ORIGINAL ARTICLE

Health-Related Quality of Life among Long Term and Short Term Breast Cancer Survivors

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ABSTRACT

Introduction: The number of breast cancer survivors in developing Asian countries is still lacking compared to Western countries. Health-related quality of life (HRQoL) of cancer patients is one of the significant predictors of survival. Hence, this study was conducted to determine HRQoL status among breast cancer survivors of different diagnosis duration in East Coast of Peninsular Malaysia. **Methods:** Cross-sectional data were collected for 128 breast cancer survivors, aged 37 to 72 years who were recruited by using purposive sampling method at two main government hospitals in Kelantan (n=67) and Terengganu (n=61). The validated European Organization for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC QLQ–C30) and Breast Cancer Supplementary Measure (EORTC QLQ-BR23) which had been translated into the Malay language were used to measure HRQoL. Independent t-test was used to compare HRQoL status among short term (≤5 years duration since diagnosis) and long term (>5 years duration since diagnosis) breast cancer survivors. **Results:** Overall, our breast cancer survivors reported good HRQoL, with high scores for global health status, functional status and low symptoms scores. Long term breast cancer survivors had better social functioning compared to short term survivors (p=.038). Nevertheless, there was no significant difference found for other HRQoL status between short and long term breast cancer survivors. **Conclusion:** Breast cancer survivors in East Coast of Peninsular Malaysia generally experienced good HRQoL. The relatively similar HRQoL status between long-term and short-term survivors indicated a constant HRQoL profile among survivors throughout their survivorship.

Keywords: Health-related quality of life, Quality of life, Breast cancer, Breast cancer survivors, Survivorship

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INTRODUCTION

Breast cancer is the second most frequent cancer and levels as the fifth cause of cancer mortality from cancer overall in the world (1). In 2012, it has been reported that approximately 1.7 million female breast cancer cases were diagnosed worldwide which represent about 12% of all new cancer cases and 25% of all cancers in the world (1). Moreover, the global burden of breast cancer continues to increase to 2.1 million cases in 2018, accounting for almost 1 in 4 cancer cases among women (2). Approximately 24% of all breast cancer cases have been identified within the Asia-Pacific region (3). In most of the Asian countries including Malaysia, the incidence of breast cancer was reported in an increasing trend (4).

The number of breast cancer survivors in Asia is increasing with a 5-year survival rate of more than 90% in early-stage disease due to enhanced cancer treatments and early detection (5). However, the age-standardized 5-year net survival rate of breast cancer survivors in Malaysia (65.0%), as well as other developing Asian countries such as India (66.1%) and Thailand (68.7%), is lower as compared to similar figures in developed Asian countries, for instance, China (83.1%), Korea (86.6%) and Japan (89.4%) and Western countries such as USA (90.2%), Canada (88.2%), and most of the European countries (more than 80%) (6). The higher survival rate in developed Asian and Western countries was due to improved methods of initial detection and treatment of breast cancer which have led to increasing numbers of cancer survivors for a longer duration (7).

During the early years of survivorship, breast cancer survivors often think of the difficulties to recommence to family, work roles and social life which affect their health-related quality of life (HRQoL) as well as long-term adjustment (8). The first six months of survivorship is also found to be the most crucial period as women with breast cancer were struggling with physical and role function, fatigue and financial difficulties compared to their healthy counterparts (9). Oppositely, a large prospective cohort study found greater social well-being at six months post breast cancer diagnosis among those who are married and had family, had social support, and interpersonal relationships and was inversely related with mortality or recurrence of cancer (10). Moreover, a systematic review had reported that a multidisciplinary approach in improving and maintaining HRQoL among breast cancer patients was associated with increased survival rates (11). Thus, because one's HRQoL status is potentially modifiable, early diagnosed breast cancer or short term breast cancer survivors should receive an early intervention to improve their survival.

