

RESEARCH COMMUNICATION

Physical Activity and Women with Breast Cancer: Insights from Expert Patients

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Abstract

Introduction: Physical activity participation amongst cancer survivors is low. This potent modifiable host factor has been disregarded in the cancer treatment plan for decades, despite its role in cancer control. The purpose of this study was to explore perception of physical activity among women with breast cancer. **Methods:** Focus group with purposive sampling methods were conducted on women at different cancer trajectory - ie. completed treatment (n=6) and undergoing treatment (n=8). The taped discussions were transcribed verbatim and analyzed using a grounded theory approach. Concepts were identified as unique or shared between the two groups, and ordered into subcategories. **Results & Discussion:** Three key categories on barriers to exercise; facilitator/motivator towards exercise; and myths around exercise were highlighted. There were more myths and reservations about physical activity in the UT (undergoing treatment) group, than in the CT (completed-treatment) group. Facilitators included positive experience from physical activity engagement, easy-access to facility, and good social support. **Conclusions:** Although both groups expressed difficulties in engaging in physical activity, the newly diagnosed have more negative perception of physical activity engagement. Both groups did not note the significant role of physical activity and cancer prevention/ recurrence, which is a key strategy to promote the uptake of exercise and acceptance of active lifestyle for cancer survivors. Health care clinicians like occupational therapists need to play greater public health role in educating and counseling lifestyle redesign for survivors living with cancer.

Keywords: Physical activity - perception - completed-undergoing treatment

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Introduction

The World Cancer Report stated that over 1.1 million women worldwide are diagnosed with breast cancer and 410,000 die from the illness each year (Stewart & Paul Kleihues, 2003). Early detection and better treatment has improved the survival rates for breast cancer (Richards, 2000). Breast cancer and its treatment regimen are associated with changes in quality of life (Ganz, 1992; Montazeri, 2008). As breast cancer now takes a form of chronic disease (Fallowfield, 2004), greater efforts are needed to ensure sustainable and relevant health-promoting programs for cancer control. Fortunately, genetic defects play its role in only five to ten percents of all cancer cases, whereas the remaining 90 to 95 percents are rooted in the environment and lifestyle factor matrices (Anand et al., 2008). Adherence to lifestyle behaviors such as being physically active, plays a critical role in cancer prevention as it modifies breast cancer risk in postmenopausal women (Carpenter, 2003; McTiernan et al., 2003; Gramling et al., 2010). For decades, host factors such as weight and physical activity in the overall treatment of breast cancer patients have been disregarded

until recently (McCarthy and Visvanathan, 2010). A study (n=203) conducted in Malaysia suggested that women who did not exercise regularly faced a four times higher risk of getting breast cancer (Kamarudin, 2006). Many cancer survivors are not pursuing healthy lifestyle. A large study by American cancer Society found that only 30 percent to 47 percent (n=9105) met the recommendation for physical activity (Blanchard, 2008). The current physical activity adult guideline of 30 minutes of moderate intensity activity daily, preferably all days of the week, is of importance for limiting health risks for a number of chronic diseases. However for preventing cancer, this guideline is insufficient today. More theory-led research into enabling people to engage physical activity is required. It is one of the most attainable modes of reducing cancer risk habit and it is also one of the most difficult behaviors to adhere. The theory underpinning the positive effect of physical activity may be contributed by a pool of knowledge related to a reduction in body fat, metabolic and sex hormones, growth factors, immune function, and/or inflammation (Chlebowski, 2002).

Over two decades of research have revealed that breast cancer patients (and colon, prostate, hematological

