TITLE Breast cancer survivors' perceptions of participating in a supervised exercise intervention: A systematic, critical review of the qualitative literature

Background. Despite the reported beneficial effects of physical activity (PA) during and after cancer diagnosis, current research data suggest that the percentages of breast cancer survivors who adhere to PA recommendations are low. The aim of the present systematic, critical review was to identify, analyze and provide a summary of qualitative literature findings, which have explored breast cancer survivors' experiences of participating in an exercise/PA intervention after cancer treatment.

Methods. A systematic search was conducted using CINAHL, PsychINFO, PubMed and Scopus electronic databases to search for qualitative literature published during 2000-2016. A total of six studies which met the inclusion criteria were reviewed. Thematic synthesis, following Thomas and Harden's (2008) methods, were used to analyze the data.

Findings. Seven descriptive themes were developed: control, focus, transitioning phase, regaining a sense of confidence, enhanced spirits, social support and safe environment. The findings suggested that participation in supervised exercise interventions enhanced breast cancer survivors' self-confidence and mood. It allowed them to regain control and provide a focus, therefore allowing them to move forward in their lives.

Conclusion. The results of this systematic critical review indicated that supervised exercise was a positive experience for breast cancer survivors.

Key words. Breast cancer, physical activity, experiences, mood, qualitative, review.

Introduction

Breast cancer is the most frequently occurring cancer in females; 53,696 women in the United Kingdom (UK) were diagnosed with new cases of invasive breast cancer in 2013 (Cancer Research UK, 2016), and nearly 1.7 million women were newly diagnosed breast cancer

cases worldwide in 2012 (World Cancer Research Fund International, 2015). Although, breast cancer survival rates are increasing, cancer diagnosis and its treatments can lead to many significant, negative physical and psychological side effects (Spence, Heesch, & Brown, 2010; &, Pinto, Dunsiger & Waldemore, 2013). Consequently, these possible side effects have been identified to have an adverse impact on cancer survivors' overall quality of life (OQoL) (Milne, Guilfoyle, Gordon, Wallman & Courneya, 2007; & Ray & Verhoef, 2013). For the purpose of this review breast cancer survivors were defined as women who had been diagnosed with breast cancer and completed initial treatment (Cancer.Net, 2013; National Coalition for Cancer Survivorship [NCCS], 2014 & Brunet, Sabiston & Meterissian, 2012).

The results of a number of quantitative studies have indicated that regular participation in physical activity (PA) during and after breast cancer treatment may alleviate certain side effects of the treatment and lead to physical and psychological improvements, such as in physical functioning, cardiovascular fitness and management of cancer-related side effects (Loprinzi & Cardinal, 2011; & Wurz, St-Aubin & Brunet, 2015). Furthermore, regular PA participation may increase OQoL amongst breast cancer survivors (Ferrer et al. 2010: & McNeely et al. 2006). The health improvements from regular participation in PA, as mentioned above, may be associated with increased survival rates among breast cancer survivors and, therefore, a decreased risk of breast cancer mortality (McNeeley et al. 2006). Findings from a meta-analysis concluded that an inverse relationship exists between PA and breast cancer-related mortality and breast cancer recurrence. The summary effect size for breast cancer-related mortality was 0.59 with higher levels of self-reported PA post-diagnosis compared to lower levels of PA and 0.54 for those who met recommended PA guidelines post-diagnosis (Lahart, Metsios, Nevill & Carmichael, 2015).

The World Health Organization [WHO] (2015) defines PA as "any bodily movement produced by skeletal muscles that requires energy expenditure" whereas exercise is defined as: "A subcategory of physical activity that is planned, structured repetitive and purposeful"

(WHO, 2015). The PA guidelines for cancer survivors suggest that individuals should engage in 30-60 minutes of moderate intensity PA, at least 5 days per week, and strength or resistance training at least 2-3 days per week (American College of Sports Medicine, 2009, p.231). Despite the evidence suggesting that regular PA during and after treatment is beneficial for breast cancer survivors, previous research has illustrated that the levels of PA in this population decrease after diagnosis and treatment (Carmichael, Daley, Rea & Bowden, 2010). Moreover, qualitative studies have recognized that breast cancer survivors face significant challenges concerning PA and exercise after treatment due to various factors, such as pain, reduced range of movement, fatigue, fear of injury, low self-confidence, and lack of knowledge etc. (Bluethemann, Vernon, Pettee Gabriel, Murphy & Bartholomew, 2015). This suggests that these challenges faced by breast cancer survivors after treatment may lead to additional barriers to PA participation.