HRQoL is a multidimensional concept which covers numerous factors associated with physical, emotional, sexual as well as social functioning (12) has become the core attention on clinical practice and research due to the increased number of breast cancer survivors (13). The evaluation of HRQoL is an essential instrument to determine the impact of the disease, its severity as well as assess the effectiveness of treatment (14). Clinical decision-making and better patient management have been shown to be easier with the presence of cancer patient's information via quality of life measures (15). Fear of recurrence which can devastatingly affect quality life among cancer survivors is a major concern even for a majority of long term cancer survivors (16). In addition, longer duration since diagnosis also might be challenging for breast cancer survivors to engage in a healthy lifestyle (17). It has been reported that healthy eating practices as well as being physically active might improve quality of life among breast cancer survivors (18). Hence, as to improve and increase breast cancer survival rate in Malaysia, it is crucial to explore the HRQoL status of our breast cancer survivors. Furthermore, there is also a limited number of studies on HRQoL differences among short and long-term breast cancer survivors in Asia, particularly in Malaysia since most of these studies were carried out in Western countries.

MATERIALS AND METHODS

Study design
This cross-sectional study was conducted from November 2015 until February 2017 among breast cancer survivors in East Coast of Peninsular Malaysia. This study was initially planned to be conducted at three main government hospitals in East Coast of Peninsular Malaysia (Kelantan, Terengganu and Pahang). However, only two government hospital granted approval to conduct research at their facilities. Therefore, breast cancer survivors in this study were recruited by using purposive sampling method at the surgical outpatient clinic department (SOPD) in Hospital Sultanah Nur Zahirah (HSNZ), Kuala Terengganu, Terengganu and Hospital Raja Perempuan Zainab II (HRPZ II), Kota Bharu, Kelantan. The ethical approval for this present study was obtained from the Medical Research and Ethics Committee of the Ministry of Health Malaysia (NMRR-14-1618-23717). The target population of participants consisted of breast cancer survivors who were at least 18 years old at the diagnosis time, diagnosed with cancer of stages I to III, finished conventional treatments (surgery, chemotherapy, radiotherapy) at least six months prior to recruitment and free from secondary cancer as well as serious cardiovascular disease, orthopaedic problems, or medical conditions that would affect the results of the study. They were further categorized as long term and short term survivors. Long term survivors were defined as those with more than five years of duration since diagnosis while short term survivors were among those with less than or equal to five years of duration since diagnosis.

Registered breast cancer patient lists at SOPD clinics were obtained from the hospitals and potential participants were initially screened through a phone call by the researcher. Only those with verbal consent and who met the study inclusion were invited for the data collection process at SOPD clinics. Each participant was provided with a written consent form and data collection started after the participant gave the written consent. A questionnaire on sociodemographic, clinical characteristics and HRQoL was interviewer-administered on a one-to-one basis. Besides that, anthropometric measurements were conducted by a trained interviewer. Height and weight of the participants were measured by using a mobile stadiometer (Seca 217, Hamburg, Germany) and weighing scale (Tanita BC-587, Australia) respectively. Waist circumference was measured using a measuring tape (Seca 201, Hamburg, Germany). All anthropometric measurements were repeated two times and, if the second differed by more than 1 cm (for the waist, height, and body composition measurements) or 0.5 kg (for weight measurement) from the first measurement, a third measurement was carried out and the mean value was taken. Obesity index was defined by using body mass index classification by WHO (2004), whereas, abdominal obesity was defined according to waist circumference classification for Asian women by WHO (2011).

