PUBLIC HEALTH RESEARCH

Lifestyle Practices and Its Influence on Quality Of Life among Breast Cancer Survivors

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ABSTRACT

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Introduction Breast cancer is ranked number one from the ten most frequent cancers in female, Peninsular Malaysia. Various studies provide negative evidence on malignancies and one of the end results is impaired quality of life (QOL). Studies show lifestyle approaches are key factors in enhancing the QOL among cancer survivors. The purpose of this study is to describe the lifestyle practices (LP) among breast cancer survivors (BCS) which consist of dietary intake, exercise habits, and stress management and to determine whether these practices have influence on the QOL among Malaysian BCS.

Methods This study adopts a cross-sectional study design using a self-administered questionnaire. A total of 280 BCS from public and private hospitals throughout Peninsular Malaysia had participated. The questionnaire covers QOL and LP items which consist of dietary intake (consumption of high-fat food, high-fibre food, fruits and vegetables), exercise habits, and stress management. Descriptive statistics and one-way ANOVA were used to determine the relationship between LP and QOL.

Results Mean age of the study sample was at 41 (*SD*=7.37). Majority of them were Malay (74%), 53% were diagnosed with breast cancer between 1 to 2 years whereas 54% were presented with stage 2 at diagnosis. There was a statistically significant difference ($p<.05$) in the overall quality of life score for the three LP groups (Better, No change, Worse).

Conclusions Malaysians' BCS reported an improvement in LP and the enhancement in LP may result to better QOL outcomes.

Keywords Lifestyle practices - quality of life - breast cancer survivors.

INTRODUCTION

Cancer is known as a life-threatening disease which creates highly traumatic experiences[1] and has far-reaching effect on individuals' physical, psychological, social, emotional, functional and economic well-being[2]. Breast cancer was ranked number one among ten most frequent cancers among female, in Peninsular Malaysia for two consecutive years[3,4]. The Ministry of Health Malaysia reported 29.9% of all cancer cases registered in 2006 were breast cancer[3] and again the same cancer type remain at number one with a higher percentage, 32.1% in the subsequent year[4]. Besides, cancer is also known as a worldwide phenomenon. An article on Global Cancer Statistics in 2008 reported, about 12.7 million cancer cases are approximately to occur and the most frequently diagnosed cancer among women is cancer of the breast[5].

Despite the increase number of cancer cases, most studies conducted in developed countries reported an improvement in survivorship for those who were diagnosed with breast cancer[6, 7, 8]. It is anticipated that the number of cancer survivors is likely to grow by 3% per year[9]. Nevertheless despite the increase in survivorship, numerous studies have reported impaired quality of life (QOL) experienced by breast cancer survivors (BCS)[1, 7, 10]. Cancer survivors are often left with the physical reminders such as pain, fatigue, sterility and loss of sexual function[11]. According to Dizon[12], the challenges faced by BCS transcend the medical, physical, and psychosocial realms. As such, it has been increasingly recognized that the impact of cancer does not end after treatment and that current approaches fail to address the full range of physical, psychological, social and financial needs that cancer survivors may have after treatment[13]. Hence, more attention should be given to improve QOL of these survivors beyond the focus on improvement in therapy[12]. In support Jacobsen and Jim[6] reported that, QOL was found to be a significant aspect of cancer survivorship. Magaji and colleagues[14] asserted that the impact of survivors' QOL is rarely assessed even though it is just as important as other disease-centric criteria. Since survivorship and QOL showed significant association, it is important to explore factors that contribute to survivors' QOL.

Positive lifestyle practices may possibly improve the QOL among cancer survivors[15]. Although in recent years, research focusing on the QOL and lifestyle interventions among cancer survivors has steadily increased, a majority was conducted outside Malaysia. Studies conducted in Malaysia among BCS were predominantly focused on survivorship and very little attention is given on examining survivors' QOL and the factors influencing it such as lifestyle practices. From the review articles published by PubMed, Springerlink, Wiley, and etc., no studies found related to lifestyle practices and its relationship with QOL specifically among Malaysian BCS.

