

The Physical Activity Preferences of Gynecologic Cancer Survivors

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The current body of literature provides strong evidence in support of a physically active lifestyle for cancer survivors, including gynecologic cancer survivors (GCSs), for its benefits in the physical and psychological domains of health (Courneya & Friedenreich, 2007; Speck, Courneya, Masse, Duval, & Schmitz, 2010). Regrettably, the physical activity (PA) levels of cancer survivors have been found to be low, with the large majority of survivors reporting levels below the recommended 150 minutes of moderate-to-vigorous PA (MVPA) per week (Blanchard, Courneya, & Stein, 2008; Stevinson et al., 2007; Trinh, Plotnikoff, Rhodes, North, & Courneya, 2011).

Increasing PA levels in cancer survivors has become a priority for health researchers and professionals. In line with this goal, many studies have worked to explore the PA program preferences of cancer survivors. Evidence suggests that survivor groups report an interest in PA programs (McGowan et al., 2013), with most showing a preference for post-treatment walking programs (Gjerset et al., 2011; Jones & Courneya, 2002; Karvinen et al., 2006; Karvinen, Courneya, Venner, & North, 2007). Although some concurring PA preferences have been reported (e.g., walking programs), the unique medical and demographic characteristics throughout the cancer survivor populations have unique influences on PA preferences (Karvinen et al., 2006, 2007; McGowan et al., 2013). For example, Stevinson et al. (2009) found that medical characteristics did not have an influence on the PA preferences of ovarian cancer survivors; however, having an ostomy, as well as recurrence status, influenced the PA preferences of colorectal cancer survivors (McGowan et al., 2013). In addition, age (younger than 65 years versus older than 65 years) and employment status (employed versus unemployed) were not found to influence PA preferences of endometrial cancer survivors (Karvinen et al., 2006); however, they did influence the PA preferences of colorectal cancer survivors (Courneya et al., 2005).

Purpose/Objectives: To identify physical activity (PA) preferences of gynecologic cancer survivors (GCSs) and to understand the reasons for them.

Design: Population-based, cross-sectional mailed survey and semistructured interviews with a subsample.

Setting: Nova Scotia, Canada.

Sample: 239 GCSs completed the survey, and 16 participated in an interview.

Methods: GCSs identified from a provincial cancer registry completed a questionnaire assessing PA preferences. Survey respondents were asked to participate in a substudy exploring PA preferences through a semistructured interview.

Main Research Variables: Self-reported PA and PA preferences.

Findings: Analyses indicated that participants were interested in a PA program. Interviews highlighted that PA counseling was highly desired and should include discussions about the benefits and appropriate amounts of PA, as well as available opportunities for PA.

Conclusions: GCSs have preferences regarding characteristics of PA discussions and programs.

Implications for Nursing: Oncology nurses are integral to the promotion of PA in GCSs. Providing oncology nurses with training opportunities to learn about PA for cancer survivors is an important consideration for cancer centers in ensuring a satisfactory experience for cancer survivors.

Key Words: exercise; gynecologic malignancies; quality of life; survivorship

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These findings suggest that unique preferences may exist among cancer survivor groups and should not be generalized across all groups. To date, much of the literature on PA preference has focused largely on breast, colorectal, and prostate cancers, leaving a significant gap in understanding the PA preferences and needs of GCSs. Regrettably, the majority of studies in this area have been limited to gathering their information via closed-item questions, and, although a useful starting

Table 1. Characteristics of Responders and Nonresponders (N = 900)

Characteristic	Responders (n = 239)		Nonresponders (n = 661)		p
	\bar{X}	SD	\bar{X}	SD	
Age (years)	52.91	9.99	53.12	11.16	0.783
Months since diagnosis	76.3	34.27	82.61	33.54	0.013
Characteristic	n	%	n	%	p
Cancer diagnosis					< 0.001; $\chi^2(3) = 24.33$
Uterine	123	52	399	60	
Ovarian	58	24	186	28	
Cervical	54	23	66	10	
Vaginal	4	2	10	2	
Stage					0.096; $\chi^2(5) = 9.35$
I	69	29	170	26	
II	5	2	26	4	
III	23	10	37	6	
IV	4	2	5	1	
Do not know	1	–	2	–	

Note. Because of rounding, not all percentages total 100.