Although quantitative and qualitative research has been conducted in this field, which has contributed to the increased knowledge of the benefits of PA for cancer survivors', their levels of PA, and factors which may influence their PA behavior, the synthesis of qualitative research findings exploring the individual, lived experiences of PA among cancer survivors is lacking (Midtgaard et al. 2015). Midtgaard et al. conducted a meta-synthesis of qualitative research, which explored cancer survivors' experience of participation in exercise-based cancer rehabilitation. Although the findings from this meta-synthesis may support implementation of future exercise for cancer survivors, it was not based on and around breast cancer survivors specifically. Thus, an exploration of breast cancer survivors' individual experiences of exercise and PA interventions may be important to inform the implication and promotion of specific exercise and PA programs specifically for this population (Thomas & Harden, 2008). Therefore, the aims of this paper were to review and synthesize the qualitative literature, which has explored breast cancer survivors' experiences of participation in exercise-based rehabilitation interventions. The findings from this review may extend the understanding of breast cancer survivors' individual experiences of participating in an exercise-based

intervention and illustrate key factors which may support the implementation of future, clinical and rehabilitation exercise-based interventions for such women.

Methods

Search Strategy

A systematic, critical review of qualitative research exploring breast cancer survivors' experiences of participating in exercise interventions was conducted. Searches were undertaken within four electronic databases: CINAHL, PubMED, PsychINFO and Scopus. Key words and search terms were: "physical activity", "exercise", "exercise therapy", "leisure activity", "breast cancer", "ductal cancer", "breast neoplasm", "Carcinoma, Lobular", "cancer survivors", "perception", "lived experience*", and "life experience*". These search terms, i.e., "perception", "lived experience*", and "life experience*", encompassed the range of qualitative studies so that "qualitative" was not also used as a search term. The key words and search terms were modified, dependant on the database, to increase the search results.

Inclusion Criteria

The inclusion criteria for selection involved: peer-reviewed, qualitative research methodology, English language, scholarly articles published from 2000 to 2016. Articles were excluded if they focused solely on: any diseases/health conditions other than breast cancer, breast cancer populations before or undergoing treatment(s), child or adolescent populations (defined as <18 years of age), self-directed physical activity (i.e., not participating in an exercise intervention), and used quantitative or mixed methods approaches.

Articles (n=213) were reviewed through examination of their title, abstract and full-text review based on the inclusion/exclusion criteria (Figure 1). The methodological quality of the studies that met the inclusion criteria were independently assessed by two of the researchers, using the Critical Appraisal Skills Programme (CASP) checklist for qualitative research, as

used in previous syntheses of qualitative research studies (Driscoll. 2015; Midtgaard et al. 2015). The studies were scored on a low, medium and high rating.

Following the full-text review and assessment of the results from the electronic database search, 207 were excluded, leaving six articles that met the inclusion criteria and were included in the review (Figure 1). Hand searches of the selected journals were also undertaken to identify further articles. Following a review of the article titles, retrieved from the hand search, 13 new articles were identified, and the abstracts were examined. No new articles meeting the inclusion criteria were identified, following the review of the titles and abstracts.

Data synthesis

The six studies included in the review were individually analyzed using thematic analysis~~,~~. t~~T~~wo researchers independently coded each paper and then ~~discuss~~reconciled ~~their~~any ~~fin~~coding discrepancies. We followed a three-stage process as described by Thomas and Harden (2008) to analyze the studies involved:

I. Line-by-line coding of the findings in relation to the meaning and contentwas undertaken., and 'initial codes' were developed. These concepts were translated between studies, and new codes were developed when necessary, as each study was coded.