Life-threatening disease may have a major impact on QOL. Overall QOL is an all comprehensive concept incorporating the entire factors that affect an individual life[16]. Ferrel and colleagues[17] construct a QOL conceptual model which significance to cancer survivors. The model can be divided into several components, including psychological well-being, social well-being, spiritual well-being and physical well being. The impact of QOL among malignant disease patient cannot be easily judge as QOL outcomes most often accessed via self-report. Moreover, QOL outcomes have considerable relevance for efforts to inform patients of the expected consequences of specific treatment and for efforts to identify the expected rehabilitative needs of cancer survivors[6].

Encouraging lifestyle practices may possibly improve the QOL among cancer survivors[15]. In a study of breast cancer patients by Kim and Yun[10], physical activity and diet were found to be significantly and positively related to QOL. This previous study suggests lifestyle approaches as key factors in enhancing the QOL of cancer survivors. Lifestyle interventions can be described by physical activity, dietary and smoking habits, as well as alcohol[18]. In tandem with the increasing trend of cancer cases worldwide, specific guidelines on lifestyle intervention for cancer prevention has been developed by several countries. Pekmenzi and Demark-Wahnefried[19] have summarized the guidelines developed by American Cancer Society (2006), World Cancer Research Fund/ American Institute for Cancer Research (2007) and American College of Support Medicine (2010). The European Society and Medical Oncology, Europe's leading oncology society has also provided a handbook on nutrition and cancer which offer recommendations for cancer prevention adapted from World Cancer Research Fund/ American Institute for Cancer Research. In Malaysia, the Ministry of Health has developed dietary guidelines for cancer patients which focus on good nutrition before, during and after treatment without the physical activity considerations. The Ministry has provided guidelines on age-specific physical activity for healthy citizens with no consideration to people with certain diseases[20]. However, physical activity guidelines for normal adult outlined by the Ministry of Health Malaysia may benefit cancer patients as well as survivors in achieving healthy lifestyle as the recommendations are very similar to age-appropriate physical activity guidelines for American cancer-related individuals[20].

Thus, the purpose of this study is to describe the lifestyle changes among BCS which consist of dietary intake (consumption of high-fat,

high-fibre food, fruits and vegetables), exercise habits, and stress management and to determine whether these changes have impact on the QOL among Malaysian women with breast cancer.

METHODS

This study adopts a cross-sectional study design using a questionnaire. Participants in this study comprised of 280 BCS who were treated at public and private hospitals from October 2012 to February 2013. A total of 17 hospitals throughout Peninsular Malaysia participated in this study (14 public hospitals, 2 university hospitals, 1 private hospital). Ethical approval from the Medical Ethics and Research Committee, Ministry of Health Malaysia, the Director of university hospitals and private hospital respectively and patient consent to participate in the research were obtained. This study employed a non probability sampling method with eligible women were those who have been diagnosed with breast cancer for at least one year and above from all three major ethnic groups namely Malay, Chinese and Indian and also any minority ethnic group. Patients excluded were women above the age of 60 years or women with other concurrent type of cancer. Sample size was calculated using G*Power software developed by Faul et al.[21] through estimated effect size of .2, α equal to .05 among three predictors for ANOVA. Thus, the sample size estimated in this study through G*Power was 261. In order to ensure an adequate response rate, the researcher decided to approach a greater number of respondents and managed to collect data from 280 BCS.

The study participants were approached to participate in this study during their hospital visits and direct interviews were carried out based on the instrument developed for this study which comprised of socio-demographic information, QOL and lifestyle practices items which consist of dietary intake (consumption of high-fat, high-fibre food, fruits and vegetables), exercise habits, and stress management).

QOL was assessed using the Functional Assessment of Cancer Therapy for Breast Cancer (FACT-B) Version 4 developed by Brady et al.[22]. This instrument consists of five dimensions; physical well-being (7 items), social/family well-being (7 items), emotional well-being (7 items), functional well-being (7 items), and breast cancer additional concerns (10 items). The items were measures on a five points scale ranging from 0 (not at all) to 4 (very much).

Lifestyle practices were assessed using five aspects of lifestyle change in terms of dietary intake which consist of 3 items (less high-fat food, more high-fibre food and more fruits and vegetables), exercise habits and stress management adapted from Robin and Pinto[23]. Respondents were asked whether there was any changes to their dietary intake, exercise habit and stress management after being diagnosed with breast cancer using 5 point scale ranging from 1 (much worse now) to 5 (much better).

