RESEARCH COMMUNICATION

Barriers to Exercise: Perspectives from Multiethnic Cancer Survivors in Malaysia

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Abstract

Background: Many cancer survivors are still not active enough to reap the benefits of physical activity. This study aimed to explore the correlation between perceived barriers and participation in exercise among multi-ethnic Malaysian women with breast cancer. Methods: A cross-sectional study using a pre-post questionnaire and a media-clip as a cancer control strategy was conducted on a random sample of women with breast cancer. The tools were structured questionnaires to collect socio-medical demographic and physical activity data (e.g. barriers, exercise self-efficacy). Results: A statistically significant relationship between level of physical activity before and after diagnosis of breast cancer (n=51, $\chi 2$=70.14, p<0.01) was found, whereby participants who rated more hours of physical activity before diagnosis were likely to persevere with exercise after diagnosis, r(49)=0.73, p<.01. Some 76.5% of women engaged in low level activity and 23.5% of the participants engaged in moderate level of physical activity. Conclusions: Despite the many benefits of physical activity, the majority of survivors in this study were not found to be physically active, and did not even consciously think of exercise participation. Lack of time is the main barrier amongst those survivors who are predominantly 40-50 year old housewives juggling with household chores, childcare and/or job commitments. Public health messages stressing that short bouts of exercise or some exercise are better than no exercise needs to be emphasised consistently.

Keywords: Physical activity - breast cancer survivors - barriers - benefits

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Introduction

Over the past 50 years, there has been mounting evidence linking physical inactivity to a host of chronic conditions, cancers and premature death. The list of beneficial effects across the body's physiological functions, as well as for physical and psycho-social well-being has generated much interest amongst researchers. Research evidence suggest that people with adequate and regular activities are less likely to develop stroke (Booth et al., 2000), type II diabetes (Helmrich et al., 1991), obesity (Di Pietro et al., 2004), osteoporosis (Greendale et al., 1995), colorectal cancer (Heineman et al., 1994), breast cancer (Bianchini et al., 2002), endometrial cancer (Voskuil et al., 2007), lung cancer (Lee et al., 1999) and prostate cancer (Hsing et al., 1994), with improvement on overall quality of life (Fletcher et al., 1996).

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 and Kleihues, 2003). Physical activity is long been recommended as a potentially modifiable lifestyle factor to breast cancer survivors. Being overweight at the time of breast cancer diagnosis (Chlebowski RT et al., 2002, Daling et al., 2001) and weight gain after diagnosis (Kroenke et al., 2005) are associated with poorer survival in many studies. Increase in physical activity has been shown to be inversely related to weight gain during breast cancer survival (Demark-Wahnefried et al., 2001). Today's consensus message to the population-at-large including breast cancer survivors is that accumulation of a minimum of 30 minutes of moderate intensity activity (such as brisk walking) on at least 5 days of the week, have important health benefits. There is insufficient research to examine the engagement and pattern of physical activity in a multiethnic population. This study aims to explore the racial differences and barriers to physical activity across the multiethnic breast cancer population so that the intervention is planned tailoring to specific needs of ethnic-groups.

Materials and Methods

Ethical approval for this study was obtained from the medical centre research ethics committee. First phase of the study comprised of women with breast cancer, who were attending an introductory session to active lifestyle program organised at the University of Malaya. Due to low uptakes, the second phase of survey was conducted via telephone interviews with randomly selected patients who were identified from database of women diagnosed with breast cancer between 2008 and 2009 in University

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Malaya Medical Centre. Informed consent was obtained at the beginning of the session. A structured questionnaire to collect socio-medical demographic data, pre-diagnosis physical activity pattern, current health-related physical activity (International Physical Activity Questionnaire), barriers to physical activity, exercise self-efficacy and awareness of physical activity guidelines and benefits for breast cancer. The barriers to physical activity and awareness of physical activity i) guidelines and ii) benefits were previously piloted on multiracial women with breast cancer who participated in active lifestyle focus group discussion. A video pertaining to guidelines of physical activity and advantages of physical activity to cancer was presented to participants. Participants were assessed on knowledge of guidelines and benefits at pre- and post-viewing. Telephone-interviewed subjects were not assessing on the efficacy of video because of technical limitation.

Data was analysed using SPSS version 17 and Microsoft Excel. The significance level used was $p < 0.05$. Descriptive analyses were conducted to describe the total energy expenditure, self-efficacy for exercise, and barriers to regular physical activity. The $\chi 2$ analyses and analyses of variance were used to compare the ethnicity subgroups on socio- and medical variables.