II. The emergence of 'descriptive themes', once initial codes were identified, they were then reviewed based on similarities and differences. Themes werethen grouped, new codes were created to 'capture the meaning of groups of initial codes'; these were the descriptive themes.

III. The development of 'analytical themes' were developed from "going beyond the content of primary studies".

Results

Characteristics of included studies

The sample size of the included qualitative studies ranged from 9 to 25 participants (only breast cancer survivors were included) (Table 1). The majority of the participants in the studies were women (n=126 out of 143 participants), and most of these women (n=92) were breast cancer survivors who had completed primary treatment. Three of the studies involved only breast cancer survivors (Balneaves et al. 2014; Crane-Okada et al. 2012; & Luoma et al. 2014), while one study involved both breast cancer survivors and breast cancer patients undergoing treatment (Bulmer et al. 2012), and the other two remaining studies comprised participants with other cancer diagnoses but with breast cancer being the main diagnosis (Martin et al. 2015; & Midtgaard et al. 2011). ~~The characteristics of the included studies are produced in Table 1.~~

The quotes used in the review were only from breast cancer survivor participants; most of the studies involved clearly stated from which participants the quotes were used. The most frequent method of data collection used was focus group interviews, n= 5 (Balneaves et al; Crane-Okada et al. 2012; Luoma et al. 2014; Martin et al. 2015; Midgtaard et al. 2011); however, Bulmer et al. (2012) used individual in-depth interviews and email journals.

Assessment of quality method

Three out of the six studies scored a low quality rating (Balneaves et al. 2014; Crane-Okada et al, 2012; & Martin et al. 2015); one scored a medium level of quality (Luoma et al. 2014), and two scored a high level of quality (Bulmer et al. 2012 & Midtgaard et al. 2011). Most of the studies (n=5) did not clearly justify why the research design was most appropriate for the aims of the research, and none of the studies considered or clearly addressed the relationship between researcher staff and participants. Although some studies scored a low methodological quality rating, they were included in the review regardless, as they were

informative and contributed to the data synthesis. Overall, the studies included in the systematic review were rated as medium quality studies.

Thematic synthesis

Each paper was read fully and analyzed independently, using 'line by line' coding to develop initial codes; these were then compared between each paper, and new codes were developed throughout the analysis of the remaining papers. Once the first stage was complete, descriptive themes were then developed to 'capture the meaning of groups of initial codes'; overall seven descriptive themes were developed. The descriptive themes were; control, focus, transitioning phase, fear, regaining confidence, enhanced spirits, social support, and safe environment. The most prominent themes found across the papers (n=6) were: control (n=6), transitioning phase (n=4), social support (n=4) and safe environment (n=4). These are the themes which appeared most in the studies.

Control

This descriptive theme involved initial codes; *control over cancer* and *recurrence of cancer*, *control over their bodies, health and fitness*, and *control over pain and their emotions*. These initial codes were found across all of the included research papers (n=6). For many of the women in the studies, participation in the exercise intervention was an 'empowering' and 'motivating' factor, that helped them to either 'feel' in control (Midgtaard et al. 2011, n=13) or to take control, through being proactive to improve their physical self and their overall health (Balneaves et al 2014, n=9; & Bulmer et al. 2012, n=15).

Control over cancer and recurrence of cancer. For some women in the studies, participation in the exercise intervention helped them to 'regain a sense of control' over the chances of cancer recurrence (Balneaves et al. 2014; & Midgtaard et al. 2011). In Midgtaard et al. (2011) some participants perceived that through participating in regular PA, cancer recurrence 'is simply not a possibility' and it will not happen as long as they continue to stay

active. Similarly, the women in Balneaves et al.'s study (2014) express that through leading a healthy lifestyle they are taking control over cancer itself.

Control over their bodies, health and fitness. Many of the women across the studies (n=4) associated improvements in their physical fitness with regaining control over their bodies and overall health. Regaining a sense of control through exercise participation led to increased adherence in the exercise interventions and further PA. Some of the women in Bulmer et al.'s (2012) study, described how exercise helped them to take control over their health and physical appearance of their bodies. Similarly, participants in Martin et al. (2015) (n=14) and Balneaves et al.'s (2014) study expressed how exercise helped them to regain the feeling of 'being in control'.