RESULTS

Socio-demographic Profiles

A total of 280 BCS participated in this study. The sample as a whole was relatively from the middle aged group (*M*=41. 25, *SD*=7. 37). Most of them were Malay (74%) followed by Chinese (12%), others (9%) and Indian (5%). Almost one third of the participant had high school education. Meanwhile 69% of the respondents had tertiary level education. More than half (53%) were diagnosed with cancer between 1 to 2 years. Half of the study participants (54%) were presented with stage 2 cancer at diagnosis. All the participants had undergone medical treatment of chemotherapy (79%), lumpectomy (63%), mastectomy (45%), radiotherapy (29%), hormonal therapy (22%) and breast reconstruction (7%). Only a few (22%) of them have experienced cancer recurrence.

Table 1 Socio demographic and clinical characteristics of participants (N=280)

Characteristic	n	Percentage (%)	Mean	Standard deviation
Age (years)			41.25	7.37
<26	7	2.5		
26-35	51	18.2		
36-45	140	50.0		
>45	82	29.3		
Ethnic				
Malay	208	74.3		
Chinese	33	11.8		
India	14	5.0		
Others	25	8.9		

Characteristic	n	Percentage (%)	Mean	Standard deviation
Education				
High school or less	87	31.0		
Diploma	89	31.8		
Bachelor	82	29.3		
Master	22	7.9		
Cancer diagnosis			3.20	2.66
1-2 years	147	53.3		
3-4 years	71	25.7		
>4 years	48	21.0		
Cancer stage at diagnosis				
Stage 0	4	1.4		
Stage 1	70	25.0		
Stage 2	152	54.3		
Stage 3	50	17.9		
Stage 4	4	1.4		
Medical treatment underwent				
Lumpectomy	173	63.1		
Mastectomy	123	44.9		
Breast reconstruction	18	6.6		
Radiotherapy	79	28.8		
Chemotherapy	215	78.5		
Hormonal therapy	58	21.6		
Cancer recurrence				
	54	22.2		

Changes in Lifestyle Practices

A descriptive analysis using frequency distribution and percentage was conducted to describe the changes in lifestyle practices among the study participants as presented in Table 2. The findings revealed that majority of the participants reported better dietary intake of less high-fat food (81%), more high-fibre food (86%), consumed more fruits and vegetables in their schedule (93%). More than two-third (69%) of the study participants reported improved exercise habits whereas 23% remain unchanged and 8% reported a decline in their exercise habits. In terms of managing stress, the findings revealed that 76% of the participants reported better stress management, 15% remains unchanged and 9% reported that they were having difficulties in managing stress.

Table 2 Changes in lifestyle practices of breast cancer survivors (N=280)

Lifestyle practices	Worse	No change	Better
Change in dietary intake (less high-fat food)	7.8% (n=22)	11.1% (n=31)	81.1% (n=227)
Change in dietary intake (more high-fibre food)	2.1% (n=6)	11.4% (n=32)	86.4% (n=242)
Change in dietary intake (more fruits & vegetables)	1.4% (n=4)	5.4% (n=15)	93.2% (n=261)
Change in exercise habit	7.9% (n=22)	23.2% (n=65)	68.9% (n=193)
Change in managing stress	9.3% (n=20)	14.6% (n=41)	76.1% (n=213)

Impact of Changes in Healthy Lifestyle Practices on Quality of Life

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of changes in healthy lifestyle practices on overall QOL among BCS (Table 3). The participants were divided into three groups according to changes in their lifestyles (Worse, No change and Better).