Health-Related Quality of Life (HRQoL)
The validated European Organization for Research and Treatment of Cancer Quality of Life Questionnaires (EORTC QLQ–C30) which had been translated into Malay (20) was used to assess HRQoL among breast cancer survivors. The validity and reliability of this instrument in assessing HRQoL of cancer patients in

diverse study settings have been approvingly reported (21). It was designed to be cancer-specific, multidimensional in structure, suitable for various cultural backgrounds, appropriate to use with supplementary site or treatment specific modules and suitable for self-administration. The questionnaire consists of 30 cancer-specific questions developed to evaluate the HRQoL of cancer patients in four different domains i.e. global health, functioning, symptoms and financial implications of the diseases. The functional scales comprise questionnaires on physical, role, cognitive, emotional and social functioning. Questions on appetite loss, nausea, vomiting, pain, dyspnoea, constipation, diarrhoea, fatigue, insomnia and financial difficulties were covered under symptoms scale. There is only one question item for global health scale. Most of the items have four response scales; from 1 (not at all) to 4 (very much) excluding global health status which consist of a seven-point response scale.

Breast Cancer Supplementary Measure (EORTC QLQ-BR23) was also used in conjunction with the parent EORTC QLQ-C30 to assess specific HRQoL issues of breast cancer patients. The EORTC QLQ-BR23 is made up of 23 questions of functional scale and symptoms scale. The functional scale covers questions on body image, sexual functioning, sexual enjoyment, and future perspective, while the symptoms scale assesses systemic therapy side effects, breast symptoms, arm symptoms, and being upset by hair loss. All questions under QLQ-BR23 provides with four response scale; from 1 (not at all) to 4 (very much). Participants need to choose only one best answer.

According to the EORTC scoring manual, all of the scores from 1 to 4 or from 1 to 7 were transformed to a score of 0 to 100 (21). The raw scores were linearly changed to provide standardised scores in the range of 0-100 for each of the scales and single items. A high scale score indicated a higher response level. Therefore, a high score for a functional scale and global health status represented a high or healthy level of functioning and better HRQoL. Additionally, a greater level of symptomology/problems was represented by a high score for a symptom scale.

Statistical analysis
The IBM SPSS version 22.0 was used for statistical analysis. Descriptive statistics were used to assess sociodemographic data, clinical and anthropometry data as well as HRQoL among breast cancer survivors. Data exploration was completed for descriptive statistics for all variables and normal distribution was tested for the numerical variables. The mean and standard deviation were presented for numerical variables while percentage and frequency were presented for categorical data. Independent t-test was carried out to compare HRQoL status among short term (≤5 years duration since diagnosis) and long term (>5 years duration since

diagnosis) breast cancer survivors. The analysis was considered significant at a p-value of less than .05.

RESULTS

A total of 160 breast cancer survivors from two main government hospitals at Kelantan and Terengganu who were met inclusion criteria through initial screened by a phone call and given verbal consent had been invited to come for data collection at SOPD clinics. However, only 128 were able to complete this study (response rate = 80%) as the remaining were not able to attend the data collection session due to personal reasons. Demographic, clinical and anthropometric characteristics of all participants in this study are described in Table I. Majority of the participants were from Malay ethnicity (94.5%), married (77.3%), had secondary education (59.4%), working (51.6%) and had monthly income between RM 500 to RM 2000 (45.3%). In terms of duration of survival since diagnosis, most of the participants 61.7% were categorized as long-term survival (more than 5 years survivorship). Most of the participants were also previously diagnosed with stage II breast cancer (55.5%) and had undergone all three main treatment modalities i.e. surgery, chemotherapy and radiotherapy. For anthropometric characteristics, more than half of the respondents were classified as overweight (45.3%), obese (29.7%) and had abdominal obesity with more than 80 cm of waist circumferences (78.1%).

The descriptive scores for EORTC QLQ-C30 and QLQ-BR23 subscales for all breast cancer survivors were displayed in Table II. According to the EORTC QLQ-C30, the role functioning subscale showed the highest mean (94.8 ± 12.1) while the lowest mean was observed by cognitive functioning (76.2 ± 33.6). For the symptoms scores, the highest mean scores were shown by fatigue (17.5 ± 16.2) and the lowest mean scores were seen on nausea or vomiting (1.2 ± 5.6). Besides, in QLQ-BR23, body image subscale appeared as the highest functional outcomes (89.8 ± 17.5) while sexual enjoyment was observed with the lowest functional outcomes (29.4 ± 29.5). Under symptom scores, the highest and lowest scores were shown by systemic therapy side effects (11.4 ± 11.1) and upset by hair loss (4.2 ± 12.6) respectively.