Control over pain and emotions. Due to the side effects of cancer treatment, many of the women experienced long-term treatment effects, such as pain, physical limitations, emotional and psychological problems (Balneaves et al. 2014; Crane-Okada et al. 2012 n=16; Luoma et al. 2014, n=25). Many of the breast cancer survivors in Crane-Okada et al.'s (2012) expressed how the movement exercises involved in the intervention, helped them to control their management with the pain. Moreover, the breast cancer survivors in Bulmer et al.'s (2012) study described that exercise helped them to deal with stress, and therefore regain control over their emotional health.

Focus

This descriptive theme includes the sub-theme *focus on themselves.* This reflects on the participant's perceptions of the exercise intervention allowing them to shift the focus away from breast cancer and its side effects of treatment and focus on themselves again.

Focus on themselves. Some of the participants in the studies described that their participation in exercise interventions allowed them to do something for themselves and gave them time for themselves (Bulmer et al. 2012; Crane-Okada et al. 2012; & Midtgaard et al.

2011). Midgtaard et al. (2011), described that the participants maintenance of PA became a goal itself, as they perceived it to be rewarding because they were doing something for themselves.

Transitioning phase

This descriptive theme includes the initial codes *regaining a sense of 'normality', moving forwards* and *perceived self-identity*. These reflect upon the breast cancer survivors' individual experiences, perceptions of every-day life and what they portrayed as 'normal', and their definitions of themselves after cancer diagnosis and treatment and throughout the exercise interventions.

Regaining a sense of normality. Throughout the studies, many of the women expressed a desire to 'regain a sense of normality' in their lives. Because of the cancer diagnosis and its treatment, many of the women felt that 'normality' was lacking in their lives, particularly in social interactions (Balneaves et al. 2014, p. 2061). For most of the women in the studies (Balneaves et al. 2014; Bulmer et al. 2012; Luoma et al. 2014, n=25; & Martin et al. 2015), expressed that the exercise intervention helped them to regain a sense of normality. Some of the women discussed that they felt that they were not treated as an 'oddity' or as 'cancer patients', by the other participants in the exercise intervention and the exercise instructor (Luoma et al. 2014; & Martin et al. 2015). Other survivors expressed that the exercise intervention facilitated the opportunity to 'feeling more normal', through undertaking the exercises to improve their health (Balneaves et al. 2014; & Bulmer et al. 2012).

Moving forward. Participation in the exercise intervention was described as way to move forward and beyond the cancer experience (Balneaves et al. 2014; & Bulmer et al. 2012). Balneaves et al. (2014), described that the exercise intervention 'offered an opportunity to return to normal and move beyond cancer'. One particular participant in Balneaves et al.'s study (2014, p.2061), explicitly stated that it was her 'mission' to put cancer and the

implications alongside it behind her, and lead a healthy lifestyle to return to pre-diagnosis health levels. Similarly, breast cancer survivors in Bulmer et al.'s study (2012), explained that the exercise intervention was essential in their journey of moving forward from surviving cancer. In contrast, for some women in Luoma et al.'s study (2014, p.1197, n=25), the exercise group 'reminded them of cancer' and 'takes them back to cancer', opposed to moving forward beyond cancer.

Perceived self-identity. Luoma et al. (2014) described that the women in the intervention had a 'desire to switch identity'. The women expressed the need to being redefined as a healthy woman again, instead of being 'labelled' as a breast cancer patient or survivor. For several of the women in the studies, the exercise interventions played an essential role, allowing them to transition and redefine themselves as 'healthy' women (Balneaves et al. 2014; & Bulmer 2012). One woman in Martin et al.'s study (2015), expressed her desire to eliminate a cancer stigma, "I don't want to say I'm a breast cancer survivor. I don't want to be known as that, I was to be me".

Regaining a sense of confidence

This descriptive theme includes the subtheme of *increased self-confidence*.Many of the women commented that the exercise interventions helped them 'regain a sense of confidence', whether it was perceived physical ability, or mental toughness.