There was a statistically significant difference at the $p<.05$ level in the overall QOL score for the three lifestyle practices groups (Better, No change, Worse): change in dietary intake (less high-fat food) $F(2,273) = 129.19$, $p<.05$; change in dietary intake (more high-fibre food) $F(2,273) = 104.56$, $p<.05$; change in dietary intake (more fruits and vegetables) $F(2,273) = 59.25$, $p<.05$; change in exercise habits $F(2,273) = 167.58$, $p<.05$; change in managing stress $F(2,273) = 105.90$, $p<.05$. The effect size calculated using eta-squared (η2), were considered large. Post-hoc comparison using the Benferonni test indicated that the mean score for QOL for Better group; dietary intake (less high-fat food) ($M = 14.49$), dietary intake (more high-fibre food) ($M = 20.64$), dietary intake (more high-fibre food) ($M = 20.64$), dietary intake (more fruits and vegetables) ($M = 20.34$), exercise habits ($M = 21.15$), stress management ($M = 20.92$) was significantly different with Worse group ($M = 9.55$; $M = 13.67$; $M = 15.50$; $M = 14.27$; $M = 15.00$) and No change group ($M = 11.48$; $M = 15.72$; $M = 14.13$; $M = 18.23$; $M = 17.63$). However, the mean QOL for the Worse group and No change group did not differ significantly for all five forms of lifestyle.

Table 3 Difference in overall QOL compared to healthy lifestyle changes among study participants

Healthy Lifestyle	Worse			No change			Better			F	Effect size (η2)	Conclusion
	N	M	SD	N	M	SD	N	M	SD			
Change in dietary intake (less high-fat food)	22	9.55	1.97	31	11.48	1.65	227	14.49	1.00	129.19*	.48	QOL improved by reducing high-fat food intake
Change in dietary intake (more high-fibre food)	6	13.67	3.61	32	15.72	2.05	242	20.64	2.07	104.56*	.43	QOL improved by increasing high-fibre food intake
Change in dietary intake (more fruits and vegetables)	4	15.00	0.00	15	14.13	2.50	261	20.34	2.34	59.25*	.30	QOL improved by taking more fruits and vegetables
Change in exercise habit	22	14.27	2.10	65	18.23	2.15	193	21.15	1.75	167.58*	.55	QOL improved by better exercise habits
Change in managing stress	26	15.50	3.04	41	17.63	2.43	213	20.92	1.89	105.90*	.43	QOL improved by better stress management

*$p<.05$

DISCUSSION

This study examines the specific lifestyle practices of diet, exercise, stress management and its impact on the QOL among women who were diagnosed with breast cancer. Over the last decade, research has focused almost exclusively on examining these types of lifestyle factors for predicting risks of breast cancer among healthy women[24]. Nowadays, as the number of cancer survivors grows parallel with the advancement of modern oncology treatment, research on healthy lifestyle interventions particularly pertaining to physical activity and dietary habits among cancer survivors were rising rapidly regardless of the cancer type[25]. Chlebowski and colleagues[26] reported in their studies, lifestyle change is common among women diagnosed with cancer to improve the prognosis and reduce the probability of cancer recurrence. Although there are mounting numbers of research related to lifestyle interventions among cancer survivors, much less is known about the effect of lifestyle practices and QOL.

The result revealed that majority of the BCS reported improvement in their dietary intake in terms of low-fat diet, high-fibre diet and plant-based diet. The most striking figure was nearly all (93.2%) of the women assessed reported they were currently engaged in plant-based diet. The findings are consistent with a prior research showing that a large number of BCS met the recommendations on fruits and vegetables serving per day[10]. The other two factors of dietary habits also showed favorable findings. More than eighty-one percent of Malaysian BCS followed the national guidelines from the Asian Food Pyramid provided by the Ministry of Health Malaysia[20] where the bottom

two of the food pyramid recommends the consumption of food rich in fibre and plant-based diet. Furthermore, with reference to changes to a low-fat diet, a country such as Malaysia with diverse racial and ethnicities shares unique culture norm which contributed to distinctive eating patterns. Malaysians most probably will eat two dishes of rice daily with additional side dishes such as fried- food which can be categorized as fatty food[20]. Therefore by substituting any fried food with grilled or steamed food, it should be considered as a part of reducing high-fat-food intake. Moreover, specific dietary changes such as reducing fat intake may be worthy of intervention efforts[27] given that a high-fat diet was associated with mortality in a previous observational study of BCS[28].

