ORIGINAL ARTICLE

QUALITY OF LIFE AMONG WOMEN WITH BREAST CANCER FROM UNIVERSITI KEBANGSAAN MALAYSIA MEDICAL CENTRE, MALAYSIA

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ABSTRACT

Introduction : The purpose of this study was to determine the quality of life (QOL) of breast cancer survivors based on socio-demographic and clinical characteristics.

Methods : A cross-sectional study was performed on 125 breast cancer survivors from the outpatient clinics. FACT-B (Functional Assessment of Cancer Therapy-Breast) questionnaire was used to assess survivors' QOL.

Results : Survivors with low body mass index (BMI) (underweight) were found to have the lowest overall QOL. Those who were overweight had a higher overall QOL, and those who were normal-weight had the highest QOL. Low educational level, being underweight and low monthly household income were significantly associated with lower overall QOL Tamoxifen use and employment status were significantly associated with QOL in some domains. Time since diagnosis to QOL interview was significantly associated with greater scores in emotional well-being (EWB). Multiple linear regression indicated that age, marital status, monthly household income, surgery and histological grade were indicative of the patients QOL.

Conclusion : The four primary factors related to better QOL were high educational level, high income, normal body weight and greater duration from the time of diagnosis to the time of interview. Age, marital status, income, lumpectomy and histological grade were indicative of the patient QOL.

Keywords : Quality of life, breast cancer, Malaysia

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INTRODUCTION

Cancer is one of the most important health concerns of today. According to the World Health Organization, ten million people are diagnosed with cancer in developing countries and six million people die of cancer every year around the world[1]. Breast cancer is by far the most frequently occurring cancer in women throughout the world[2] and the second leading cause of cancer death among women[3]. In Malaysia, breast cancer is the most common cancer in Malaysian women and the commonest cause of death[4]. With improved survival rate of breast cancer patients due to advancement in cancer treatment, Quality of Life (QOL) among cancer patients represents a significant issue faced by health care providers and society at large. Due to the incurable nature of cancer, patients suffer side effects including pain, anorexia and fatigue, which not only shorten life but also decrease the QOL[5]. Despite the wide application of the QOL concept in different sciences, no specific definition of the concept exists. Because of its subjective nature, there are different definitions. Walker[6] described it as a concept embracing a wide range of physical and psychological characteristics and limitations that describe an individual's ability to function and derive satisfaction from doing so. Calman[7] suggested a definition of QOL; "the extent to which our hopes and ambitions are matched by experience". Many other definitions of QOL have been attempted, frequently emphasizing components of happiness and satisfaction with life[8]. Although QOL research has been extensively conducted among Western population[9,10], such studies are lacking in Malaysia. We decided, therefore, to carry out a study that would allow us to evaluate the QOL and factors affecting it. This information will be valuable in identifying the areas of life in which these patients may need specific support and subsequently lead to the development of treatment and prevention strategies.

METHODOLOGY

This study was designed as an observational cross-sectional study. The data collected from 125 female breast cancer patients who were chosen for recruitment from the Oncology and Surgery Departments; National University of Malaysia Medical Centre/ Universiti Kebangsaan Malaysia (UKMMC), Malaysia from February 2006 to January 2007. Women were included in this study if they were able to speak, write and read English and/or Malaysian language (Bahasa Malaysia), women older than 18 years old, women from three major races group (Malay, Chinese, and Indian) because of a limited number of other ethnic groups diagnosed with breast cancer each year, and women who survived at least one year since initial diagnosis. Excluded from this study were those women who had other malignancies, those who presented with metastasis. Women who were terminally ill and women who had severe physical, cognitive or psychiatric illnesses. Questionnaires were distributed to the patients during their visit to the clinics. Medical reports of the patients were reviewed in order to obtain demographic and medical information. Demographic data, treatment and breast cancer related characteristics were collected from the case records except the monthly household income which were self-reported by the patients.