Note. Because of missing data, stage was not reported for all participants.

point, such techniques are limited in their ability to understand why such preferences and interests exist. Only a few studies, none of which focus on GCSs, have attempted to bridge this gap by using interviews or focus groups (Rogers et al., 2004; Spence, Heesch, & Brown, 2011; Whitehead & Lavelle, 2009), which provide opportunities for cancer survivors to expand on their PA preferences and the reasons for them. Promotion efforts aimed at increasing PA in cancer survivors will be more effective if and when they can leverage on the common and unique PA preferences of their target populations. These efforts also will likely be more effective when cancer survivors' PA preferences and reasons for them are known. The purpose of the current study was to quantitatively identify the common and potentially unique PA interests and preferences of GCSs and to understand the reasons for the those preferences in greater detail using semistructured interviews.

Methods

Participants

This project was approved by the Capital Regional Health Authority in Halifax, Nova Scotia, Canada. A provincewide postal survey first was conducted through the Nova Scotia Cancer Registry (NSCR). Participants were identified by the NSCR and deemed eligible if aged 18–69 years and diagnosed with histologically confirmed invasive gynecologic cancer after January 1, 2001. Women with more than one gynecologic cancer were excluded from the study to avoid confusion.

The NSCR mailed 900 eligible GCSs a study pack, which contained an introductory cover letter, information explaining the nature of the study, a consent form, a questionnaire, instructions for returning the survey, and a stamped self-addressed envelope. Participants who chose to take part in the study were asked to return the completed study pack to the NSCR. Survivors not wishing to participate were asked to complete and return an opt-out form so that no further correspondence would be made. The NSCR sent a postcard reminder to all nonrespondents after two weeks and a second study pack after five weeks. In an effort to maximize response rate, quality features (i.e., personalized

letters and postage-paid envelope) were incorporated into the study design (Dillman, 1997; Laws, 2001).

In addition to details about the postal survey, the letter of information also provided participants with study details and eligibility criteria for the substudy. The substudy asked women to participate in a short (15–20 minute) interview regarding their PA interests and preferences. Participants were eligible for the substudy if they were aged 18–65 years and were residents of the Halifax Regional Municipality. If interested, participants were asked to provide contact information and consent in their response to the larger study. Following consent, a meeting was scheduled to complete the semistructured interview.

Instruments

Medical and demographic information were collected via self-report. The demographic variables collected included age, ethnicity, education, marital status, income, and employment status. Medical variables included disease type and stage, date of diagnosis, type of treatments, and disease status.

PA information was assessed by a modified version of the **Leisure Score Index (LSI)** (Courneya, Jones, Rhodes, & Blanchard, 2004) from the Godin Leisure Time Exercise Questionnaire (Godin, Jobin, & Bouillon, 1986; Godin & Shephard, 1985) and a short version of the **International Physical Activity Questionnaire (IPAQ)** (International Physical Activity Questionnaire, n.d.). Within the LSI, participants were asked to recall the average duration and frequency of mild (e.g., minimal effort, easy walking), moderate (e.g.,

