Factors perceived to influence exercise adherence in women with breast cancer participating in an exercise program during adjuvant chemotherapy: a focus group study.

Authors

Anne Marie Lunde HUSEBØ, RN, MSc, Doctoral Student, University of Stavanger, Norway.

Bjørg KARLSEN, RN, MSc, Professor of Nursing, University of Stavanger, Norway.

Helen ALLAN, Professor of Nursing, School of Health & Education, Middlesex University, UK

Jon Arne SØREIDE, MD, PhD, Senior Consultant Surgeon, Department of Gastrointestinal Surgery, Stavanger University Hospital, Stavanger, Norway; Professor of Surgery, Department of Clinical Medicine, University of Bergen, Bergen, Norway

Edvin BRU, PhD, Professor of Educational Psychology, University of Stavanger, Norway.

Abstract

Aims and objectives. To explore factors influencing exercise adherence among women with breast cancer while following an exercise program.

Background. Earlier research show that women with breast cancer decrease physical activity following the cancer diagnosis, and that adhering to exercise interventions can be a challenge. Research is needed to identify motivational factors and barriers for exercise adherence among women during treatment for breast cancer.

Design. This was a qualitative study to explore patient's perceptions of the challenges to exercise adherence during a randomized, controlled trial.

Methods. Twenty-seven women with early stage breast cancer were purposively sampled for focus group interviews during 2011-2012 from their participation in the exercise intervention group during 2010-2012. Five focus groups were performed, and data analysis was completed using the Systematic Text Condensation method.

Results. During the focus group study five main themes were identified which described factors participants perceived to influence their adherence to exercise during chemotherapy, and were: '**s**ide-effects of breast cancer treatment as a barrier to exercise', 'restoring and maintaining normality in daily life motivates exercise', 'other valued activities compete with exercise', 'constructive support enhances exercise' and 'positive beliefs about efficacy and outcomes motivate exercise'.

Conclusion. Adherence to exercise in women with breast cancer is challenged by internal and external conditions, and may be improved by attention to the impact of treatment side-effects, and by supporting patient self-efficacy towards changing health behavior.

Relevance to clinical practice. Nurses should be aware that exercise adherence could be a challenge among women with breast cancer. They should help identify obstacles to exercise

for women and ways to overcome them, as well as support them in their beliefs that they are capable of changing their health behavior.

Keywords: breast cancer, cancer nurse, chemotherapy, exercise adherence, exercise barriers, exercise motivation, focus group

SUMMARY STATEMENT

What does this paper contribute to the wider global clinical community?

- Research on motivation to exercise in women with breast cancer during adjuvant chemotherapy is sparse.
- Findings from this focus group study contribute to increased understanding of factors that may stimulate or discourage women with breast cancer to exercise during treatment.
- Nurses should acknowledge exercise adherence as a challenge to women with breast cancer, help identify barriers to exercise, and support the women in their exercise performance.

Introduction

Extensive research has found regular physical activity (PA) during breast cancer treatment to have several positive outcomes, including less of a decline in overall quality of life (McNeely *et al.* 2006, Mishra *et al*. 2012). Even though physical activity may counteract treatment side-effect a low proportion of women with breast cancer follow physical activity (PA) guidelines during treatment, and they fail to return to pre-diagnosis activity levels (Midtgaard *et al*. 2009,

Littman *et al*. 2010). This has led to a growing interest in breast cancer survivors' motivation to participate in PA (Pinto & Ciccolo 2011). However, the perception of women with breast cancer towards factors that may stimulate or discourage exercise during treatment is yet not fully explored. Therefore, we conducted a study to explore factors affecting adherence to exercise in women with breast cancer while following an exercise program during adjuvant chemotherapy.