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malignancies) (Speck, 2010; Velthuis, 2010) can gain from physical activity programs (Wiskemann and Huber, 2007). Controlling cancer via lifestyle factor such as adopting an active lifestyle is becoming particularly essential in cancer survivor populations. After a breast cancer diagnosis, a 40%-50% lower risks of mortality has been associated with about 2 to 3 hours of moderate-intensity activity (Holmes, 2005; Holick et al., 2008), whilst another study indicated a duration of 3 to 5 hours per week (Holmes et al., 2005). In both premenopausal and postmenopausal women who are physically active, a 30% to 40% reduction in risk of developing breast cancer is postulated when compared with sedentary women (Thune and Furberg, 2001). Nevertheless, evidence are strong that exercise before and after breast cancer diagnosis is inversely associated with the risk of recurrence and death (Verloop, 2000). The lifestyles of most people today are more sedentary than active. In UK, only a third of the population currently meet minimum physical activity recommendations (Craig and Mitchell, 2006). In Australia, population surveys suggest that daily physical activity engagement has declined from 62% in 1997 to 57% in 2000 (Bauman, 2002). Higher (daytime) movement, measured with actigraphy is associated with lower odds of cognitive impairment in older women (Barnes et al., 2008). This finding has great implication for women with breast cancer who faces 'chemobrain' - a cognitive decline which is now universally accepted (Taillibert, 2010). Physical inactivity is an independent risk factor for chronic diseases, and it is estimated to cause 1.9 million deaths globally (WHO, 2010). This qualitative study, employing focus group interviews, explored the perception of women with breast cancer on myths, barriers and facilitators of exercise in order to understand their ideas about physical activity and to inform intervention for reducing physical inactivity.

Materials and Methods

Design

Focus group is an information-gathering method to study people perception and why they perceive as they do (Barbour, 1995). This preliminary study uses focus group format to gather in-depth information about how women perceived myths or misconceptions of physical activity and breast cancer as well as to explore their perceptions of barriers and facilitators of exercise. In particular, this paper presents the shared and dissimilar perceptions between the survivors who had completed treatment (CT) and those still undergoing active treatment (UT). The interaction between survivors ensured that priority was given to their language, concepts and frameworks for understanding physical activity engagement in the bigger population of cancer survivors. Ethical approval for the study was obtained from the Malaysian Ministry of Health Research Committee and the University of Malaya Sub-Committee for Research.

Subject Recruitment

Purposive sampling methods were used to recruit women with breast cancer who were representative of

the cancer trajectory. 20 participants were randomly selected from the databases of old and new breast cancer cases. They were briefed and invited to participate. Those who agreed and signed the informed consent were given a date to meet at the Breast Centre. Potential participants were separated into two focus groups in order to ensure homogenous grouping - those who had completed treatment (CT, n=6) and those still undergoing active treatment (UT, n=8). All consented participants were offered the opportunity to withdraw at any time. The confidentiality of the sharing was emphasized. The participants were reminded to respect the confidentiality of others due to the nature of the group format. The key researcher (together with a note-taker) moderated all groups to ensure consistency. A short questionnaire was used to assess demographic and lifestyle characteristics of the study participants. The questionnaire was administered prior to commencement of the focus group sessions.

Table 1. Focus Group Guide: Exercises and Cancer

1. Were there any factors stopping or encouraging you to exercise during/after cancer? What are some of these key barriers or facilitators that keep you exercising or not exercising?
2. Have you heard any beliefs (i.e myths) linking physical activity and breast cancer?
3. What key messages have you gleaned from these three posters? What is most important to conveyed to women with breast cancer?

Table 2. Characteristics of Participants

	Total	Completed Treatment	Undergoing Treatment
Participants	14	6	8
Ethnic			
Chinese	9 64.3	5 83.4	4 50.0
Indian	2 14.3	0 0.0	2 5.0
Malay	2 14.3	0 0	2 25.0
Others	1 7.1	1 16.7	0 0
Marital status			
Single	2 14.3	1 16.7	1 12.5
Married	11 78.6	5 83.3	6 75.0
Widowed	1 7.1	0 0	1 25.0
Highest educational level			
Primary	1 7.1	0 0.0	1 12.5
Secondary	7 50.0	3 50.0	4 50.0
College	2 14.3	1 16.7	1 12.7
University	4 28.6	2 33.3	2 25.0
Occupational status			
Full time	2 14.3	2 33.3	0 0.0
Part time	2 14.3	0 0.0	0 0.0
On medical leave	0 0.0	0 0.0	2 25.0
Unemployed/retired	5 35.7	2 33.3	3 37.5
Homemaker	5 35.7	2 33.3	3 37.5
Financial status (RM \$)			
500 - 1000	6 42.9	2 33.3	4 50.0
1001 - 3000	3 21.4	2 33.3	1 12.5
3001 - 5000	2 14.3	0 0.0	2 25.0
More than 5000	3 21.4	2 33.3	1 12.5
Stage at diagnosis			
0	1 7.1	0 0.0	1 12.5
I	4 28.6	3 50.0	1 12.5
II	6 42.9	3 50.0	3 37.5
III	2 14.3	0 0.0	2 25.0
Don't know	1 7.1	0 0.0	1 12.5

Permission was obtained from participants to audio-tape the sessions. It was later transcribed verbatim.

of participants were stated in Table 2.