not exhausting, fast walking), and vigorous (e.g., heart beats rapidly, running) PA completed in the past week during their leisure time. The LSI has compared favorably with other self-reported measures of exercise, is an easy tool to administer, and has been validated extensively (test-retest correlation coefficient = 0.24–0.84) (Jacobs, Ainsworth, Hartman, & Leon, 1993). The modified version was selected to allow for comparisons with the public health PA guidelines and because it has been successfully used in the PA and cancer literature (Karvinen et al., 2006; McGowan et al., 2013). In contrast to the LSI, the IPAQ measured total activity (i.e., occupational, active transportation, domestic, and sedentary activities). The short version of IPAQ has good reliability with a Spearman's rho of 0.8, and its criterion validity has been shown to compare to other self-report questionnaires (median Spearman's rho of 0.3) (Craig et al., 2003). The PA guidelines of the American Cancer Society (Doyle et al., 2006; Schmitz et al., 2010), American College of Sports Medicine, and American Heart Association (Haskell et al., 2007) were used to identify GCSs who were meeting the PA guidelines (150 or more minutes of moderate PA, 75 minutes of vigorous PA, or an equivalent combination that doubly weighted the vigorous minutes). Using the calculated total MVPA, participants were divided into four groups: (a) completely sedentary (no MVPA), (b) insufficiently active (less than 150 minutes of MVPA), (c) within guidelines (150–299 min-

utes MVPA), and (d) above guidelines (300 or more minutes of MVPA).

PA preferences were explored in the provincial study using 13 closed-item questions that have been used in previous studies with cancer survivors (Karvinen et

Table 2. Descriptive Statistics for Exercise Programming Preferences From the Provincewide Survey (N = 239)

Variable	n	%
Interested in participating in an exercise or physical activity program (n = 235)		
Yes	88	37
No	78	33
Maybe	69	30
Capable of participating in an exercise or physical activity program (n = 232)		
Yes	107	46
No	45	19
Maybe	80	35
Preferred type of exercise (who responded yes)		
Walking	206	95
Swimming	86	59
Yoga	72	57
Cycling	42	38
Aerobics	49	44
Other	77	65
Preferred time of commencing program (who responded yes)		
Before treatment	44	48
During treatment	23	28
3–6 months after treatment	82	68
1 year after treatment	37	43
Preferred company during physical activity program (who responded yes)		
Alone	132	79
Friends	118	76
Family	100	71
Other cancer survivors—any cancer	66	48
Other cancer survivors—same cancer	55	42
No preference	61	61
Preferred location of physical activity program (who responded yes)		
Home	141	81
Community fitness center	101	69
Cancer fitness center	47	43
No preference	63	62
Preferred time of day of physical activity program (who responded yes)		
Morning	122	79
Afternoon	72	61
Evening	73	59
No preference	31	46
Preferred intensity of physical activity program (who responded yes)		
Low	75	62
Moderate	142	84
High	25	34
No preference	16	32
Preferred pattern of activities of physical activity program (who responded yes)		
Different activities at each session	123	75
Same at each session	69	54
Preferred supervision of physical activity program (who responded yes)		
Supervised	117	72
Unsupervised	98	70
Preferred structure of physical activity program (who responded yes)		
Scheduled	143	87
Spontaneous and/or flexible	70	54

Note. Some participants had more than one response.

Note. Participants who responded “yes” were calculated using participants who responded “yes” or “maybe.”

al., 2006; Stevinson et al., 2009). To capture PA information not given within the preferences survey (i.e., what information should be communicated during PA discussions), PA preferences were further examined

via a short semistructured interview (i.e., Who do you think is the best person to provide PA information? Why them?). The preferred method of data collection was face-to-face interviews, but telephone interviews

Table 3. Significant Associations Between Demographic Characteristics and PA Preferences in Gynecologic Cancer Survivors (N = 239)