Background

For women with breast cancer, chemotherapy treatment is of the most important factors for decreased PA during treatment (Kwan *et al.* 2012). Other barriers to PA in women with breast cancer have been identified, including time constraints, insufficient social support and changed physical appearance (Courneya *et al.* 2008, Hsin-Tien *et al.* 2011, Ottenbacher *et al*. 2011). Researchers have shown that breast cancer survivors find motivation to exercise in the experience of an improved physical and mental health, increased illness control, and enhanced social support (Rogers *et al*. 2007, Brunet *et al.* 2013). Motivation for exercise performance in cancer survivors may also arise from personal factors like goal setting, self-efficacy and previous exercise experiences (Bandura, 1997). To enhance exercise adherence researchers are encouraged to investigate the skills and resources the individual needs to successfully adopt a health behavior (Weinstein *et al.* 2008). Although research has been carried out to determine factors that predict adherence to exercise programs during cancer treatment, research have predominantly used quantitative methods (e.g. Courneya *et al.* 2008, Hsin-Tien *et al.* 2011, Ottenbacher *et al*. 2011, Kwan *et al.* 2012). Importantly, questions have been raised towards the appropriatness of questionnaries used to capture exercise barriers and motivators (Brunet *et al*. 2013). Additionally, only one qualitative study exploring women's experiences of scheduled home-based exercise performed during chemotherapy has been identified (Ingram *et al*. 2010). This reflects a knowledge gap related to qualitative research

on women with breast cancer's perceptions of challenges of exercise adherence during chemotherapy treatment. Knowledge of this cancer population's experience with health promoting behavior is crucial to enhance participation in activities that could have positive effects on the women's health and well-being.

Aims and objectives

To follow up on quantitative findings on low adherence to a home-based exercise program tested in a randomized, controlled trial for women with operable breast cancer (Husebø *et al*. 2014) we carried out a focus group study aiming to explore factors that may influence exercise during adjuvant chemotherapy treatment. The research question for this study was 'What are the motivational factors and barriers to exercise as perceived by women with breast cancer?'

Methods

Design

A qualitative, exploratory design used focus group interviews to collect data from women with breast cancer who had participated in a home-based exercise intervention that combined strength and aerobic training to be performed throughout chemotherapy (Husebø *et al.* 2014). Focus groups were chosen to elicit the women's experience and perceptions on engaging in exercise through group interaction, and to gain insight on multiple views on the participant's adherence to an exercise prescription (Litosseliti 2003).

Participants

Purposive sampling (Polit & Beck 2004) was employed to recruit women who had participated in a randomized, controlled trial exercise group. Eligible women with breast cancer were between 18 and 70 years of age, surgically treated for early stage breast cancer (mastectomy or lumpectomy), and allocated to adjuvant chemotherapy according to the national treatment guidelines of the Norwegian Breast Cancer Group (2011). The participants had to be able to read, write and speak Norwegian, and they were approved for participation in this study by a clinical oncologist. Of the 29 women who completed the RCT exercise intervention, 27 agreed to take part in the focus groups interviews.

Data collection

Focus group data on motivational factors and barriers to exercise in were collected from January 2011 - May 2012. The groups were scheduled for 5-8 participants, based on focus group literature recommending smaller groups when the participants have substantial experience with the topic (Kreüger 2006). We planned for five focus groups in this study. The number of groups was settled based on a recommended number of participants per group, and the total number of participants in the study. The participants were allocated to one of the five groups following completion of participation in an exercise intervention. The focus groups were held at a hospital location familiar to the participants. The participants were offered refreshments during the group sessions, and travel and parking expenses were reimbursed.

The focus groups were moderated by the first author, accompanied by two observers. The members of the research team were all female and nurses. The moderator guided the group discussion by a sequenced, focused question route (Plummer-D'Amato 2008). To ease the participants into the discussion and make them more comfortable with the group concept, the moderator started with a broad opening question on the women's pre-diagnosis exercise history (Kreüger 2006). This theme was followed by key questions on perceived barriers to

exercise, and what motivated them to perform the exercise program. The moderator used prompts following key questions to encourage group interaction. To assure dependability the same question route was used with each group (Polit & Beck 2004). The participants were encouraged to share stories that illuminated their experience (Barbour & Kitzinger 1999). The interviews lasted for 2 hours and were audio recorded.

Ethical considerations

The study was approved by the Norwegian Regional Committee for Medical and Health Research Ethics (Reg.NO. 2009/2283). An invitation letter including study information was sent by post to each patient. The participants were assured that the data would be treated confidentially and gave their informed consent. Transcripts of interviews and field notes were undertaken and anonymized. Audio recordings were only available to the first author and the transcriber, and the anonymized transcripts only to the authors.