Instrument

The Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaire (version 4) was designed to capture patients' perspective on the impact of breast cancer treatment on their quality of life. The FACT-B, a 36- item instrument measured on 5-point rating scales, includes measures for physical, social/family, emotional, and functional well-being. The FACT-B also includes a collection of items assessing breast cancer-related concerns pertaining to various QOL domains. Two items tap into emotional concerns (worried about risk of breast cancer in the family members and worried about effects of stress on the illness). Three other items focusing on body image-related concerns (feeling sexually attractive, feeling self-conscious about the way one dressed, and feeling like a woman). Regarding reliability, validity, and responsiveness to clinical change of the FACT instruments have been demonstrated extensively[11].

As far as validation of the questionnaire, two forward translations into Malay language have been done by language experts translating the original FACT-B scale into Malay language to produce the first consensus of Malay language version. Reconciliation of the forward translations by other native Malaysian speakers not involved in the forward translation process. The next step consisted of two back translations of the reconciled version of Malay language to English language. The second consensus of Malay language version of the FACT-B would be produced by comparing it with the original

English. The procedures and techniques taken by bilinguals to get equivalence to the original language based on Brislin's[12] back translation technique.

Regarding data analysis, sub scores of the FACT-B were computed according to the instructions (all subscales are scored such that high values mean high QOL). Means and SDs of subscales were evaluated for descriptive purpose. Analysis of variance (ANOVA) was performed to compare the three groups (race, years after diagnosis, marital status, BMI, educational status, income and histological grade) regarding QOL subscales. Whereas, independent t-test was performed for comparing two groups (age, employment status, chemotherapy, radiotherapy, Tamoxifen, surgery and tumor size) regarding QOL subscales. Multiple linear regression using backward analysis was performed to obtain the final model for each domain. The final model was chosen depending on R^2 and the p value of the model. A p value less than 0.05 is considered significant.

RESULTS

During the study period between February 2006 and January 2007, a total of 232 patients who fit the study criteria were approached to participate in this study. Of those, 125 were agreeable and 107 refused. Overall response rate was 53.9%. Participants age ranged from 30 to 67 years (Mean = 49.6 ± 8.2); while the non-respondents age ranged from 23 to 83 years (Mean = 51.8 ± 1.2). Majority of them were married (72.8%). Approximately half of them had at least a secondary education (49.6%). The majority were not employed (57.6%) and younger or equal to 55 years old (64.8%). Malay women were the majority who participated in this study (59.2%), followed by Chinese women (32.0%). Indians were the lowest participants (8.0%). Regarding treatment modality, majority of participants underwent mastectomy (56.0%) and received chemotherapy, radiotherapy, and hormonal therapy (75.2%, 72.8%, and 53.6%) respectively. Regarding tumour characteristics, the majority were diagnosed with grade II (41.6%) and larger tumour size (> 2 cm) in diameter (41.6%) (Table 1). Regarding socio-demographic characteristics, there was no difference in QOL according to age group, race and marital status (Table 2). However, low educational level, underweight and low monthly household income were significantly associated with lower total quality of life (TQOL). Being employed was significantly associated with QOL in some domains. Years after diagnosis were significantly associated with only one domain of QOL. Moreover, there was a significant association between body mass index (BMI) and Social Well-Being (SWB) ($p = 0.029$), Emotional Well-Being (EWB) ($p= 0.018$), Functional Well-Being (FWB) ($p = 0.014$) and Total Quality of Life) TQOL ($p = 0.025$). There was also a significant association between educational level and FWB ($p = 0.041$) and TQOL ($p = 0.042$).