Increased self-confidence. Some of the women described that exercise helped them to 'regain a sense of confidence', "I feel more confident" (Balneaves et al. 2014, p.2060), "I felt like I got extra confidence, actually" (Bulmer et al. 2012, p.778). Although many of the women experienced physical benefits from the exercise intervention, the women associated the physical benefits with increased self-confidence, "I felt a sense of confidence within myself, that was sort of based in the physical but it went beyond that". Furthermore, through

increasing their PA levels the women felt in control and that they were 'doing something for themselves', in turn they regained a sense of confidence.

Enhanced spirits

This descriptive theme captures some of the women's feelings of *'lifted spirts'* and being '*in a good place'*. For some of the women, they expressed that they felt the exercise program had enhanced their spirits (Bulmer et al. 2012, p. 778; & Luoma et al. 2014, p.1196). Feeling well and having the physical ability to do the exercises was transferred into feelings of enhanced spirits.

Social support

This descriptive theme involved the initial codes of *shared experiences and understanding,* and *appreciation for the exercise instructor*. These initial codes captured the breast cancer survivors' experiences of social support received within different realms of the exercise intervention. Social support was one of the strongest themes throughout the research studies; the level of social support received throughout the exercise interventions influenced the breast cancer survivors' experiences.

Shared experiences and understanding. For many of the women in the studies, the exercise interventions involving other breast cancer survivors was a benefit of the program; the social support and understanding received by the other women in the exercise classes were valued and appreciated. A woman in Balneaves et al's study (2014), expressed that an "understanding" was apparent amongst the women in the exercise group, which they would not have if they attended a gym. Similarly, in Luoma et al.'s study (2014), a participant described that she felt that she did not need to explain to the other women in the exercise group why she had short hair because they had similar experiences. The participant compared the shared experiences she had received from the women in the breast cancer survivors only exercise classes to how she thought others from an "open exercise class" might notice her

short hair and perceive her as a “lezzie”. Accordingly, others felt that sharing information and experiences in the group acted as a source of “informal support” and a way of looking out for each other (Bulmer et al. 2012, p.782).

Appreciation of the exercise instructor. The structured exercises and delivery of the exercise intervention, were acknowledged as important factors for the participants (Balneaves et al.2014; Bulmer et al. 2012; & Luoma et al. 2014). The personality of the instructors was described as; “very motivating”, “encouraging”, “really accommodating”, “nurturing” and “comforting” (Balneaves et al. 2014; & Bulmer et al. 2012). The positive relationships with the instructors were valued, thus increasing their adherence to the exercise classes (Bulmer et al. 2012).

Safe Environment

This descriptive theme involved the sub themeof *feeling safe*.. These reflected the importance of the exercise environment for the women in the interventions regarding the people involved, the types of activities involved and who was leading the exercise groups.

Feeling safe. Many of the women expressed the importance of having a “skilled instructor”, who is knowledgeable of the implications of exercise, following breast cancer treatments (Luoma et al. 2014, p.1195; & Balneaves et al. 2014). This made the women feel safe and that “they could trust that the movements that they were asked to do were suitable for them” (Luoma et al. 2014, p.1195). Similarly, women in Balneaves et al.’s study (2014) perceived the exercise intervention as a “safe environment”, as they felt more secure being supervised by an exercise instructor. One of the participants in Crane-Okada et al.’s study (2012), expressed that she felt safe and free in relation to the instructor and the group setting of the intervention.

Discussion

These findings provide an insight into breast cancer survivors' experiences of their participation in a supervised exercise program. Many women in the studies, indicated that supervised exercise, was an important factor which helped them to 'regain a sense of control and normality' and 'moving forward' beyond the breast cancer experience. Furthermore, some participants perceived that exercising with other women who had similar experience and having an exercise instructor who was knowledgeable of their physical limitations, increased their motivation to join and adhere to the exercise program (Balneaves et al. 2014; Bulmer et al. 2012; Luoma et al. 2014; Martin et al. 2015).