Focus Group Guide

The focus group guide (Table 1) consisted of a semi-structured question to cover their perceptions on physical activity and breast cancer, barriers and facilitators to exercise. The interviews end with exploration of their views on the poster impact to promote active lifestyle. Three posters for promoting physical activity in relation to cancer risk prevention were used as visual props.

Data Analysis

The transcripts were analysed by NVivo 8 using thematic analysis. Transcripts were systematically analysed to identify emergent themes related to mythical perceptions, perceived barriers and facilitators to exercise. Thematic analysis involving content analysis to extract meanings of the participants was used for qualitative data. The raw data were coded into categories of similar meaning. Categories were established, resulting into content themes that summarized the meaning of the data, which addressed the purpose of the study.

Results

Demographics

Participants in the CT focus group were survivors who had been diagnosed with breast cancer for more than 12 months and had completed with their treatment. They had previous experience with work groups organized by University of Malaya Medical Centre. On the contrary, participants in the UT focus group were just diagnosed within six months period and had no link with any work group in University of Malaya Medical Centre aforesaid. The overall mean age is 55.0 ± 8.74 years; average mean age in CT group is 58.2±5.00, whilst the mean age in the UT group was 52.6±10.45. Majority of the participants are Chinese (64%), married (78.6%) and had up to secondary schooling (50%). The socio-demographic characteristics

Qualitative Findings

Three categories of themes were identified – barriers, facilitators and myths. The themes and sub-themes under each category are presented in Table 3. For each of the barriers and facilitators, three subthemes were identified: i) personal, ii) environmental and iii) Psychosocial. For the myths about physical activity, four subthemes were identified: i) illness-related myth, ii) age-related, iii) perceived purpose of physical activity and iv) setting-related.

Barriers to Exercise

The subthemes were grouped under physical and personal factors, environmental factor and psychosocial factors (see Table 3). Some themes from the two groups converged into shared factors and some were distinctive factors. Shared personal factors were personal factor (e.g. time, fatigue and age) and physical limitations (e.g pain, weakness, unfit). Both groups cited age as a barrier but utterances were more in the CT group and this may be because the members are slightly older with higher mean age range.

The distinct factors exclusive to the UT group included the need to conserve energy and fear of infection analyses as key barrier preventing more physical activity engagement. Using depression and pain as the strongest predictor of fatigue in cancer survivors, n=1957 (Bower et al., 2000), it was found that about 34% of breast cancer patients (n=763) reported significant fatigue and at even 1-5 years following diagnosis (Bower et al., 2006). Also, fear of infection has been highlighted in an earlier focus group on Malaysian women with breast cancer. Participants in the completed treatment (CT), perhaps being free from the preoccupation on treatment, appeared to highlight more structural factors such as limited facilities, inconvenient location of gyms and parks for exercising. Participants in the undergoing treatment (UT) were more expressive of barrier like lack of time

Table 3. Perceived Barriers, Facilitators and Myths of Physical Activity

<ul style="list-style-type: none"> •Personal -Personal factor (tired, lazy, time management, old- age issue ...) -Conserve energy for treatment -Physical limitation (back pain, weakness, poor fitness, ...) 	<ul style="list-style-type: none"> •Personal Needs -Keep myself fit -Need to build-up energy -Maintain health 	<ul style="list-style-type: none"> •Illness -Sick people are not supposed to do exercise - I need to conserve energy for our treatment - Our veins would 'bind together' if vigorous activity is carried out during treatment
<ul style="list-style-type: none"> •Environmental -Crimes (being attacked/robbed when exercising outside)# -Weather (raining or too hot) -Park are too far -Facilities 	<ul style="list-style-type: none"> •Environmental Access -Easy to engage exercises like brisk walking, around the housing community. -Exercise places (park & facilities nearby) 	<ul style="list-style-type: none"> •Age -Being old - I cannot do as much physical activity
<ul style="list-style-type: none"> •Psychosocial -Role responsibility (home/office commitment) -Lack of social support (advise not to#, lack of ex companion#) -Feels house chores is enough -Afraid of infection if exposed outdoor or in public 	<ul style="list-style-type: none"> •Psychosocial -Socializing -My support groups -Fight side effect of cancer -I ncrease mood -Avoid recurrence -Pleasure 	<ul style="list-style-type: none"> •Purpose -Physical activity is for those who are aiming for a slim figure
		<ul style="list-style-type: none"> •Setting -PA must be done outside the home –park are too far, so cant exercise; -Afraid of exposure to crimes against them (e.g pick-pocket, being attacked...) -Afraid of infection when exercising in public -Bad weather stops going out to exercise