Characteristic	PA Preferences With Significant Associations
Survivors aged older than 60 years compared with survivors 60 years and younger were . . .	<p>More likely to</p> <p>Prefer morning PA (94% versus 80%; $\chi^2(1) = 7.31, p = 0.007$)</p> <p>Less likely to</p> <p>Be interested in a PA program (60% versus 74%; $\chi^2(1) = 5.56, p = 0.018$)</p> <p>Want PA counseling (62% versus 79%; $\chi^2(1) = 8.54, p = 0.003$)</p> <p>Prefer PA alone (80% versus 93%; $\chi^2(1) = 6.26, p = 0.012$)</p> <p>Prefer PA with cancer survivors (same cancer) (67% versus 83%; $\chi^2(1) = 4.56, p = 0.033$)</p> <p>Prefer evening PA (50% versus 82%; $\chi^2(1) = 14.22, p < 0.001$)</p> <p>Have no time preference (50% versus 82%; $\chi^2(1) = 7.64, p = 0.006$)</p> <p>Prefer high-intensity PA (27% versus 54%; $\chi^2(1) = 5.07, p = 0.024$)</p>
Survivors who were employed compared with survivors who were not employed were . . .	<p>More likely to</p> <p>Want PA counseling (78% versus 66%; $\chi^2(1) = 4.2, p = 0.04$)</p> <p>Prefer evening PA (87% versus 50%; $\chi^2(1) = 19.56, p < 0.001$)</p> <p>Less likely to</p> <p>Prefer morning PA (80% versus 93%; $\chi^2(1) = 5.42, p = 0.2$)</p> <p>Prefer afternoon PA (70% versus 86%; $\chi^2(1) = 4.3, p = 0.038$)</p> <p>Prefer low-intensity PA (64% versus 81%; $\chi^2(1) = 4.37, p = 0.037$)</p>
Survivors earning \$40,000 or more compared with survivors earning less than \$40,000 were . . .	<p>More likely to</p> <p>Want PA counseling (76% versus 60%; $\chi^2(2) = 7.42, p = 0.024$)</p>
Survivors who were married or common law compared to survivors who were single, divorced, or widowed were . . .	<p>More likely to</p> <p>Prefer doing PA at a community center (90% versus 72%; $\chi^2(1) = 7.85, p = 0.005$)</p>
Survivors meeting PA guidelines compared to those not meeting PA guidelines (LSI) were . . .	<p>More likely to</p> <p>Prefer PA with cancer survivors (same cancer) (85% versus 70%; $\chi^2(1) = 3.85, p = 0.05$)</p> <p>Prefer yoga (88% versus 67%; $\chi^2(1) = 7.01, p = 0.008$)</p> <p>Prefer cycling (76% versus 57%; $\chi^2(1) = 13.09, p < 0.001$)</p> <p>Have no activity preference (98% versus 81%; $\chi^2(1) = 7.98, p = 0.005$)</p> <p>Prefer high-intensity PA (61% versus 27%; $\chi^2(1) = 8.61, p = 0.003$)</p> <p>Less likely to</p> <p>Prefer to start PA one year post-treatment (44% versus 78%; $\chi^2(1) = 10.24, p = 0.001$)</p> <p>Prefer low-intensity PA (47% versus 87%; $\chi^2(1) = 25.96, p < 0.001$)</p>
Survivors meeting PA guidelines compared to those who are not meeting the PA guidelines (IPAQ) were . . .	<p>More likely to</p> <p>Prefer yoga (88% versus 71%; $\chi^2(1) = 4.61, p = 0.032$)</p> <p>Prefer aerobics (90% versus 61%; $\chi^2(1) = 9.28, p = 0.002$)</p> <p>Less likely to</p> <p>Prefer low-intensity PA (47% versus 28%; $\chi^2(1) = 7.72, p = 0.005$)</p>
Survivors who had completed treatment compared to those who had not were . . .	<p>More likely to</p> <p>Prefer doing PA alone (88% versus 63%; $\chi^2(1) = 4.31, p = 0.038$)</p> <p>Prefer doing PA with women only (73% versus 14%; $\chi^2(1) = 10.52, p = 0.003$)</p> <p>Prefer doing PA at a community center (87% versus 50%; $\chi^2(1) = 8.34, p = 0.004$)</p>
Survivors within 60 months of diagnosis compared with survivors beyond 60 months were . . .	<p>More likely to</p> <p>Prefer doing PA at a cancer center (59% versus 51%; $\chi^2(1) = 6.13, p = 0.013$)</p> <p>Have no preference for PA location (86% versus 66%; $\chi^2(1) = 4, p = 0.046$)</p> <p>Prefer morning PA (95% versus 83%; $\chi^2(1) = 4.01, p = 0.0403$)</p> <p>Prefer to start PA during treatment (71% versus 42%; $\chi^2(1) = 6.15, p = 0.013$)</p> <p>Prefer high-intensity PA (64% versus 37%; $\chi^2(1) = 4.09, p = 0.043$)</p> <p>Have no intensity preference (83% versus 36%; $\chi^2(1) = 7.93, p = 0.005$)</p>

IPAQ—International Physical Activity Questionnaire; LSI—Leisure Score Index; PA—physical activity

were used when a face-to-face meeting could not be arranged. All interviews were audio recorded and transcribed.