The influence of social support and shared experiences on enjoyment and adherence to exercise interventions is supported in many other studies. For example, Farrance, Tsofliou and Clark (2016) assessed adherence to community-based group exercise interventions for older people, and the findings demonstrated that demographic homogeneity and inclusion of peers with similar needs and interests developed feelings of belonging and connectedness, further improving adherence. It is important, however, to know if this is a generalized effect in older people or specific to breast cancer survivors. As stated by Clark (2016), to increase our knowledge through qualitative research, reviews need to be less generic and focus on particular populations, phenomena or factors of importance. As a result of breast cancer treatment, physical limitations and changed appearances were a frequently reported issue amongst the breast cancer survivors in the exercise interventions. The women portrayed the exercise classes as a "safe", "comfortable" and non-judgemental environment, and they felt no need to explain their appearance or physical limitations. This may have been due to a sense of shared understanding among the women in these groups.

These findings, supported those from Midtgaard et al.'s (2015) meta-synthesis–, highlighted the importance of exercising with others who have had similar experiences. Other studies similarly have found that exercising with others in a similar position is important (stroke survivors (Lawrence et al. 2015); cardiac rehabilitation (Clark et al. 2013)); however,

the physical changes to the body appear particularly important to women with breast cancer due to the visual nature of the disease. In addition, the cardiac rehabilitation reviews suggested that men benefit more from mixed-gender group activity sessions, than women (Clark et al. 2013). The studies included in this review revealed that women enjoyed exercising with women who have similar experiences and were not put off by others in the interventions; this may have been be due to the single sex nature of breast cancer classes.

The role of the instructor, rather than other participants, was particularly valued by breast cancer survivors. In Crane-Okada et al.'s study (2012), the participants specifically appreciated the instructors "ability to create a sense of acceptance and freedom" and feeling "safe". These findings reflect those from other studies which assessed the barriers and facilitators of participation in a supervised exercise program, such as interventions for type 2 diabetes (Casey, De Civita and Dasgupta 2009) and lung cancer (Granger et al. 2016). Findings from Casey, De Civita and Dasgupta (2009) suggested that the supervision and support from a professional throughout the program was acknowledged as an important motivator for adherence to the program, further highlighting the importance of implementing supervised exercise programs to increase adherence to PA across multiple populations with other health conditions.

The group-based exercise intervention helped many women to 'regain a sense of normality and control' and 'move forward' beyond the breast cancer experience, thus suggesting that exercise and lifestyle interventions would be very beneficial for breast cancer survivors transitioning from the 'treatment phase' to a 'survivor' and thus should it be an integral part of breast cancer treatment/care. Many of the studies included in the review emphasized the beneficial effects that the exercise interventions had on the women's psychological health and well-being, which helped move them forward and regain normalcy (Balneaves et al. 2014; Bulmer et al. 2012; Luoma et al. 2014; & Martin et al. 2015). Additionally, the physical benefits that the women experienced through their participation in

the exercise interventions, rendered many of them to feel 'normal' and have more 'control', which ultimately increased their self-confidence.

It appeared that as the women began to experience physical improvements, their self-confidence increased, and they began to feel like they were moving forward to becoming healthy and 'themselves' again. Similarly to this, Yeh et al. (2016) in a study on heart failure, reported that physical improvements influenced the likelihood of successful exercise behaviors and in turn increased self-efficacy and perceived behavioral control.

Although many quantitative and qualitative studies have shown that the levels of PA participation among breast cancer survivors are low, and they face many challenges with regard to PA, the results of this review showed that the benefits experienced from the supervised exercise interventions helped many of the women overcome the challenges of exercise and motivated them to adhere to the exercise interventions.

Methodological considerations

To our knowledge, this is the only systematic review which has explored only breast cancer survivors' perceptions of participating in a supervised exercise intervention. Throughout the documentation process of this systematic review, some difficulties with determining the methodological quality of the studies, due to the lack of information provided in the published papers, particularly in relation to research integrity and methods used to develop themes. Despite this, we included all of the studies, regardless of their quality scores; the reason for this was that all of the studies were relevant to the aims of the review (Thomas & Harden, 2008, p.8). Some limitations must also be noted. Firstly, the studies involved in the review were limited to English language only; thus, it is possible that other relevant studies might have been neglected, which compromises the generalizability of the findings. Secondly, the review only included supervised exercise interventions; the results may have been enhanced if home-based exercise interventions were included, again reducing the generalizability of the

findings. Thirdly, the samples of the studies are small and non-representative, which reduced generalizability. Also, it is possible that other researchers may have different interpretations and findings from the review.