Instruments

International Physical Activity Questionnaire – Short Form (IPAQ). Self-reported physical activity was obtained by the last 7 days, short and self-administered version of the IPAQ. The questionnaire collects information on time (i.e. number of sessions and average time per session) spent walking, in moderate-intensity physical activity, in vigorous-intensity physical activity and sitting, on weekdays and weekend days. Questions regarding participation in moderate and vigorous physical activity were supplemented by concrete examples of activities commonly performed. Data from the questionnaire were summed within each item (i.e. vigorous intensity, moderate intensity, walking) to estimate the total amount of time spent in PA per week. Total daily PA (MET- min day-1) was estimated by summing the product of reported time within each item by a MET value specific to each category of PA and expressed as a daily average MET score (where MET is metabolic equivalent; 1 MET=resting energy expenditure) according to the official IPAQ scoring protocol (www.ipaq.ki.se). Vigorous intensity PA was assumed to correspond to 8 METs, moderate-intensity activity to 4 METs and walking to 3.3 METs (www.ipaq.ki.se).

Exercise self-efficacy scale. The perceived self-efficacy in exercise is concerned with people's confidence in their capabilities to attain regular exercise. The 18-item exercise self-efficacy scale, developed by Bandura (2006), utilised a Likert scale of 0 to 100, whereby 0 refer to "cannot do at all", 50 to "moderately certain can do" and 100 to "highly certain can do". Participants self-rated how certain (confidence) they could get themselves to perform their exercise routine regularly (three or more time per week), under a range of conditions.

Results

Demographics

A total of 51 breast cancer survivors participated in the survey. The subjects were mainly Chinese, followed closely by Indians and Malays. Their age ranged from 33 to 63 years old (mean: 50.1+ 8.25). The body mass index (BMI) ranged between 18.3 and 33.3. Subjects were diagnosed for at least nine months to as long as 83 months. Most of the participants were married (n=41), have three to five children (n=22), graduated with secondary education (n=30), post-menopause (n=26) and was diagnosed at stage II (n=25). Independent $\chi 2$ tests showed that there is no significant difference between three ethnicity groups in educational level, financial status, marital status, occupation, duration (months) since diagnosis, stage at diagnosis and type of cancer. More than 50% of participants self reported that they participated in moderately active or active lifestyle, which includes at least 1 to 2 days light exercises per week at time of survey. There is statistically significant relationship between level of physical activity before and after diagnosis of breast cancer ($\chi 2(9) = 70.14$, $p<0.01$). Significant strong correlation indicated that participants who engaged in more hours of physical activity before diagnosis were likely to persevere the exercise after diagnosis, $r(49)=.73$, $p<.01$.

Physical Activity (IPAQ)

All participants were participating at low or moderate level of physical activity which the MET value ranged from 16.5 to 1080 minutes/week. Missing values and outliers were substituted with total mean score. 76.5% engaged in low level and 23.5% of the participants engaged in moderate level of physical activity. A comparison of three ethnicity groups (Chinese, Indian and Malay) was performed. The F test was not significant $F(2,44)=1.82$, $p>0.05$. This means that there was no difference in level of physical activity due to ethnicity.

Self-efficacy

The scores of exercise self-efficacy scale are categorized under three factors (interpersonal, competing-demands, and internal-feelings sub-factors) based on exploratory factor analysis by Noroozi et al (2010). Across ethnic groups, the Chinese have highest scores for exercise self efficacy. Across the self efficacy's sub-factors, the 'competing-demands' for exercise is the highest-rated factor by the women. However, there was no significant difference apparent across sub-factors, or in the total exercise self-efficacy scores among the three ethnicity groups.

Barriers to Physical Activity

None of the subjects identified they were advised not to exercise. Almost 90% claimed that they were not even thinking of exercise. Time-factor was the single most identified factor by Chinese and Indian breast cancer survivors as the key barrier to routine exercise (Table 1). A significant relationship was observed between time issue and household chores ($\chi 2$ (1) = 10.55, $p<0.01$).