Data Analysis

Frequencies and percentages were used to determine the PA preferences of GCSs. Chi-square analyses were used to examine the association between demographic and medical variables and PA preference. The medical and demographic variables selected for the current study are consistent with those used in previous studies (Karvinen et al., 2006; Trinh, Plotnikoff, Rhodes, North, & Courneya, 2012; Vallance, Courneya, Jones, & Reiman, 2006). All medical and demographic variables were dichotomized or trichotomized based on clinically relevant cut-points: age (younger than 60 years versus older than 60 years), education (completed high school or less versus some post-secondary or more), employment status (working versus not working), annual income (less than \$40,000 versus greater than \$40,000 versus "do not wish to say"), marital status (married or common law versus single, divorced, or widowed), months since diagnosis (less than 60 months versus more than 60 months), disease stage (I/II versus III/IV), and current treatment status (not receiving treatment versus receiving treatment). The moderating effect of exercising regularly also was tested (meeting public health exercise guidelines versus not meeting guidelines). For the preference variables, "yes" and "maybe" were combined when the response options were "yes," "maybe," or "no."

The PA preferences survey, along with participants' responses to these survey questions were used as guide for the interview. PA preference information obtained from the short semistructured interviews was transcribed verbatim and a simple content analysis (Hsieh & Shannon, 2005) was used to evaluate the interviews. The interviews were categorized according to words, phrases, and sentences, and frequencies and percentage of responses were reported.

Results

Provincewide Study

Of the 900 GCSs identified by the registry, 25 unopened surveys were returned, 299 survivors responded noting they were unwilling to participate, and 8 were deceased. Completed questionnaires were returned by 239 GCSs. The other 329 survivors who received the surveys did not respond, resulting in a 28% completion rate and a 62% response rate, excluding the wrong addresses and deceased from the denominator. Using the data from the registry, responders and non-responders were compared across available medical and demographic variables (see Table 1). Given the

limited demographic and medical variables provided by the registry, self-reported data for the demographic and medical variables were used in the subsequent analyses.

For the provincewide postal survey, the mean age of respondents was 58.5 (SD = 9.97), 68% were married or living common-law, 28% had completed college or university, and 41% were employed full- or part-time. The majority of respondents identified as Caucasian (93%), with other respondents identifying as aboriginal (1%), African American (0.4%), and other (e.g., Chinese, Filipino) (5%). Ninety-four percent had completed treatment.

Physical Activity Levels and Preferences

Based on LSI PA data, 49% (n = 111) of participants were completely sedentary, 19% (n = 43) were insufficiently active, 17% (n = 38) were meeting PA guidelines, and 16% (n = 36) were exceeding current guidelines; the remaining participants (n = 11) did not complete that portion on the questionnaire. Using IPAQ PA data, 48% (n = 110) of participants were completely sedentary, 17% (n = 38) were insufficiently active, 14% (n = 32) were meeting the guidelines, and 22% (n = 51) were exceeding the guidelines; the remaining participants (n = 8) did not complete that portion of the questionnaire.