and tiredness which makes sense as they have to manage the multiple hospital appointments and are subjected to the side-effects from treatment too.

Women in the CT group appeared to be more aware of the benefits of physical activity. Participants from both groups gave many excuses or barriers for not exercising. However, the UT group tends to just go along with their current low mood whilst the women from the CT group would attempt to force themselves out of the inertia. The CT group are also motivated by their significant others, whereby they expressed that their family members are encouraging them to persevere in physical activity participation.

'Barriers for me include... Laziness..to be very frank. Often, I will make excuses eg its raining, ...or..if I have something to do...I have lots of excuses but ...I think I should force myself to exercise, I know it's good. My husband encourages me to exercisebecause its good and also helps me (improve bone health) as I am into menopause now. I feel that exercise is a good thing ... but I just have a lot of excuses so as not to exercise ...' (n1fg1). 'Of course, I am lazy, tired and all ... so I stay at home and I don't want to travel and I don't want to drive also. ...' (n6fg2).

The influence of physiological and psychological variables of being lazy cannot be ascertained within the present study, however, motivation may be an imperative factor to sedentary lifestyles (Pinto et al., 2002). Cancer is a debilitating illness and low mood and depression can be the key underlying factor in their sedentary habits. Positive correlations between anxiety and depression have been found in patients undergoing chemotherapy (Schreier and Williams, 2004; Pandey et al., 2006). Adding on, studies have shown that even stress and depression can inhibit efforts made to lose weight (Hainer, 2006) or be more active. Nevertheless, physical weakness and/or limitations as a factor preventing physical activity were uttered in both groups. Participants reported the physical limitation impeded their ability to exercise as much as they would like. Again in the completed treatment the desire to try and give the best is heard but in the UT, the urge to just give in or flow with it was expressed.

'I can do to the best of my ability..but I have terrible backache..I can't bend for too long...Even during gardening I just water plants, I can't really loosen soil or anything slightly strenuous, it makes my backache worst'(b6fg1). I feel tired and weak and I feel dizzy too. I can't do any activity at all. Also, the pain (body) happens occasionally... and I am not sure what is the cause, and with it dizziness also comes and goes. Sometimes I feel good and comfortable, but sometimes my body will wobble. Just not physically well to exercise' (n3fg2)

Closely related to setting of exercise is the environment crimes and weather as factors hindering participation in physical activity. Weather thwarts participants from partaking outdoor exercise like activity in the parks

or in driving to the gym for gym work. A participant reported the safety issue concerning doing exercise in the neighborhood worries her spouse who discourages her from engaging in more outdoor exercise than she would like. Another from the UT group shared that her children are discouraging her from going out due to fear of her being infected.

'The only barrier for me is my husband's fear. He said, not to go out for brisk walk, ...don't create any trouble(for myself or him)...you know..these reports on snatch thieves, attacks, rape etc in the community.....' (n2fg1). 'Cause my children don't want me to go out. They are so worried that I will be infected by viruses and everything....' (n2fg2)

Research evidence stressed that women may face different barriers such as perceptions of safety and environmental access than men, which can limit their physical activity participation (Eyler, 2003). Social support is also a main correlate of physical activity (Jakicic, 1997). Literature suggested that social influences were pronounced at earlier stages of exercise adoption (Troped and Saunders, 1998). Lack of social support from family and friends can be a crucial factor impeding active lifestyle. A supportive environment is a prerequisite to adequate physical activity levels.

The issue of roles and responsibilities was mentioned in both groups but had perceived as a critical issue in UT group. Prioritizing exercise over traditional female-caring roles can be a difficult decision for these Asian women with strong ties of extended family cultures, and many are living within an extended family system. A compounded barrier comprising of childcare, housework and job commitment is a critical variable for physical activity engagement amongst women today who have to juggle multiple roles. One woman from the UT group lamented...