Table 1. Summary of Factors Hindering Routine Exercise among Malaysian Breast Cancer Cases

Barriers	All (n=47)		Malay (n=14)		Chinese (n=22)		Indian (n=15)	
	Yes	No	Yes	No	Yes	No	Yes	No
I wasn't even thinking of exercising	11.8	88.2	21.4	78.6	0	100	20.0	80.0
My body feels weak	13.7	86.3	28.6	71.4	9.1	90.9	6.7	93.3
I have bodily pain (eg back)	27.5	72.5	50.0	50	22.7	77.3	13.3	86.7
No proper place to exercise	15.7	84.3	28.6	71.4	9.1	90.9	13.3	86.7
I don't know how to exercise	15.7	84.3	35.7	64.3	9.1	90.9	6.7	93.3
I don't have the time	58.8	41.2	42.9	57.1	68.2	31.8	60.0	40.0
I feel I don't need to exercise	3.9	96.1	0	100	4.5	95.5	6.7	93.3
I'm too old to exercise	3.9	96.1	0	100	4.5	95.5	6.7	93.3
I feel too sad to exercise	2.0	98.0	0	100	4.5	95.5	0	100
I don't have the interest to exercise	9.8	90.2	7.1	92.9	4.5	95.5	20	80.0
I'm too lazy	27.5	72.5	21.4	78.6	31.8	68.2	26.7	73.3
I feel uneasy/shy to exercise in public	9.8	90.2	14.3	85.7	13.6	86.4	0	100
I think exercise will not improve my condition	3.9	96.1	0	100	4.5	95.5	6.7	93.3
I think exercise will make my condition worse	3.9	96.1	7.1	92.9	4.5	95.5	0	100
I don't have friend to exercise with	33.3	66.7	57.1	42.9	27.3	72.7	20	80.0
My worries/stress stop me from exercising	5.9	94.1	7.1	92.9	9.1	90.9	0	100
I have many household chores to do	51.0	49.0	42.9	57.1	68.2	31.8	33.3	66.7
I have too much office work to do	23.5	76.5	21.4	78.6	22.7	77.3	26.7	73.3
The weather does not permit	39.2	60.8	28.6	71.4	63.6	36.4	13.3	86.7
I don't have transport to go to exercise	13.7	86.3	21.4	78.6	13.6	86.4	6.7	93.3
The traffic puts me off to go out for exercise	23.5	76.5	28.6	71.4	36.4	63.6	0	100
People tell me not to exercise	0	100	0	100	0	100	0	100

Efficacy of video

Wilcoxon signed-rank test was used to compare the difference in awareness about physical activity before and after the viewing of active lifestyle video (Figure 1). More than 75% of the subjects agreed that women with breast cancer can do some amount of moderate exercises during treatment (76.6%), and after treatment (85.0%) before viewing the video. A qualifying clause was added by most women who suggest that although moderate activity is feasible, women should never exert themselves during treatment. The percentage of consensus agreement (that one can engage in ercise) increased at post-viewing of the active lifestyle video (i.e. by 2.0 % for moderate exercises-during-treatment and by 6.2% for exercises-after-treatment). More than ¾ of participants have heard that adults should do at least 30-minute moderate exercise for three to five days per week. After watching the video, only 50% of the participants agreed that three bouts of 10-minute sessions of exercise give the same effects as one session of 30-minute exercise whilst 39% disagreed with this notion and 11% were not convinced. Overall, the subjects perceived that the video is effective in influencing cancer survivors to engage in active lifestyle (M=7.7, SD=2.0, p=0.02). As its generally difficult to get people to adhere to a regular exercise, the message the one can accumulate short bouts of 10 minutes exercise needs to be emphasised aggressively across all levels of population.

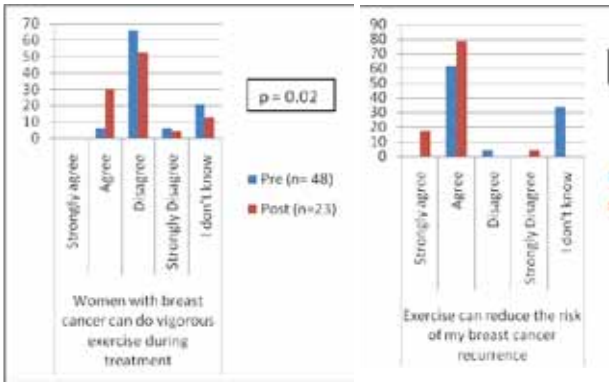

Figure 1. Comparison of Responses before and after Viewing an Active Lifestyle Video

Discussion

Increasing awareness and adoption of regular physical activity is a global health priority proposed by World Health Organisation (2004). The goal of this study is to examine the factors associated with physical activity among women previously diagnosed as having breast cancer, assuming the role of ethnicity as the central of contemplation. The ethnic demographic pattern was in congruence with data reflected Chinese led the highest incidence rates of diagnosing with breast cancer among all races in Malaysia (Lim and Halimah, 2004) .