Data analysis

Recordings from the focus group interviews were transcribed and studied for preliminary themes relevant to follow up in the next focus group (Malterud 2012). The transcripts were checked for accuracy by comparing them to the audio records and to field notes. After any small adjustments, the transcripts were stored in the software program QSR International NVivo 10 (QSR International 2012) for the purpose of systemizing and coding the data. Further in the analysis Systematic Text Condensation (Malterud 2012) was employed (see table 2). Step 1 of the analysis resulted in two main preliminary themes; ‘motivational factors for exercise` and ‘barriers to exercise`. Step 2, coding through derivation and identification of meaning units (Malterud 2012) which included identifying text fragments containing

information about the research question, derived 90 meaning units on motivational factors, while exercise barriers derived 72 meaning units. In step 3, the meaning units were organized in a total of 18 sub-groups, and finally in step 4, five main categories were identified. Trustworthiness was achieved by using investigator triangulation in the analysis (Polit & Beck 2004). Accuracy checking and coding was performed by the first author. The analysis was independently performed by the first and the second author, employing a comprehensive read-through of coded material and negotiating of meaning-units and subgroups. Additional discussion and conciliation of subgroups and main categories involved several authors, and was performed until agreement was reached.

Results

The characteristics of the participants are shown in Table 1. Mean age of the participants in the focus group study was 52 years (SD± 9; range, 34-69). 93 % were living with a partner, 48 % had children living at home, while 52 % were currently employed. 67 % had had a lumpectomy, and 44 % had received an adjuvant chemotherapy treatment containing taxane monotherapy.

Table 1 Characteristics of the focus group participants.

Variables	Focus group 1 (*n*=5)	Focus group 2 (*n*=5)	Focus group 3 (*n*=6)	Focus group 4 (*n*=6)	Focus group 5 (*n*=5)	Total sample (N= 27)
Age:						
Mean (SD)	53(4)	49(3)	54(9)	53(15)	48(5)	52 (9)
Range	50-60	46-53	38-65	34-69	44-51	34-69
Living conditions: (*n)*						*%*
Living alone	1	1	0	0	0	7

Living with partner	4	4	6	6	5	93
Children at home: (*n*)						*%*
Yes	1	4	2	2	4	48
No	4	1	4	4	1	52
Currently employed: (*n*)						*%*
Yes	3	3	4	2	2	52
No	2	2	2	4	3	48
Surgery: (n)						*%*
Lumpectomy	3	2	4	5	4	67
Mastectomy	2	3	2	1	1	33
Chemotherapy regimen: (*n*)						*%*
FEC-60	2	3	3	2	3	44
FEC-100	0	0	0	2	0	7
FEC-60 + Taxotere	2	2	3	0	1	30
FEC-100 + Taxotere	0	0	0	2	0	7
FEC-60 + Taxol	1	0	0	0	1	7

FEC-60 Chemotherapy regimen of fluorouracil, epirubicin and cyclophosphamide, and epirubicin administered in 60 mg/m2 dosage. *FEC-100* Chemotherapy regimen of fluorouracil, epirubicin and cyclophosphamide, and epirubicin administered in 100 mg/m2 dosage

Table 2 The analytical process of focus group data

Meaning units (a sample)	Subgroups	Main themes
The tiredness…lying on the couch feeling like I was in a coma. I should have been out walking, but I just stayed on the couch.	Treatment side-effects	**S**ide-effects of breast cancer treatment as a barrier to exercise
I stopped going to the gym when I got cancer. First of all I didn't want to…having to lean forward…well, in a wide neckline things will show and my head felt like boiling because of the wig. I'm too vain to walk around the gym without it.	A changed body	
I had really low blood counts, and was	Hospital admissions	

short of breath and couldn't walk fast…so I had to be admitted to hospital.		
After receiving the last treatment I felt like hitting rock bottom. And it was Christmas, so I decided on preparing for the Holidays instead of doing my strength exercises.	Holidays and social events	Other valued activities compete with exercise
I was really busy doing long work hours every day, and could easily find an excuse not to exercise.	Going to work	
I have small children…and it was busy, especially during the school holidays. Finding time to exercise was very hard.	Family commitments	
Even though I was on a sick leave, the exercise routine gave me a sense of having an ordinary day with proper things to do.	Exercise organized everyday life	Restoring and maintaining normality in daily life motivates exercise
I was not just a person with cancer, but someone who exercised.	Not just having cancer	
During treatment I thought that the exercise is something I could be in total control of, because so much happened at that time which was out of my control.	Being in control	
Everyone around me is truly impressed that I'm able to do the exercise.	Support from family and friends	Constructive support enhance exercise
My primary nurse prepared me for the effects from the chemo, and told be when to exercise and when to rest.	Information on exercise	
It was very nice to get some guidance, support and ideas, and I needed to be pushed.	Motivational talks	
I thought that if I didn't do it (exercised) my body would quickly deteriorate.	My own effort for getting better	Positive beliefs about efficacy and outcomes motivate exercise
To have the commitment to get up of the coach, go for a walk…just do i!	Commitment and self-discipline	
I expected to be myself again after the treatment, physically…so that I wouldn't have to start all over again.	Expectations on mastery and goal achievement	
You have a goal to work towards, and keeping an exercise diary is like competing with yourself.	Exercise diary	

