0.6	0.4	0.08	0.62	0.07
Exercise when tired	0.11	0.57	0.21	0.37	0.61	0.08
Exercise when busy	0.49	0***	0.21	0.38	0.28	0.46
Total exercise barriers	-0.23	0.26	-0.39	0.11	-1	0.01**
Total exercise benefits	-0.05	0.79	-0.16	0.55	0.36	0.43

* $p \leq 0.05$; ** $p = 0.01$; *** $p < 0.01$

^a Of the 65 total participants, four did not complete the questionnaire.

lack of a gym or equipment are unnecessary. Walking has reportedly been one of the most common types of exercise among breast cancer survivors (Irwin et al., 2004), but little is known about engagement in other types of exercise that might be more culturally appealing to African American and Hispanic/Latina survivors.

According to theories of behavior change, an individual usually would have to perceive high benefits from a particular behavior before adopting the behavior (Pinto & Ciccolo, 2011). Top benefits rated by women in all three racial and ethnic groups were: improved health and reduced risk for disease, improved heart and lung fitness, improved muscle strength, weight loss or improved shape, and less tension and stress. Although most women in the current study perceived health benefits from exercise, the question on the scale was not specific to breast cancer. Therefore, it would be prudent for clinicians to directly assess women's beliefs about exercise as they related to breast cancer and recurrence and emphasize the facts about general and specific exercise benefits for breast cancer survivors.

Environmental factors have an influential effect on physical activity (Rogers et al., 2009). Few studies have examined these factors among non-Caucasian cancer survivors. In the current sample, less than 50% of women reported their neighbors were somewhat to very active, with the lowest percentage being reported by Hispanic/Latina women. Hispanic/Latina women also were more likely to report their neighborhoods had moderate to heavy traffic, were unsafe, had poor lighting, and that they distrusted their neighbors. Neighborhood safety has been reported as an important factor related to walking outdoors among healthy Hispanic women (Evenson, Sarmiento, Macon, Tawney, & Ammerman, 2002). Caucasian breast cancer survivors were most likely to report that their neighbors could be trusted, a finding similar to that by Hooker, Wilson, Griffin, and Ainsworth (2005), who compared perceptions of environmental factors for physical activity among African American and Caucasian adults. Ho, Mama, Medina, and Lee (2010) found that neighborhood attractiveness influenced physical activity behaviors of African American and Latina women, indicating that an individual's environment should be taken into consideration prior to physical activity promotion. It would be unrealistic to expect a woman to walk for exercise if she perceived her neighborhood as unsafe and she had no other place to walk. Although the current study provides preliminary data on perceptions of environmental supports for physical activity, Hispanic/Latina women and possibly African American women may have more barriers to walking as a form of exercise because of perceived neighborhood safety issues compared to Caucasian breast cancer survivors. Some environmental barriers may be partly because of socioeconomic factors rather

than cultural beliefs, considering that Hispanic/Latina women in the current study appeared to have a lower socioeconomic status (i.e., lower education and higher unemployment) compared to Caucasian and African American women. Low socioeconomic status can create a multitude of exercise barriers, particularly as it relates to a lack of environmental supports.

Limitations

The study has several limitations, including a small sample size of breast cancer survivors (particularly Hispanic/Latina women), which affects generalizability. Because women voluntarily enrolled in the wellness workshops, they may not be representative of other breast cancer survivors. In addition, the authors were not able to explore sociocultural context as it relates to exercise beliefs and behaviors because of the nature of the study design. Social support for exercise was not included and it has been identified as an important factor for engagement in physical activity, particularly among Hispanic/Latina and African American women (Perez, Fleury, & Keller, 2010; Stolley, Sharp, Wells, Simon, & Schiffer, 2006). Results also are based on self-report and, although questionnaires are widely used to collect information on physical activity, such data are subject to recall and reporting bias (Ferrari, Friedenreich, & Matthews, 2007). Some women also were in active treatment and their exercise perceptions may have been different than if they had completed treatment. However, as previously reported elsewhere, physical activity behavior between those who completed treatment and those in active treatment was not significantly different (Spector et al., 2012).

Implications for Nursing

Oncology nurse clinicians and researchers have been at the forefront of survivorship care, and oncology nursing was among the first disciplines to focus on exercise to ameliorate adverse effects (e.g., fatigue) from breast cancer and related treatments (Mock et al., 1994). With the ever-increasing number of breast cancer survivors from diverse racial and ethnic backgrounds, a great need exists for culturally competent nursing interventions aimed at increasing exercise, particularly important given that most breast cancer survivors are not meeting physical activity guidelines. When discussing exercise with breast cancer survivors of diverse backgrounds, nurses and other health professionals need to address sociocultural factors that may hinder or facilitate engagement in exercise. This study indicates that differences may exist in exercise behaviors and beliefs among diverse racial and ethnic groups, but additional exploration with a larger sample is warranted. Future nursing research in this area should consider the use of a mixed-methods approach with a more ethnically diverse sample. A qualitative

component could capture the sociocultural context of findings, which would be valuable for designing exercise promotion programs. For example, personal interviews or focus groups could be used to explore how social factors (e.g., family support) and cultural beliefs (e.g., body image) impact a woman's desire and ability to exercise, as well as explore exercises that may have more cultural appeal to specific groups.

Conclusions

The health benefits from exercise are well known, but the public health challenge will be implementing physical activity guidelines into practice for the growing population of ethnically diverse breast cancer survivors. Exercise interventions will need to address women's belief systems and personal values related to exercise and health to be effective. The value of regular exercise in relationship to breast cancer outcomes needs to be emphasized before it can become a motivating

factor for engagement in regular physical activity. In addition, programs should aim to enhance exercise self-efficacy and diminish predominant exercise barriers. Theory-derived physical activity interventions should be designed to enhance exercise self-efficacy and be culturally tailored toward specific ethnic and racial groups of breast cancer survivors.

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