Overall, breast cancer survivors in the study had a good HRQoL status. Higher mean scores for global health status (78.7 ± 13.7) and total functional scores EORTC QLQ-C30 (87.7 ± 11.1) and QLQ-BR23 (73.7 ± 19.5) represents a high quality of life and a healthy level of functioning. Whereas, lower mean scores for total symptoms scores of QLQ-C30 (9.0 ± 9.1) and QLQ-BR23 (8.3 ± 8.6) indicates that respondents had a lesser level of symptomatology or problems. The mean comparisons between short and long-term survival are described in Table II. There were no significant differences between the participants with survivorships duration below or

Table I: Characteristics of the Breast Cancer Survivors (n=128)

	n (%)	Mean ± SD	Range
Demographic Characteristics			
Age		52.7 ± 7.9	37 – 72
Ethnic			
Malay	121 (94.5)		
Chinese	7 (5.5)		
Marital Status			
Single	5 (3.9)		
Married	99 (77.3)		
Widowed	20 (15.6)		
Divorced	4 (3.1)		
Education level			
None	1 (0.8)		
Primary	11 (8.6)		
Secondary	76 (59.4)		
College/University	40 (31.2)		
Occupational Status			
Working	66 (51.6)		
Not Working	62 (48.4)		
Monthly income (MYR)		2409.80 ± 2325.85	100 – 12000
≤ 500	22 (17.2)		
500 – 2000	58 (45.3)		
≥ 2000	48 (37.5)		
Clinical Characteristics			
Duration since diagnosis (years)		7.14 ± 3.92	2 – 33
≤ 5 year survival	49 (38.3)		
> 5 year survival	79 (61.7)		
Cancer stage			
Stage I	23 (18.0)		
Stage II	71 (55.5)		
Stage III	34 (26.5)		
Treatment			
Surgery	127 (99.2)		
Chemotherapy	128 (100.0)		
Radiotherapy	108 (84.4)		
Had menopause	109 (85.2)		
Contraceptive -ever	58 (45.3)		
HRT – ever	17 (13.3)		
Had family history of cancer	36 (28.1)		
Anthropometric Characteristics			
Body Weight (kg)		66.48 ± 12.52	38 – 115
Body mass index (kg/m²)		27.72 ± 5.03	15 – 50
Underweight	3 (2.3)		
Normal	29 (22.7)		
Overweight	58 (45.3)		
Obese	38 (29.7)		
Waist circumference (cm)		87.98 ± 11.30	56 - 125
≤ 80 cm	28 (21.9)		
> 80 cm	100 (78.1)		

equals to five years and above five years except for social functioning (p=.038). Survivors with more than five years duration of survivorship since diagnosis in this study showed a better social functioning compared to the respondents with less than five years of survivorship since diagnosis.

DISCUSSION

Previous studies among cancer patients have proven HRQoL as a key assessment to rate their overall well-being and survivorship after diagnosis (15,22,23). During active cancer treatment, despite a decrease in physical and social functioning, HRQoL among women with breast cancer was also reported to be decline considerably and remain low for a short period of time due to stress, anxiety and depression (24–26). Among long-term cancer survivors, fear of recurrence and subsequent primary cancers might be the issues of reduction in their HRQoL status (13). Interestingly, by knowing the potential modifying aspects of HRQoL that had a relationship with survival, possible interventions could be done in order to reduce the risk of recurrence or death. Therefore, this cross-sectional study was conducted to determine the HRQoL status among breast cancer survivors in East Coast of Peninsular Malaysia.