The group interaction was mainly complementary, where the participants shared their common knowledge of exercise during treatment in general, and of the RCT exercise program in particular (Kidd & Parshall 2000). They also acted as each other's supportive and encouraging audience by building on each other's statements concerning disease-specific topics in relation to exercise performance.

The analytical process (presented in table 2) resulted in five main themes related to factors perceived to influence women with breast cancer's adherence to exercise during chemotherapy: (1) **s**ide-effects of breast cancer treatment could be a barrier to exercise; (2) other valued activities compete with exercise; 3) restoring and maintaining normality in daily life motivates exercise (4) constructive support enhances exercise; and (5) positive beliefs about efficacy and outcomes motivate exercise. Quotations were added to give meaning to the text.

Theme 1: Side-effects of breast cancer treatment as a barrier to exercise.

Struggling with side-effects, like nausea and fatigue, was emphasized in the discussion as a strong barrier to exercise performance, which in some cases stopped them from exercising for a while. Several of the respondents spoke of getting more and more affected by each chemotherapy cycle, especially those who were scheduled for taxane monotherapy.

Participant (P)1: I think I was more affected by the Taxotere, especially in my muscles and joints. How about you?

P2: Oh, yes! I got the Taxotere, as well. It affected the nerves in my fingers and underneath my feet. It was just like they had fallen asleep, or like walking on needles. It was ok to exercise the day after treatment, but two or three days afterwards it was impossible.

P3: I didn't tolerate the Taxotere, either. And it came on top of everything else. But it didn't stop me. I just had to pull myself together even more. (Focus Group (FG) 1)

Also, hospital admissions due to treatment complications disrupted the women's exercise schedule. Respondents in all groups had experienced complications, which required hospital admission.

The women expressed how a changed body image due to treatment affected their exercise adherence. A mastectomy required the use of a prosthesis, which had to be well adapted or else the women feared it would fall out during exercise. For most of the women the chemotherapy also resulted in hair loss. They told that wearing a wig during exercise was not practical, and it also felt uncomfortable as soon as the physical activity (PA) made them start sweating. In addition to a changed body image, the respondents also experienced changes in how their bodies responded to PA which they attributed to the chemotherapy. As a result, they experienced dyspnea and dizziness. The women described feelings of distrust in their bodies as exemplified below:

I have to say that I used to trust my body. When I went walking in the mountains I knew how much it could take. Well. I don't trust it anymore (P25)

Theme 2: Other valued activities compete with exercise

The participants discussed the challenge of balancing between time to exercise and social events such as going on holiday or spending time with their family. These events sometimes were described as valued activities that could affect their exercise routine. Many participants decreased their total work load, including the exercise, and they often chose to spend their

energy on preparing and conducting for social events, because they valued them more than exercise. One of the women expressed her feelings of obligation towards her family like this:

After receiving the last treatment I felt like hitting rock bottom. And it was Christmas, so I decided on preparing for the Holiday instead of doing my strength exercises (FG 2, P8)

Also, some of the participants worked fulltime or part time while being treated for breast cancer, and found it hard to combine work and exercise. Being able to go to work was described as an important goal, but also strenuous, and it made the women too tired to exercise when they got home.