A study which was conducted in Korea indicated that cancer diagnosis increases healthy behaviors among BCS[10]. It should be noted that in this present study, BCS adopt a healthy lifestyle interventions probably because they are aware that as BCS, they need to maintain positive lifestyles as well as to ensure good QOL. Data from this study reported exercise habits shows the highest improvement among the six healthy lifestyle interventions in BCS. The encouraging outcome from this present study may be influenced by the health awareness campaign promoted by the Ministry of Health Malaysia[20] which focused on the "10,000 steps per day activity" such as walking, jogging, and cycling. The campaign was launched on the 20th of June 2009 by the former Health Minister, Dato' Sri Liow Tiong Lai at the Ministry of Health family day with an aim to achieve wellness-approached of health which has been practiced worldwide. Apart from the walking benefits, Liow[29] emphasized that Malaysians must find time to exercise and be physically active every day. Liow also recommends Malaysians to use the stairs, limit sedentary practice such as watching television and perform plenty of recreational activities. Furthermore, healthy lifestyle is also function as a preventive measure to alleviate the risk of cancer and other non-communicable chronic diseases such as hypertension and diabetes mellitus.

In this study, BCS put together their effort in regular exercise habits revealed an utmost impact on QOL. Previous study conducted among colorectal cancer survivors in the United Kingdom has consistently shown positive association where survivors who were physically active had better scores for global QOL[15].

Based on the recommendations and guidelines[18,19,20], essentially cancer survivors are encouraged to maintain a healthy weight, adopt a physically active lifestyle, and consume a healthy diet. Cancer survivors are highly recommended to maintain healthy weight throughout life. They are encouraged to be as lean as possible to keep their weight in the normal range of Body Mass Index (BMI) which is between 18 and 23.9[19]. It is suggested for persons who have cancer history to be physically active by engaging in at least thirty minutes of moderate-to-vigorous physical activities for instance brisk walking each day[19,20] and to limit sedentary activities such as watching television to no more than two hours per day[19]. Besides, cancer patients are advised to maintain healthy diet such as consume at least five portions or servings of vegetables and fruits, increase fibre intake, restrain the intake of red and processed meat as well as the consumption of salt[19,20].

Moreover, the result from this study suggests that Malaysian BCS' lifestyle demonstrate an improvement in healthy lifestyle practices including dietary intake, exercise habits and stress management which further contribute them to have a better QOL. This is the first Malaysia study to investigate lifestyle practices and QOL in BCS and was in line with current previous study in Iran whereby the study also reported that healthy eating practices and physical activity can improve QOL of women with breast cancer[27].

This study had a number of limitations. First, self-reported questionnaire might become an issue when participants were given an explanation on what was the purpose of the study conducted prior in answering the questionnaire. Second, more than half (53.3%) of the sample was diagnosed with cancer roughly about two years. A population-based cohort study found that lifestyle practices such as exercise was significantly and positively related to QOL assessed 6 and 35 months after diagnosis among BCS[30]. This short number of years may reflect to the results reported in this study. Another limitation is this is a cross-sectional study. It is suggested that a longitudinal study should be conducted in order to examine the association between lifestyle practices and QOL. Although some limitation remains, to our knowledge, this is the first Malaysian population-based study to evaluate the association of lifestyle practice with QOL. Along with these new and positive discoveries in Malaysian oncology, QOL issues should be further explored and documented.

Breast cancer survivors experienced tough phases in order to survive. However, the evidence-based guidelines for cancer survivors still remain scarce. This study revealed positive outcomes in overall QOL as influenced by healthy lifestyle interventions among BCS. Hence, cancer diagnosis can be classified as a possible "teachable moment" and becoming a turning point to make changes in survivors' lifestyles towards healthier approaches[10].

CONCLUSIONS

The present study reported important new information on lifestyle practices among BCS in

Peninsular Malaysia. On average, Malaysian BCS reported an improvement in lifestyle practices. Modification in dietary intake (less high-fat food, more high-fibre food and extra fruits and vegetables) may direct to a better outcome in QOL. Same goes to healthier exercise habits, and good stress management may enhance positive QOL outcomes. Moreover, QOL showed significant association with survivorship which becomes trending issues nowadays in oncology. Consequently, as breast cancer cases among Malaysians were relatively increasing, Ministry of Health should create specific guidelines on healthy lifestyle interventions as reference and support to cancer survivors as well as conducting cancer survivors' awareness campaigns along with cancer prevention awareness campaigns.

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