Table 1 Patients Characteristics

Characteristics	Number	Percentage (%)
Age (years)		
≤ 55	81	(64.8%)
> 55	38	(30.4%)
Race		
Malay	74	(59.2%)
Chinese	40	(32.0%)
Indian	10	(8.0%)
Years after diagnosis		
1-2 year	25	(20.0%)
2-5 year	51	(40.8%)
> 5 year	40	(32.0%)
Marital status		
Single	9	(7.2%)
Married	91	(72.8%)
Divorced/widowed	23	(18.4%)
Employment status		
Employed	50	(40.0%)
Not employed	72	(57.6%)
BMI		
Underweight	5	(4.0%)
Normal-weight	46	(36.8%)
Overweight	52	(41.6%)
Educational level		
Primary	34	(27.2%)
Secondary	62	(49.6%)
Tertiary	24	(19.2%)
Monthly household income		
< RM 1000	13	(10.4%)
RM1000- RM3000	28	(22.4%)
> RM 3000	18	(14.4%)
Family history of breast cancer		
Yes	35	(28.0%)
No	85	(68.0%)
Chemotherapy		
Yes	94	(75.2%)
No	27	(21.6%)
Radiotherapy		
Yes	91	(72.8%)
No	27	(21.6%)
Tamoxifen		
Yes	67	(53.6%)
No	38	(30.4%)
Surgery		
Mastectomy	70	(56.0%)
Lumpectomy	37	(29.6%)
Tumour size (cm)		
≤ 2	27	(21.6%)
> 2	52	(41.6%)
Histological grade		
Grade I	31	(24.8%)
Grade II	52	(41.6%)
Grade III	32	(25.6%)

Table 2 Socio-demographic variables and QOL

	PWB	SWB	EWB	FWB	BCS	TQOL
Age (years)						
≤ 55	21.05 ± 6.14	24.19 ± 4.26	18.33 ±4.62	22.98 ±5.08	22.46 ± 6.32	109.11 ± 20.77
> 55	21.71 ± 5.80	24.47 ± 4.70	19.35 ±4.48	22.03 ±5.88	24.63 ± 5.08	111.71 ± 19.16
	p:0.579	p:0.740	p: 0.262	p:0.373	p:0.077	P:0.529
Race						
Malay	20.81 ± 6.33	23.96 ± 4.00	18.78 ±4.18	23.38 ±4.24	24.06 ± 5.86	110.77 ± 18.97
Chinese	22.40 ± 5.76	24.33 ± 5.15	18.05 ± 5.29	21.41 ±6.86	22.26 ± 6.31	108.74 ± 22.61
Indian	21.40 ± 5.54	24.60 ± 4.62	19.10 ± 3.98	22.20 ±5.24	20.90 ± 5.74	108.20 ± 19.07
	p:0.417	p: 0.862	p: 0.672	p:0.168	p:0.151	p:0.848
Years after diagnosis						
1-2 year	20.08 ± 7.65	24.72 ± 3.73	17.04 ± 4.42	23.13± 4.73	22.33 ± 6.45	106.83 ± 22.38
2-5 year	22.12 ± 5.81	24.10 ± 4.53	18.48 ± 5.03	22.78± 5.64	22.90 ± 6.41	110.50 ± 21.24
> 5 year	21.43 ± 5.27	24.33 ± 4.62	20.0 ± 3.56	23.05± 5.28	24.26± 5.07	112.95 ± 17.59
	p:0.393	p:0.846	p:0.035*	p:0.957	p:0.407	p:0.517
Marital status						
Single	24.89 ± 3.40	25.22 ± 4.20	20.11 ± 2.36	25.56± 3.00	25.44 ± 3.12	121.22 ± 10.31
Married	21.19 ± 6.05	24.37 ± 4.41	18.20 ± 4.78	22.57± 5.58	23.38 ± 6.06	109.54 ± 20.61
Divorced/widowed	20.78 ± 6.90	22.65 ± 4.46	19.35 ± 4.11	21.78± 4.76	21.10± 6.29	106.05 ± 20.09
	p:0.196	p:0.186	p:0.321	p:0.193	p:0.142	p:0.159
Employment						
Employed	21.40 ± 6.23	25.14 ± 3.35	19.29 ± 3.81	23.98± 3.96	23.90 ± 5.39	113.49 ± 16.57
Non -employed	21.49 ± 5.89	23.42 ± 4.95	18.27 ± 4.74	21.87± 5.75	23.06 ± 6.05	108.27 ± 20.79
	p:0.938	p:0.024*	p:0.197	p:0.019*	p:0.443	p:0.153
BMI						
Underweight	18.67 ± 8.47	19.83 ± 2.63	13.67 ± 7.09	16.83± 7.96	18.17± 8.25	87.17± 29.72
Normal-weight	20.80 ± 5.09	24.32 ± 3.81	19.60 ± 3.32	22.92± 5.09	24.30± 5.72	111.65± 18.70
Overweight	21.27 ± 6.41	24.49 ± 4.21	18.37 ± 4.64	23.15± 4.69	22.86± 6.05	110.37± 19.89
	p:0.608	p:0.029*	p:0.018*	p:0.014*	p:0.096	p:0.025*
Education						
Primary	19.71 ± 6.38	22.88 ± 5.19	17.50 ± 5.28	20.79± 5.47	22.00 ± 5.89	103.31 ± 20.98
Secondary	21.31 ± 6.37	24.29 ± 4.15	18.57 ± 4.45	22.97± 5.49	23.05 ± 6.66	109.68 ± 20.35
Tertiary	23.13 ± 4.55	24.92 ± 3.84	19.67 ± 3.42	24.17± 4.20	25.08± 4.47	116.96 ± 16.50
	p:0.110	p:0.181	p:0.201	p:0.041*	p:0.169	p:0.042*
Income (RM)						
< 1000	19.46 ± 6.29	23.31 ± 4.57	17.69 ± 5.96	21.54± 5.23	21.38 ± 6.81	103.38 ± 22.20
1000 - 3000	22.32 ± 6.32	25.43 ± 2.82	19.70 ± 2.79	24.21± 3.08	24.59 ± 5.11	116.42 ± 15.77
> 3000	23.39 ± 4.46	26.67 ± 1.60	20.94 ± 3.73	26.39± 2.61	24.35± 5.14	121.59 ± 13.01
	p:0.176	p:0.013*	p: 0.088	p:0.002*	p:0.213	p:0.015*