The respondents discussed the experience of participating in the exercise program and most of them agreed upon the need for more variation and progress in the program. "Getting bored" was the reason many of the respondents gave for prioritizing more valued activities, such as family events, making them less able to reach their exercise goals. However, most of the women were satisfied with a home-exercise program, because they could decide for themselves when, where and with whom they wanted to exercise. Despite this, exercising alone required self-discipline and self-motivation, and some respondents expressed the need of supervised exercise in a group to encourage them in their exercise as exemplified below:

I missed meeting in a group, once in a while. To keep up the good work, and to hear someone say; `No, it's not just you who have lost the spirit´. A little bit support, that's all. (FG 1, P3)

Theme 3: Restoring and maintaining normality in daily life motivates physical activity

This theme was based on discussions of the importance of restoring and maintaining the everyday life they used to know before the cancer diagnosis. For the majority of the participants the exercise routine became a structural factor, which helped them get back to normality:

It was one of the most positive things in my life at the time, and one of the really important activities I had planned for each day. I put the I-pod on, put on my boots and walked! I was not just a person with cancer, but someone who exercised. (FG 3, P11)

Most of the respondents were surprised when they were told they could exercise during treatment. This notion was intriguing and motivated them to be physical active, as this woman describes:

Being a patient was scary and not something I wanted for myself. I imagined getting very sick and just lying in bed. Suddenly, someone comes around telling me to start exercising and walking. This has meant the world to me, together with the belief that I can do something for myself, regardless of having chemo. (FG 2, P7)

Theme 4: Constructive support enhances exercise

This theme is based on the discussions of the importance of social support as a great exercise motivator. The majority of the respondents stated that they received support from family and friends, neighbors and colleagues.

I have had a lot of positive feedback from the people around me. They think it's really great that I can do this (exercise) while being ill, as a contribution to my own recovery, they say. (FG4, P19)

Support was described on both an emotional and practical level. One of the most important motivational factors emphasized was the response they received to their participation in an exercise program during cancer treatment. Participants spoke of people being ignorant to the fact that cancer patients can exercise, expressing both surprise and admiration towards the women's effort. Support from health professionals was mainly described as informative, focusing on how to manage the side-effects while exercising, which most of the participants expressed as helpful to overcome the chemo side-effects which were barriers to exercise. The majority emphasized that professional support was experienced as encouraging. However, exercise was described as a seldom topic during clinic appointments unless when the patients

brought it up themselves, or if the cancer nurse herself was in to exercise. Some of the women thus questioned health professionals' lack of attention to and knowledge of exercise as health promotion for the patients during treatment as exemplified in the following quotation:

I'm not sure they really know that much about it (exercise), or if they know how to inform the patients on exercise. Maybe they are afraid to add the burden, because people might be vulnerable and think they got cancer because they didn't exercise. (FG2, P8)

The respondents evaluated the motivational telephone calls in a positive way, and described them as energizing and caring. For the majority, the calls also created a feeling of commitment to adhere to the program, which they identified as motivating. Having a bad conscience for not exercising according to the prescription spurred them to increase their activity.

Theme 5: Positive beliefs about efficacy and outcomes motivate exercise

The respondents expressed high expectations on mastery and goal achievement. Quite a few described themselves as experienced exercisers, and the majority were used to daily walks as a leisure time activity. Some were uncertain how to correctly perform the exercise. Not knowing how to perform the exercise led to doubt over the exercises' effectiveness and consequently they reduced the effort. This was perceived as a vicious cycle of demotivation:

I sometimes wondered if I was doing the strength exercises right. I used a lot of energy on this. (FG 5, P23).

In general, the women talked about high expectations of positive effects of the exercise. They were certain that exercising would do them good, help them towards a speedy recovery and prevent the cancer from reoccurring:

There has been research on reoccurrence of the cancer, and that is what drives me! Exercise is preventive. I thought that all this exercise will keep the cancer way. (FG 1, P4)

‘This is what I can do for myself´ one of the women said when asked what motivated her to exercise. Others agreed that exercise was their own effort to stay healthy during treatment:

I thought that if I didn’t do it (exercise) my body would quickly deteriorate. Because, when I saw what the poison did to my body….If I hadn’t done something for myself, it would have been even worse. (FG 4, P18)

The exercise routine was described by the women as helping them focus on positive perspectives of life even while at the same time they felt their lives were threatened. They felt the exercise gave them a break from the problems of cancer. One of the participants used the expression ‘to run away from the disease’ when describing how her daily walks helped her process negative thoughts and feeling.

Whether self-discipline was a necessary component of adhering to the exercise program was discussed in the focus groups. Although they felt committed to the program, they sometimes found themselves postponing the exercise sessions and choosing to do something more meaningful instead. Several of the women followed a strict routine which involved putting on their exercise gear and performing the program to certain hours every day, thus exercising became habitual.