'We have to work for our family, work for ourselves, and this economy-factor is the key barrier stopping me to exercise. Hmm (sigh) ... you know, my friend say you come la, come and do qi gong, 6 o'clock in the morning then 'yam cha' (have tea) with them. I said I cannot because I have to work. Then they suggested, ...ok..come at evening time, you come and do qi gong with us...., I said I cannot too because I have to send my son for his tuition-class and my daughter to her piano-class. You see? All these responsibilities ...a lot of work need to be done by me. If I have the time and if I have the money, I may be able to put these duties aside (to just look after myself)' (n4fg2)

This finding is consistent with the previous research, which indicated that involvement in multiple roles such as mother, employee, and caretaker significantly affects time to exercise (Ainsworth, Wilcox, Thompson, Richter, & Henderson, 2003). However, women need to be aware that all those running around are potential source of moderate-vigorous physical activity too.

Some women experienced negative psychological outcomes that impeded functioning and active lifestyle.

A woman reported being moody or 'always have negative thinking' after being diagnosed with breast cancer. One woman lamented,

'I feel sad. Even when I wanted to go out I also feel guilty...With other kind of physical sickness it's ok but with cancer...so difficult to get myself out of this..... negativity. (n2fg2)'

This highlighted the need for dedicated service provision during early diagnosis, with a focus on social and psychological support (Burgess et al., 2005). In summary, the women experienced many perceived key barriers hindering their engagement in physical activity. Promoting physical activity in breast cancer population requires more collaborative efforts amongst health professionals in their networking with various resources within the hospital as well as in the community.

Facilitators to exercise

Central to understanding the influencing factors of physical activity is the question of why people engage in physical activity and exercise when time could be used and spent in other ways. Three themes emerged and are presented in Table 4.

Most of the facilitating factors for physical activity were brought up in the CT group. Both groups expressed that exercise can keep oneself fit but the CT group expanded the idea and reported engaging in physical activity may also build up energy and assist in maintaining health. The information gained from cancer self-management group may increase the awareness of physical activity in relation to breast cancer management. This suggested by increasing awareness and benefits of physical activity related to cancer, we may enable the community to increase their physical activity engagement. However none of the participant raised the view that physical activity has a significant role in cancer prevention or cancer recurrence. One key benefit of exercise is the pleasant feeling gained from post-exercise involvement. One woman from the completed treatment group reported,

'When I started (exercise) I feel very much better... more energetic.. And I carry on from there and usually at the end of activities, I do feel very much better.' (b3fg1)

Feeling of contentment may encourage more engagement in physical activity, which further enhances confidence level leading to increase tenacity to persevere. These findings are concurrent with literature suggesting positive experience of physical activity will influence future physical activity behavior by promoting and shaping self-efficacy for exercise and by developing physical activity skills (Sherwood and Jeffery, 2000). Women in the CT group reported engaging in brisk walking and had persisted as a habit when these factors were not constraint by time, environment and companionship. A number of participants reported doing exercise in a field close to their house had become an important facilitator correlated with exercise intention. Research also suggested that

there is a modest relationship between access to facilities and physical activity (Sallis et al., 1990). Environments which are conducive to physical activity likely has a strong impact on population activity levels (Sallis et al., 1990). The relevance of environmental resources for physical activity and strategies for improving access to facilities deserves further attention.

The psychosocial factors reported in both groups mainly related to social support received and the therapeutic effect of belonging to a group. The examples noted included:

'We have a group there, we walked quite often... without them I wouldn't (b1fg1) 'I make it a point to go for the Qi Gong class...Because that's where I meet friends...I think it's a driving force for me.' (n5fg1)
'With a group of ladies, we do brisk walking for one hour. When finished we break off and I then go for my usual activities. Without them I wouldn't, because they have the music (pull factor) for me to do together with them...' (n1fg1)

*'After the 4th day, I started back my Qi Gong..and pick up other exercise.
So I think it is good to find a group of people and do together like line dancing...because being alone is very lonely and harder to sustain the physical activity.'* (n4fg2)

Research indicated social support and objective indices of support, such as exercising with a partner, predict higher physical activity levels (Sherwood & Jeffery, 2000). In recent years, the value of support groups for cancer rehabilitation has come into interest of research. Women from CT group reported the positive impact of support group on continual involvement in physical activity. One woman reported,

'When I joined the (medical centre's survivor) program, there is a part on exercise and healthy lifestyle and we had a guideline on how to start physical activity ... I followed from there'.