Methodological limitations of included studies

Methodological limitations existed among the included study designs. First, reflexivity was missing in four of the six studies (Balneaves et al; Crane-Okada et al. 2012; Luoma et al. 2014; & Martin et al. 2015), whereas the reporting of reflexivity was unclear in two of the six studies (Bulmer et al. 2012; & Midgtaard et al. 2011). Therefore, the effect the researcher had on the data is uncertain; In addition to this, many of the studies did not adequately report on issues related to the credibility, transferability and confirmability of the research, again affecting the quality assessment of the included studies.

Second, the majority of the studies did not clearly explain how the quotes used in the studies were selected from the original sample to demonstrate themes. The studies mainly selected a single quote from the data of just one participant to support their interpretation and selection of themes. Some of the studies which involved survivors of multiple cancer types did not clearly state which participant, from which cancer type, experienced the themes, thus making it unclear whether breast cancer survivors from that study related to the themes Therefore, it is unclear whether all the participants in the study or just one reported the same factors, thus affecting the assessment of the rigor of the data analyses (Houghton, Casey, Shaw & Murphy, 2013).

Third, only one of the six studies provides a definition of breast cancer survivors (Crane-Okada et al. 2012). Five of the six studies (Balneaves et al; Crane-Okada et al. 2012; Luoma et al. 2014; Martin et al. 2015; & Midgtaard et al. 2011) used the term “survivors”, and details of the participant’s characteristics were stated in the inclusion criteria or demographics table. All participants (survivors) included in the studies had completed adjuvant treatment,

chemotherapy, radiotherapy or surgery. However, the time since the completion of treatment varied among the study samples in the included studies, thus making it difficult to identify a specific definition and subsample of “cancer survivors”. Two of the studies (Martin et al. 2015; & Midgtaard et al. 2011) included survivors of multiple cancer types and one study included participants in both during and the post-treatment phase (Bulmer et al. 2012), therefore the terms used to describe the participants differs across the studies. Fourth, some of the studies did not clearly explain the recruitment procedure for methods used to select participants nor why the participants selected were the most appropriate for the study.

Future research and implications for practice

This review is the first of which we are aware to draw together the findings from qualitative studies of breast cancer survivors’ experiences of supervised exercise. Through this review effort, from the patient’s perspective, we can learn more about what is needed for future interventions. The findings suggested that women need to be offered opportunities to exercise that are solely for breast cancer survivors, so that they can feel safe and supported with those who can empathize with them. They need to feel confident that the professional will be able to advise them safely and will also be non-judgmental. This experience not only helps them feel as though they can control their own physical recovery but also increases their confidence and enhances their spirits. This suggests that both the group element and the level of supervision are important to breast cancer survivors and may also be important in other health conditions which lead to physical manifestations.

It was also evident that qualitative studies exploring breast cancer survivors’ experiences and perceptions of participating in a supervised exercise intervention have been scarce. Therefore, further qualitative research, of high methodological quality, is greatly needed. Additionally, further qualitative research exploring breast cancer survivor’s PA in all contexts, such as home-based exercise and self-directed PA, is suggested to increase understanding of breast cancer survivors’ experiences of PA and exercise.

Conclusion

The findings of this systematic, critical review provide an insight into breast cancer survivors' experiences of their participation in a supervised exercise program and may support the implementation of future, clinical and rehabilitation exercise-based interventions for such women. Previous research evidence has shown that exercise interventions are safe and effective for breast cancer survivors during and after cancer treatment (Sprod, Hsieh, Hayward & Scneider, 2010 & Schmidt, Wiskemann, Armbrust, Schneeweiss, Ulrich & Steindorf, 2015). Additionally, findings from this review and others suggest that with the supervision of qualified professionals and exercise alongside other breast cancer survivors may increase motivation to exercise and adhere to the exercise interventions. Subsequently, findings from this review may provide new knowledge and solutions to increase breast cancer survivors' participation and adherence in exercise and PA.

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