Breast cancer survivors in this study showed good HRQoL status with the high mean scores for global health status and total functional scores while low mean for total symptoms scores. In accordance with the present results, a former study found a better HRQoL among Iranian breast cancer survivors with healthy lifestyle modification (18). Several previous studies had also verified that a better lifestyle changes such as increased in physical activity, healthy foods and avoiding non-nutritious foods like red meat, animal fat, fast foods as well as fried foods related with improved in HRQoL and decreased risks of cancer recurrence among women after breast cancer diagnosis (27–29). Besides, the finding of this study might be explained by advancement in current technologies such as online research and easier information or guidelines for cancer patients available in social media, the breast cancer survivors might make their own search to change their lifestyle towards healthy practice for a better HRQoL. Moreover, the majority of breast cancer survivors in this study are older adults and had good socioeconomic status and this might support the result of the good HRQoL amongst breast cancer survivors. Hence, this study finding on the status of HRQoL among our breast cancer survivors might provide the beginning evidence to the respective clinicians for instance nutritionists, dietitians or oncologist to be ready in specified support and monitor breast cancer survivors' choices towards healthier choices in order to make them permanent.

It was noteworthy to mention that this study found comparable HRQoL status between short and long-term breast cancer survivors whereby no significant differences were found except for social functioning which was higher among survivors with more than five years duration of survivorship since diagnosis. These findings indicated that breast cancer survivors in this study had maintained good HRQoL throughout the survivorship. Similarly, Spanish premenopausal early-stage breast cancer patients in a long follow-up after surgery were found to have a high HRQoL (30). This view was further supported by a study in German

Table II: Health-Related Quality of Life Status of the Breast Cancer Survivors

HRQoL Variables	All (n=128)	Duration of survivorship		p value
		≤ 5 years (n=49)	> 5 years (n=79)	
EORTC QLQ-C30				
Global Health Status	78.7 ± 13.7	80.4 ± 13.3	77.6 ± 13.9	0.261
Total Functional Scores	87.7 ± 11.1	87.7 ± 10.4	87.8 ± 11.5	0.926
Physical	89.4 ± 10.5	88.4 ± 11.5	89.9 ± 9.8	0.430
Role	94.8 ± 12.1	93.5 ± 14.8	95.6 ± 10.1	0.381
Emotional	84.7 ± 15.9	85.2 ± 16.3	84.3 ± 15.7	0.761
Cognitive	76.2 ± 33.6	80.3 ± 15.8	73.7 ± 40.8	0.280
Social	93.8 ± 12.3	90.8 ± 13.2	95.6 ± 11.5	0.038[a]
Total Symptoms Scores	9.0 ± 9.1	8.3 ± 9.9	9.5 ± 8.5	0.477
Fatigue	17.5 ± 16.2	17.7 ± 16.8	17.5 ± 15.9	0.939
Nausea/vomiting	1.2 ± 5.6	0.3 ± 2.4	1.7 ± 6.9	0.105
Pain	9.1 ± 12.3	9.5 ± 13.2	8.9 ± 11.8	0.774
Dyspnoea	5.0 ± 12.6	4.8 ± 11.8	5.2 ± 13.1	0.852
Insomnia	12.4 ± 19.5	12.9 ± 22.4	12.1 ± 17.6	0.824
Appetite Loss	7.1 ± 17.6	5.4 ± 15.7	8.2 ± 18.6	0.391
Constipation	10.3 ± 18.9	10.9 ± 19.7	10.1 ± 18.5	0.790
Diarrhoea	3.7 ± 11.2	2.0 ± 8.1	4.7 ± 12.8	0.146
Financial difficulties	14.6 ± 27.6	10.9 ± 21.9	16.8 ± 30.5	0.203
EORTC QLQ-BR23				
Total Functional Scores	73.7 ± 19.5	77.0 ± 20.2	71.7 ± 19.1	0.133
Body Image	89.8 ± 17.5	89.3 ± 19.7	90.2 ± 16.1	0.777
Sexual Functioning	30.7 ± 27.4	27.2 ± 24.1	32.9 ± 29.2	0.232
Sexual Enjoyment	29.4 ± 29.5	27.2 ± 26.9	30.8 ± 31.0	0.504
Future Perspective	74.1 ± 29.1	79.6 ± 27.1	70.5 ± 29.7	0.083
Total Symptoms Scores	8.3 ± 8.6	8.7 ± 10.1	8.1 ± 7.8	0.628
Systemic Therapy Side Effect	11.4 ± 11.1	10.2 ± 10.8	12.2 ± 11.1	0.325
Breast symptoms	5.5 ± 10.1	7.1 ± 12.5	4.5 ± 8.2	0.230
Arm symptoms	8.9 ± 13.2	9.7 ± 14.6	8.4 ± 12.2	0.585
Upset by Hair Loss	4.2 ± 12.6	4.8 ± 13.6	3.8 ± 11.9	0.675