A study found that group sessions promoting exercise have an unintended effect that created a supportive environment for the cancer survivors which allowed them to initiate an exercise program together (Burnham and Wilcox, 2002). In summary, many facilitators which can be addressed to enhance participation in physical activity were identified in CT group than UT group. The participants from the CT group sounded more proactive towards an active lifestyle and this could be contributed by the fact that they benefited from support groups to be proactive in active lifestyle.

Breast cancer incidence rates are higher around menopause (40 to 50) and then the rates decline with age (Bray, 2004). Around this age, most women are also housewives needing to juggle lots of roles and responsibilities. It may be more effective to highlight the message to avoid being inactive, than to send the message that they need to exercise. The reason is that these

participants' expressions of exercise seemed to conjure an entrenched view of exercise as structured gym-work outside the home, which most may not be able to find additional time. Household activity should be viewed as a potent source of physical exercise. One of the crucial feedbacks from a woman (when shown three posters on physical activity promotion) in the CT group highlighted a message from one of the three poster which state, "Avoid being sedentary" as most fundamental. Recent literature are promoting that any movement is better than no movement (Ainsworth, 1998). There is a significant inverse association between sitting hours during work and breast cancer risk among postmenopausal women (Kruk, 2009).

'these posters are all important to show a strong relationship between exercise and cancer but to me, what is most basic and an effective message is this one on avoid being sedentary. Very important...because if you ask women to exercise they come with many excuses, but if you tell them don't stay still, just move... they are more likely to not stay sedentary.'

Myths about Exercise

Many cancer survivors are skeptical about engaging in physical activity even though the efficacy and safety of physical interventions commenced both during and following cancer treatment have been proven (Courneya, 2003; Turner, 2004; Courneya and Friedenreich, 2007; Monninkhof et al., 2007). In this study, four categories of myths were identified: i) illness, ii) age, iii) aim, and iv) setting. The first three myths were echoed in the UT group whilst the fourth myth was a common factor in both CT and UT groups. The UT participants perceived that their engagement in physical activity was restricted by the fact that they were ill and should not exercise too much because they needed to conserve energy for treatment. Too much exercise was seen as not good for them. The idea of conserving energy seems to convey the typical

Chinese view of a need to balance energy (or qi) so that one can fight the illness. One Malay woman reported the veins would bind together if vigorous activity was carried out during treatment, suggesting the mythical concept may exist in the Malay community and further study is implicated.

A woman from completed treatment group reported that she already has a slim figure. It seems exercise to her was primarily for one to get in shape and/or to get a slim figure.

'I don't do any exercise at all. I thought since I was already slim, I don't need to do physical activity Also, I'm already doing a lot of housework. I sweat a lot with my housework. I don't do any structured type of physical activities' (n1fg1)

The posters on active lifestyle did cause a shift in their perception of physical activity. The utterances suggested a shift in their awareness and acceptance that physical activity can reduce cancer risks. The key principles on physical activity recommended by scientists can be summarized as i) some activity is better than no activity, ii) its health benefits increase with the increase of the intensity, frequency and/or duration of activity, iii) its health benefits outweighs the health risks, and iv) its health benefits are largely independent of gender, race and ethnicity (Oja, 2010). In short, as suggested by one woman from the CT group, the message on avoiding sedentary behavior from the poster may be the best clear, effective message to send out to women with breast cancer. Communication messages aimed at the general public needed to be clear, simple, appropriate and target at specific-group to support people's personal behavioural choices. Despite convincing evidence that physical activity reduces risk, women needs to be encourage beyond the myths and barriers and perhaps, at this level, that all they need to do is move. Later, they need to be taken to a higher level ensuring they engage in the correct dosage