Participants' exercise program preferences from the postal survey are presented in Table 2. Thirty-seven percent of respondents expressed an interest in a PA program, with an additional 29% stating that they may be interested in a PA program. Eighty-one percent of participants expressed a preference for a home-based program, and 79% preferred a morning program. Despite the clear interest in PA, 93% of participants reported that they did not receive or were unsure whether they received any exercise counseling following their diagnosis. Table 3 summarizes the significant associations between demographic and medical variables and PA preferences. The chi-square analyses suggest age, employment status, income, marital status, treatment status, time since diagnosis, and PA level influenced the preferences of participants. GCSs younger than 60 years of age were more interested in a PA program than survivors aged older than 60 years (74% versus 60%; $p < 0.05$). Interest in receiving PA counseling was higher in participants who were employed, earned more than \$40,000, and were aged younger than 60 years. Participants who were employed, aged 60 years and older, and were less than 60 months from time of diagnosis had a greater preference for PA in the morning.

Substudy

A total of 94 GCSs showed interest in participating in the substudy; however, 55 were ineligible because of

age or place of residence. Of the 39 eligible participants, 20 consented to participate and 16 completed the interview. Scheduling conflicts were noted as the primary barrier to participation. The mean age of respondents was 53 (SD = 9.79), 16 participants were married or living common law, 8 of the participants had early-stage disease (I/II), and 19 participants had not completed their treatment.

Physical Activity Preferences

Semistructured interviews were conducted with 16 GCSs. Interviews were face-to-face when possible and conducted at patient homes or an alternate convenient location (e.g., work office). The interview questions covered four major topic areas and were used to guide the discussion of the interview results: (a) characteristics of PA discussions, (b) interest in a program, (c) factors influencing participation, and (d) program specifics.

Characteristics of physical activity discussions: Eleven participants identified someone other than the doctor to be the person to provide this information (e.g., counselor, healthcare team). In the interviews, GCSs identified that emotional and nutritional counseling were readily available, but that someone with PA knowledge was missing from the healthcare mix. Physicians' demanding schedules were identified by six of the participants as a reason why someone other than a doctor was ideal for this role, "I don't think necessarily the doctor's position because they seem to be very busy, and I'm sure you know they have a lot more to do."

Discussing the appropriate types, amounts, and benefits of PA, as well as the available services, was desired by GCSs. One participant identified that such information could have prevented her from engaging in potentially harmful exercise behaviors.

You could have someone to talk to if you wish . . . about fitness and what other things you could be doing and progressing. So, instead, I went back to yoga, and I did things that were probably dangerous for me to be doing . . . when I was going through [chemotherapy], which is really stupid now, but then I didn't realize it.

The clinic was the only environment identified where PA information should be provided and made available. The women's connection with the cancer clinic and their frequent check-ups and follow-ups makes this a desirable location. The post-treatment period was the most preferred time for PA discussions (n = 5) because of the short and overwhelming nature of the pretreatment. However, three women identified a preference for PA discussions before treatment or for information to be available at any time.

Interest in a physical activity program: Twelve GCSs showed some interest in a PA program. Social support

(n = 8) and the health benefits of being active (n = 8) were the most frequently reported reasons for why women showed interest in a PA program. Although some women did not identify as needing additional support themselves, they did note that a PA program may have the potential to provide support to others.

Some people need to have that connection with others . . . sometimes, it may not be so much about the physical activity, but it may be about the connection with others that is so important.

Factors influencing participation: Participant interviews revealed the importance of non-treatment-related factors on PA behaviors. Location, time, and cost were the most frequently reported factors influencing GCSs' PA participation. GCSs emphasized the importance of addressing these factors and noted that offering programs in convenient locations is crucial because asking these women to travel long distances during times of illness is unrealistic.

During that period of my life, unless I had to go to Halifax for a check-up, I was living here. . . . So, if it was offered within Halifax, I definitely would not have been able to participate just because I probably wasn't well enough to travel that much.

I know from other people that I have been around, like, their energy is just very limited and so it would have to be a convenient . . . because if you had to go all of the way to Halifax to exercise for half an hour . . . it's a trip when your energy is low.

Respondents also noted that when ill and needing to take time off of work, program affordability is an important consideration.

You worry about, you know, if you had time off work that, you know, you weren't working, that you weren't earning the same income.