Physical activity is put forward as a principal risk for approximately 21-25% of breast and colon cancers (World Health Organization, 2009). The minimum recommended amount of physical activity for an adult is "moderate-intensity physical activity for at least 30 minutes on five or more days of the week", or "vigorous-intensity physical activity for at least 20 minutes on three or more days of the week" (Centres for Disease Control and Prevention, 2009). A Nurse Health Study that assessed leisure time physical activity beginning in 1986 with a cohort of 2,296 women, concluded even modest amounts of physical activity after a breast cancer diagnosis may promote survival (Holmes et al., 2004), particularly the stage I, II and III. Taking into account the stage of disease, obesity and other factors, the relative risk of death from breast cancer was decreased with every level of physical activity compared with being sedentary. The risk of death from breast cancer was 19 percent less among women who undertook 180-534 met-minutes/week of exercise; 54

percent less for 540-894 met-minutes/week; 42 percent less for 900-1434 met-minutes/week; and 29 percent less for 1440 or more met-minutes/week of recreational exercise. As only 50% of the participants agreed that three bouts of 10-minute sessions of exercise give the same effects as one session of 30-minute exercise after watching the video, (despite the significant findings that the subjects generally perceived that the video is effective in influencing cancer survivors to engage in active lifestyle), more aggressive public messages needs to be disseminated. More than ¾ of participants have heard that adults should do at least 30-minute moderate exercise for three to five days per week. After watching the video, only 50% of the participants agreed that three bouts of 10-minute sessions of exercise give the same effects as one session of 30-minute exercise whilst 39% disagreed with this notion and 11% were not convinced. Many seemed to be indoctrinated with the notion that physical activity must be at least 30 minutes in duration and must be performed in one session. Since its generally difficult to get people to adhere to regular exercise, as well as the key finding on 'no time to exercise' as a key barrier, a public health message that people can accumulate short bouts of 10 minutes exercise needs to be emphasised aggressively across all levels of population. In short, some exercise and short duration is still better than being sedentary.

Despite all the convincing and probable evidence on many benefits, cancer survivors in this study are still not physically active, and about 88 % did not even think of engaging in physical activity. A study conducted in northern Alberta showed that only 34% out of 377 breast cancer survivors who were about three years post-diagnosis were meeting public health guidelines for physical activity (Vallance et al., 2008). This suggests the significance of being physically active is not deeply rooted in breast cancer population and thus, a stronger emphasis on cancer survivors' participation in physical activity as role model and as a promotional strategy may be pursued. Participants who have already participated in regular exercise prior to diagnosis were more likely to continue participating in physical activity post-diagnosis. Targeted physical activity promotion amongst cancer population is necessary; highlighting the direct significant link between activity and a lowered breast-colon cancer recurrences. Promotion of active lifestyle should be delivered nationwide, and occupational therapists should be more engage in the therapeutic lifestyle redesign with cancer survivors.

Exercise self-efficacy is relatively low which explains the low level of physical activity engagement in this study. This group of participants perceived the situational/ interpersonal factor as the lowest exercise self-efficacy factor, which is consistent with finding on Korean adults with chronic diseases (Shin et al., 2001). The similarity may result from collectivism-orientated culture of two countries where the external sub-factor related to other persons/ organisational settings can markedly affect the perception of exercise self-efficacy and participation in physical activity for an individual (Lee, 1987). Lack-of-time factor was identified as a key barrier to participation in physical activity among nondisabled adults (Johnson et al., 1990, Nelson, 1991). Lack of time was the most lamented barrier to engaging in routine exercise in this study, especially for Chinese and Indian survivors.

The Chinese respondents are also preoccupied with practical issues such as household chores. These women may still be inclined toward a traditional Asian attitude of female roles and assuming much responsibilities of domestic chores and cares for children (Farh et al., 1997). The Indian respondents reported their time was also mostly taken up by household chores, and work commitments although 46.7% of Indian breast cancer participants work full-time. Thus Indian women also assumes multiple roles such as mother, employee and caretaker which significantly affects time to exercise (Ainsworth et al., 2003).