The women also agreed that keeping an exercise diary helped them to establish an exercise routine, by monitoring their own efforts, which enabled them to look back and compare the activity level from week to week. One of the respondents felt like she was competing against herself and that keeping a diary helped her set exercise goals. Self-monitoring made them feel proud of themselves, but also gave them a bad conscience when the activity levels dropped.

To me it has been very positive to log my activities, it’s fun and a driving force. It’s very inspiring to look back; so many minutes this day and so many minutes the next. You feel like; YES! This is what I have achieved this week! It feels good! (FG 4, P 17)

Discussion

This paper reports findings from a focus group study to enhance understanding of factors that could influence women with breast cancer's exercise adherence. Through the focus groups the participants were stimulated to react to and build upon the comments from other group members (Plummer-D'Amato 2008). This provided in-depth contextual data on factors of motivation and barriers, which to some extent can explain adherence to exercise programs in in a breast cancer population, and thus can be viewed as strength of this study.

The results from the focus group study reveal a complex picture of motivational factors and barriers to exercise, showing that even though the focus group participants experienced several exercise barriers, they seemed to perceive themselves as sufficiently motivated to engage in the exercise intervention. This is reflected by data from the same sample in Husebø *et al*. (2014) showing that although the women's adherence to the exercise prescription was low, 58 % of them achieved an exercise volume in accordance with generally recommended exercise guidelines. Noticeably, data from Husebø *et al*. (2014) also showed a substantial variation in weekly exercise volume, which might also indicate a disparity in perceived motivational factors and barriers to exercise in this sample.

Our findings from the focus group study suggest that the greatest barrier to exercise was treatment-specific. The women's perceptions of fatigue and nausea as diminishing their exercise efforts support previous research highlighting these symptoms as the most frequently reported barriers to exercise during treatment (Midtgaard *et al*. 2009). Courneya *et al*. (2008) found that over 50 % of all exercise sessions missed by breast cancer patients during chemotherapy was due to treatment-related barriers. In our study, the women experienced

neuropathic pain as interfering with their exercise routine. Taken into account that nearly 50 % of them received taxane during the exercise intervention, this could explain low adherence rates. Although contributing to survival benefits, taxane is known to cause peripheral neuropathy, with prevalence rates up to 33 % in breast cancer survivors (Ewertz & Bonde Jensen 2011). An increased attention towards the impact of taxane on women with breast cancer's physical activity (PA) and providing supportive care to help them manage pain and discomfort could result in elevated PA.

Earlier research discusses a changed body image as a barrier to exercise in women with breast cancer. Blaney *et al*. (2010) found that women with breast cancer experienced wearing prostheses in public exercise facilities as limiting their exercise behavior. This is in line with our findings from the focus group interviews. Even though most of the participants in our study were satisfied with home-based exercise, some of them would prefer to perform the program in a gym. Public exercise facilities should be tailored towards breast cancer survivors needs, to avoid feelings of self-load and uncertainty due to a changed body (Blaney *et al*. 2010).

Balancing between fighting treatment side-effects and finding strength to exercise, the women in our study experienced that exercise helped them regain a sense of normality, meaning and in some cases it was life affirming. These findings may indicate an understanding of how exercise can be contextualized within women's lives, reframing exercise adherence as exercise participation which may have a meaning for the women. Meaning making should be recognized by health professionals as important for exercise promotion in cancer patients, because acknowledging meaning facilitates coping strategies for the patients' effort to live as usual during cancer treatment (Larsson *et al*. 2008).

Besides treatment side-effects, the women in our study described performing daily life activities as affecting exercise adherence. This finding may reflect that the majority lived with a partner and were working, and over half of the women had children living at home. Lack of time for family responsibilities has been identified as a significant exercise barrier amongst female cancer survivors (Ottenbacker *et al*. 2011). Courneya *et al.* (2008) describe this as "life-related barriers", and suggest home-based exercise programs as a possible solution to overcome these barriers. Our findings are, however, somewhat contradictory indicating that following a home-based exercise program does not necessarily diminish exercise barriers related to daily-life activities. Time constraints are found to complicate cancer survivors' efforts to establish an exercise routine (Rogers *et al*. 2007). Women with breast cancer could thus benefit from informative support from health professionals on how to maintain exercise levels on a regular basis, for instance by performing the program in shorter and more frequent sessions (Ingram *et al*. 2010). Moreover, the women's reflections on '*lack of self-discipline'* as to explain low exercise adherence may reflect a feeling of amotivation, emerging from not valuing the exercise and its outcomes, resulting in lack of intention to act (Deci & Ryan 2008_1). Amotivation in our study can be linked to the participants' perceptions of the exercise program as static and lacking progression, resulting in loss of interest and "*feeling bored"*. Group exercise is often associated with social support, and is found to be the preferred exercise mode of many women being treated for early breast cancer (Bernardo *et al*. 2010, Emslie *et al*. 2007).