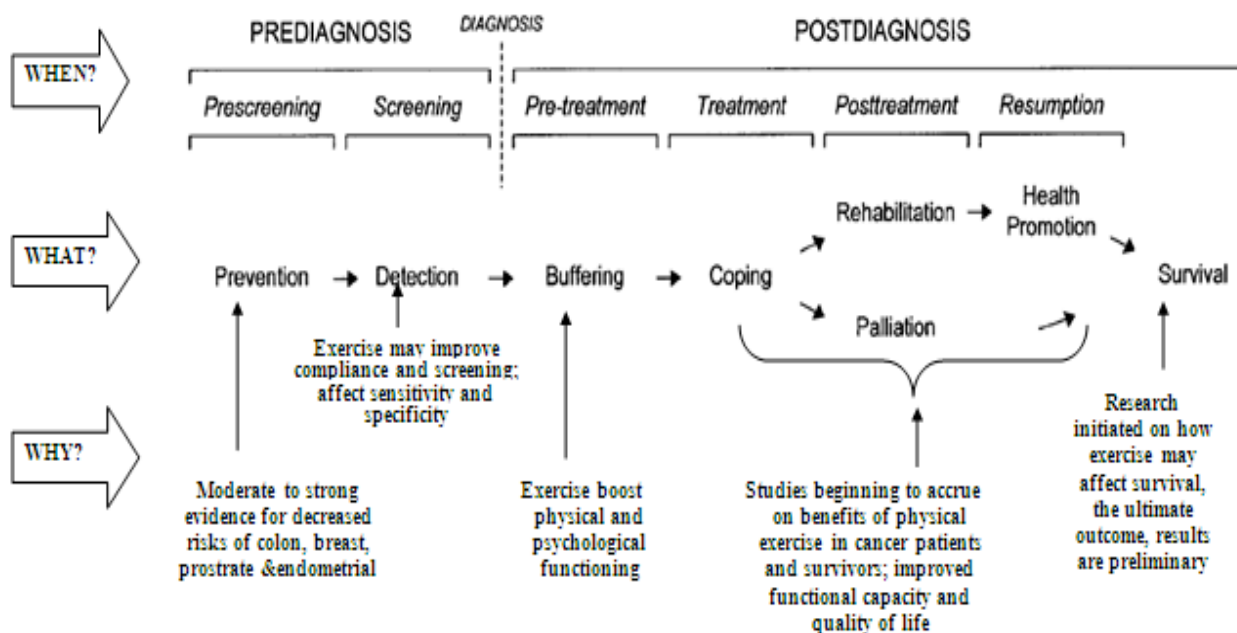


Figure 1. Organisational Model for Implementing Physical Activity along the Cancer Continuum

(duration, intensity, frequency) of activities. Research have led to new hypothesis that activities performed at a vigorous levels of intensity may be associated with hormone production and uptake, immune function, and/or prostaglandin production and uptake, and thus, the total energy expenditure may be important to maintain body weight and energy balance, levels both of intensity and total activity need to be ascertained in future studies of physical activity and breast cancer (Ainsworth et al., 1998). Limitations of the study include the small numbers of participants and possible self-selection to participate in focus group research. Further study will explore the exclusive three main cultural-ethnic diversities for perceived barriers and misconceptions. Future studies may examine subgroups of the breast cancer population (such as menopausal, working, social economic, basal metabolic index and other medical status) to gain insight into multilevel correlates of physical activity.

In conclusion, many countries in the Asia-Pacific region show a steep rise of overweight and obese people in the populations, as a result of a shift from traditional to more western lifestyles-characterised by excess energy consumption, reduced physical activity, and more affluent standards of living, and which is highly associated with increased risk of mortality from cancer (Parr et al., 2010). This small study highlights that women undergoing treatment were more reserved with physical activity involvement whilst those who had completed treatment were more positive about engaging in exercise. However, the key message is that better attitudes do not mean a translation into practice and even when initiated, adherence is an issue as with all health behavior changes. Promoting physical activity in cancer survivors may require extensive counseling and support from health professionals networking with various resources. The PEACE framework proposed by Friedenreich and Orenstein (2002) is a useful guide for practitioners in Asia Pacific on policy planning for physical activity intervention along the cancer continuum (Figure 1).

The findings endorsed a range of personal, environmental and social variables are important to consider when designing interventions. These determinants do vary in importance across settings, so community-specific tailoring of studies will be required. This paper contributes fundamental information to the sparse literature about physical activity/inactivity with women diagnosed and living with breast cancer. As both incidence and survival rates from breast cancer are high, many women are now living with the diagnosis of breast cancer. With many more years to benefit, socio-behavioural policies and intervention need to be in place to facilitate a healthy cancer survivorship.

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