Most Malay respondents identified either 'no time', 'no friend to exercise with' and 'household chores' as their key barriers to routine exercise. Social support is a crucial contributor to activity adherence. A cross sectional study with 1818 adults concluded the source of support is predictive of the impact on physical activity where social support from friends was found to be significantly related to activity for all type of socioeconomic residents (Parks et al., 2003). Malay participants also reported the highest symptoms of bodily pain, which is one of the detrimental factors for adherence in routine exercise. Similar statements were expressed in previous focus group discussion where Malay women were rather preoccupied with "vein becoming entangled" if they engaged in vigorous form of exercise, and results in bodily discomfort or pain. Malays also claimed to be lacking of time for routine exercise due to engaging in domestic chores. Across the multiethnic women, dual role of work-homemaking chores seems to be a prevailing issues interfering with time for exercise. Parks et al (2003) reported adults who experience higher numbers of personal barriers such as lack of time were known to be less active, which is in concordant to current study.

Furthermore, Chinese claimed that their exercises such as brink walking or Qi Gong were greatly affected by the weather. The weather thwarts the engagement in routine exercises especially for outdoor exercises. The infrastructure in Malaysia is lacking of equipped and sheltered area for physical activity in the neighbourhood that inhibits participants from partaking in regular exercise where Malaysia is renowned for high and frequent rainfall throughout the year (Barr et al., 2007). Due to the widespread of health promotion, people are more susceptible to exercise. 100% participants claimed that they were often being encouraged to exercise regularly by health professionals, family members and friends.

Cancer treatment has long been cited as potential moderators of exercise involvement among women with breast cancer. A study from Australia found that only 13% of women on chemotherapy treatment were physically active (Milne et al., 2007). Even though 76.6% of the participants agreed women with breast cancer can do moderate exercise during treatment, most of the participants stated they were too fatigue to do any exercise during chemotherapy. In a study of 130 colorectal carcinoma survivors, Courneya and Friedenreich reported

that treatment had a significant negative effect on physical activity participation levels that did not recover completely posttreatment and that decreased physical activity levels are associated with a worse quality of life (Courney and Friedenreich, 1997).

Video on promoting active lifestyle was perceived to be effective to encourage participation in physical activity. Participants reported learning about the benefits of regular exercise and increasing in awareness. Jones et al examined the effects of an oncologist's recommendation to exercise on self-reported physical activity behaviour in breast cancer survivors beginning adjuvant treatment, indicated breast cancer survivors receiving recommendation reported significantly higher self-reported physical activity (approximately 30 min/week) over 5-week period than the control (Jones et al., 2004).

The study has limitations. The findings of this study are associations and do not infer causality. The sample comprised only 51 breast cancer survivors representing a narrow sample, therefore caution needs to be exercised when attempting to generalise to other contexts or populations. All data were obtained from a self-reported survey. With regard to the physical activity assessment, pre-diagnosis and post-diagnosis physical activity levels were assessed in the same interview, which may result in cross-contamination of responses. Pre-diagnosis physical activity levels also were assessed retrospectively and, thus, are subject to recall bias. The missing values restrained the analysis of the group data and prohibited statistical analysis of the deviation sum score. On some occasions participants could not complete all of the assessment. By substituting a missing value on a particular test by the mean score of the total sample we tried to avoid biasing the results in favor of detecting deviating scores. Further longitudinal studies could provide insights on how these barriers factors function in respect to each other as moderating variables and provide evidence on directions of causality.

World Health Organisation indicated that 60% to 85% of adults around the world are not active enough to achieve the benefits of physical activity (World Health Organization, 2002). In summary, this study provides a preliminary evaluation of barriers to physical activity among Malaysian breast cancer women. This segment of the population was specifically targeted in light of the substantial prevalence of inactivity and the risk of mortality related to physical activity determinants in this group (World Health Organization, 2009). Lack of time was found to be most identified barriers to active lifestyle as most breast cancer women were housewives or working women whose time was occupied for household chores and job commitments. More than 75% women engaged in low level of exercise and this may be contributed by low sense of exercise self-efficacy. Thus, future work is needed to take into consideration of perceived determinants to physical activity in relation to ethnicity when designing and implementing interventions that will promote adoption and maintenance of exercise behaviors among breast cancer patients. It is likely that these positive lifestyle changes may help these women to live longer, healthier lives and enhance their quality of life.

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