Being part of a supportive social environment is acknowledged in motivational and behavioral theories as a key factor to health behavior change (Bandura 1997, Deci & Ryan 2008_2). Our findings suggest that among the strongest incentives for exercise motivation in women with breast cancer were the perceptions of being supported in their choice to exercise. This may reflect that by participating in exercise the women perceived an enthusiastic supportive

feedback from the environment, influencing their self-efficacy and outcome expectations, and thus increasing their exercise motivation. On the other hand, one should note the findings that exercise during breast cancer treatment is rarely a topic in the clinic. These findings may therefore be of importance to healthcare practice on how to include exercise as a topic in the clinic, and needs to be further explored in future health promotion research. In a health promotion setting, women with breast cancer should be provided with autonomy support from the patient's perspective, including a meaningful rationale for engaging in exercise behavior, and receive information on the challenges a health behavior change might entail (Wilson *et al*. 2006).

Our findings indicate that outcome expectancies influenced motivation to perform the exercise prescription. To engage in exercise was perceived as a way of staying healthy during treatment, and of fighting the influence of the chemotherapy. The beliefs that exercise would have a preventive effect against cancer recurrence, and that exercising would bring normality back into their lives also emerged as outcome expectancies enhancing exercise adherence. Bandura (1997) claims that tolerance of negative outcomes and anticipation of positive outcomes is achieved through self-regulation; the ability to influence behavior by means of rewards and facilitation of the environment. Self-monitoring and seeking social support are ways of achieving self-regulation or self-discipline, when motivating oneself to perform a behavior (McAlister *et al*. 2008). Moreover, our findings suggest that undertaking a PA diary allows for self-monitoring of the exercise behavior and creates motivation to perform the behavior. This is in line with earlier research suggesting that self-reporting PA has increased individuals' activity levels (Matthews 2002). Our findings show that exercise diaries and motivational talks were perceived as supportive towards the patients' exercise behavior, but some of the patients also expressed a commitment towards the program and sometimes exercised to avoid a bad conscience. Deci and Ryan (2008_2) describe avoiding bad feelings as

controlled motivation, where the individual is motivated for controlling reasons, feeling compelled to participate, although their behavior is not consistent with their priorities. Motivation to exercise should thus focus on enhancing patients' autonomous motivation through promoting self-determination. This can be done by promoting the patients' feeling of competence and confidence in exercise performance (Wilson *et al*. 2006), and might result in greater long-term persistence in maintaining the health behavior change (Deci & Ryan 2008_2).

Limitations of this study included the timing of the focus group interviews. Due to a long time span between the intervention and participation in a focus group, it might have been difficult for some of the women to recall their experiences. On the other hand, taking part in focused discussions with peers is highlighted as one of the benefits of the focus group method by facilitating reminiscence (Litosseliti 2005). Moreover, a moderator style focusing on argumentative statements used to explore different opinions during the group session might have contributed to richer data (Kidd & Parshall 2000).

Conclusion

The findings identified treatment side-effects as a substantial barrier to influence exercise adherence. Findings also suggest that a need for balancing between investment in exercise and other valued activities might lower women with breast cancer's adherence to exercise programs during treatment. However, to maintain a normal daily life, exercise participation seems to propose some distraction from worries about their disease, and too strong a focus on adherence to high physical activity levels might be counterproductive to this kind of beneficial outcome. Moreover, it is likely that a sufficient supportive environment could benefit women in their efforts to take up exercise while being treated for breast cancer.

Relevance to clinical practice

To assure exercise adherence in health promotion interventions for women with breast cancer during treatment, exercise programs should be individually adjusted for experienced detrimental side-effects of the employed chemotherapy, and for the function exercise has for the patient. During treatment, setting individual goals should be regarded as important as strict recommendations of exercise volumes for women with breast cancer. When communicating exercise as health promotion, nurses should support the patients' belief that they are capable of changing their health behavior, and provide support on how to succeed.

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