A lot of people don't have [sick time], and, so, when they lose their work hours because of their illness, they don't have an income, some of them, and, so, access to activities is very limited for them.

Program specifics: Many of the specifics about a PA program designed for cancer survivors were based on personal preferences. However, consistent with the survey responses, walking was the most commonly preferred activity because it is easy, allows conversation, and its intensity can be modified to suit individual needs. Similar to the preferred activity types, the preferred company and environment for a PA program also was based on personal preference. A fitness center was the most preferred location for women (n = 7), with home not far behind (n = 6). Although the home is comfortable, convenient, and safe, the distractions

that can arise and women's reported lack of motivation make exercising outside of the home attractive. The preference for supervised scheduled programs was consistent with the survey data. The additional guidance and motivation that an instructor could provide were the two most common reasons for wanting a supervised session. Lastly, the post-treatment time period was identified as the most appropriate time to start an exercise program (n = 10).

Discussion

The present study helped to identify a number of important PA preferences that can help inform future PA interventions for GCSs. The results from both the postal survey and substudy show that GCSs expressed an interest in receiving PA counseling, with many GCSs indicating that they did not receive any themselves. Similar to many other cancer survivor groups, the majority of GCSs expressed a definite or possible interest in doing a PA program, and most felt that they were able to participate (McGowan et al., 2013; Stevinson et al., 2009; Trinh et al., 2012). Similar to other cancer survivor groups, GCSs showed a preference for morning, home-based walking programs, and preferred commencing a program 3–6 months post-treatment (McGowan et al., 2013; Stevinson et al., 2009; Trinh et al., 2012; Vallance et al., 2006). Meeting the PA guidelines was the only variable shown to have a significant influence on the preference for activities in this study, with women who met the guidelines more likely to prefer other activities such as cycling and aerobics, particularly activities of higher intensities. In terms of morning PA, an expected trend was observed with employed women less likely to prefer PA programs offered in the morning or afternoon and more likely to prefer PA in the evening. The observed influence of age on activity time of day also may be explained by employment status because women aged older than 60 years are more likely to be retired, which also may explain the morning preference of older GCSs. In terms of company, exercising alone was the most popular preference for GCSs; however, friends and family were not far behind. The medical status of women, particularly their treatment status, influenced the preference for exercising alone, with those who had not completed treatment less likely to prefer to exercise alone. Medical characteristics also were important in the current study. Women who were less than 60 months post-diagnosis were more likely to prefer to start a PA program during treatment compared to those who were further from the date of diagnosis. Women closer to diagnosis, perhaps because of more recent memories or continued effects of treatments, may be more able to identify the benefits of PA (Demark-Wahnefried, Aziz, Rowland, & Pinto, 2005). Time since

Knowledge Translation

Gynecologic cancer survivors (GCSs) are interested in receiving physical activity (PA) information and participating in PA programs.

GCSs have preferences about who provides PA information, what is communicated, and when it is communicated, as well as preferences around the characteristics (e.g., structure, activities, setting) of PA programs.

The PA preferences of GCSs are essential to the development of effective PA programs and, ultimately, an improved quality of life.

diagnosis also was shown to have an influence on the preference for morning PA in the authors' sample of survivors, with women closer to diagnosis more likely to prefer the morning than their counterparts. Women diagnosed with later stage of cancer and those who were diagnosed less than 60 months ago were more likely to identify a cancer-specific fitness center as their location of preference. Although Karvinen et al. (2007) identified treatment-related concerns to be a possible explanation for bladder cancer survivors' preference for exercising at home, the additional support that cancer-specific fitness centers may provide for women with aggressive disease or relatively new diagnoses may make exercising outside of the home appealing.

Although the postal survey was useful in outlining the basic preferences of GCSs, the interviews were useful for further investigating topics that were briefly explored within the survey or completely overlooked. First, a discrepancy existed between GCSs' desire for PA information and the frequency at which it was being provided. Previous literature identified counselors as the most appropriate person to fill this role (Blaney, Lowe-Strong, Rankin-Watt, Campbell, & Gracey, 2013; Karvinen et al., 2006, 2007), with little exploration into the reasoning behind this preference. From their experiences, GCSs in the present study identified that someone other than the physician or nurse would be most appropriate to fill this role with physicians' lack of time recognized.