Values are presented as Mean ± SD
[a] Significant differences with p<0.05 (t-test)

which also found a fairly constant HRQoL between year five and year fifteen past diagnosis (31). Moreover, significantly higher social functioning showed among long-term survivors compared to short-term survivors in this study matched those observed in an earlier study carried out in the United States (32). They found that older, long-term breast, prostate, and colorectal cancer survivors in the United States were more interested in lifestyle modification and were at the high prevalence of suboptimal health behaviours.

Survivors with a longer duration of survival since diagnosis might be more used to living with the illness and have adapted with the surrounding circumstances compared to those who were recently diagnosed. In the earlier time of diagnosis, breast cancer patients had to experience varying phases such as primary treatment,

genetic risk and its psychological management, recurrence, completing treatment and re-entry to normal living that adversely affects their HRQoL. These ideas corroborated with findings of a previous study, which found that as many as one-third of women continued to experience considerable psychological morbidity in the first two years after initial treatment (33). However, contrary to present findings, a large prospective cohort study among female breast cancer survivors found that survivors at 6 months after diagnosis had greater social well-being and was significantly associated with a decreased risk of mortality or recurrence but at 36 months post-diagnosis, no measures of HRQoL were associated with mortality or recurrence (10). Greater social well-being at six months post-diagnosis in the previous study was among those who are married and had family, had good social support and interpersonal

relationship.

Nevertheless, these findings are limited by the use of cross-sectional design and should be explored further in a prospective study or in a longitudinal follow-up study that determines the progress of HRQoL among breast cancer survivors over time. Besides, the small sample size of breast cancer survivors stratified between short-term and long-term survivors in this study might have also contributed to non-significant findings. Anyhow, this study managed to cover a wide variety of respondent characteristics including different age groups, socioeconomic status and duration of survival since diagnosis. Moreover, the present study had used EORTC QLQ-C30, a generic quality of life instrument for cancer patients and QLQ-BR23, a breast-specific module in assessed HRQoL among breast cancer survivors. Both are feasible, promising and widely used questionnaires to measure the status of HRQoL in breast cancer survivors.

CONCLUSION

In conclusion, this study provided details on the status of survivorship in terms of HRQoL among breast cancer survivors in East Coast of Peninsular Malaysia. Findings highlight that despite low breast cancer survival rate had been reported in Asia as compared to Western countries, but our breast cancer survivors are at good HRQoL status. Besides, long term survivors showed better social functioning compared to short term survivors in this present study. Therefore, early intervention strategies in improving and increasing our survivors' social life, hope and expectations in future life particularly among short term breast cancer survivors are recommended in order to increase their HRQoL. However, no significant differences observed on other HRQoL status between our short and long-term survivors indicating that the survivors might have continued better quality of life throughout their survivorship. This study will also stimulate future research efforts, particularly in recognizing the modifiable risks factors that had a significant relation with HRQoL for instance dietary intake and physical activity. Further understanding of these processes might provide new goals for intervention in order to maintain and improve the health as well as the well-being of cancer survivors in Asian countries.

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