Incorporating an expert is only one part of the solution and will likely have little impact if the information communicated is of little interest to the target population. Previous work has identified the preferred mode of counseling (e.g., brochure, face-to-face), but have not investigated further into the type of content that should be communicated. To the authors' knowledge, this was the first study to examine the type of PA information cancer survivors would like to have communicated during such encounters. According to interviewees, PA discussions should provide guidance around the appropriate types and amounts of PA according to GCSs, educate about the benefits of PA, and mention available

PA opportunities. In addition, highlighting the physical benefit and the social support a PA program could provide would likely be beneficial for GCSs because these made PA programs interesting to the women.

Having an interest in PA is important for increasing levels of PA, but factors beyond interest also have a role in facilitating or hindering exercise participation (Blaney et al., 2013; Trost, Owen, Bauman, Sallis, & Brown, 2002) and must be considered in the design of future PA programs. The influence of side effects and treatments have been examined in cancer survivors (Brawley, Culos-Reed, Angove, & Hoffman-Goetz, 2002; Brunet, Taran, Burke, & Sabiston, 2013) and also were examined in the current study. However, to the authors' knowledge, the current study also is the first to examine the external facilitators and barriers influencing PA participation in GCSs. Time and location, similar to the general population (Trost et al., 2002) and other cancer survivors (Brunet et al., 2013; Sander, Wilson, Izzo, Mountford, & Hayes, 2012), were the two most common factors identified by GCSs. Providing programs at local exercise centers was suggested by these women as the best way to overcome the location barrier. Providing PA programs in local facilities would also likely decrease the time dedicated to PA by reducing travel time. The cost of programs was the second most common factor identified by GCSs. As a result, free or low-cost programs are an essential component to facilitate increased PA participation by GCSs, thereby reducing actual and perceived barriers to their participation. Although many of these factors are consistent with those identified within the general population, the current study's interviews illustrate that the importance of these factors are intensified by the presence of the cancer. For instance, the negative effects of treatment make travel nearly impossible for these women, heightening the importance of convenient locations, particularly if trying to promote PA during treatment. In addition, the time off work and the possibility of future unemployment with a cancer recurrence creates financial stress and worry for these women emphasizing the importance of affordable programs.

The use of interviews, in conjunction with the survey data, was particularly helpful in expanding on specific patterns and trends. For example, although the survey found that GCSs wanted PA counseling, none was received; the interviews suggest that the absence of a PA expert or counselor, as well as the busy schedules

of physicians, may explain the lack of PA counseling during the cancer journey.

Limitations

Although the current study does provide new and important information, a number of limitations should be considered. Because the purpose of this study was clearly detailed to potential participants, GCSs who were more interested in PA may have been more inclined to participate, potentially limiting the generalizability of the findings. The comparison of responders and nonresponders highlights differences, particularly in the medical variables, of these two groups. As medical variables can influence the PA behaviors of cancer survivors (i.e., capability), future studies must work hard to ensure the generalizability of the findings. Also, the interview data were not analyzed using intricate qualitative methodology, with the chosen analyses limiting the depth of the current data. Future work with specific subgroups (e.g., age groups, disease stage) is warranted to further investigate the PA preferences and interests of GCSs in greater detail.

Implications for Nursing and Conclusion

GCSs can provide important insight in the health-promotion efforts aimed at increasing PA levels in this group. Likewise, oncology nurses, as identified by GCSs, are key players in efforts to improve the PA patterns of cancer survivors. Leveraging on the relationship and the frequent interactions oncology nurses have with their patients may be effective avenues for PA discussions and counseling. Providing learning and training opportunities to nurses regarding PA for cancer survivors is important because it may help to empower nurses and provide the much needed and desired PA information to cancer survivors.

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