*Statistically significant

PWB = Physical Well-Being, SWB = Social Well-Being, EWB = Emotional Well-Being, FWB = Functional Well-Being, BCS = Breast Cancer Subscales, TQOL = Total Quality of Life.

There was a significant association between monthly household income and SWB (p = 0.013), FWB (p = 0.002) and TQOL (p = 0.015). Employment status was significantly associated with QOL in some domains: SWB and FWB (p = 0.024; p = 0.019 respectively). Years after diagnosis was significantly associated with only emotional well-being (EWB) (p = 0.035).

As far as cancer-related characteristics, the QOL did not show any association with chemotherapy, radiotherapy, surgery, tumour size and histological grade. However, Tamoxifen use was significantly associated with QOL in some domains: PWB (p = 0.037) and SWB (p = 0.030) (Table 3).

Table 3 Cancer-related variables and QOL

	PWB	SWB	EWB	FWB	BCS	TQOL
Chemotherapy						
Yes	21.14 ± 6.16	24.26 ± 3.89	18.73 ± 4.52	22.54± 5.22	22.91 ± 6.26	109.63 ± 20.10
No	22.22 ± 5.60	23.67 ± 5.90	18.26 ± 4.82	23.07± 5.69	24.19 ± 5.46	111.41 ± 20.31
	p:0.413	p:0.628	p:0.639	p:0.649	p:0.342	p:0.689
Radiotherapy						
Yes	20.95 ± 6.31	24.36 ± 3.97	18.47 ± 4.78	22.82± 5.17	22.84 ± 6.47	109.49 ± 20.92
No	22.04 ± 5.50	23.63 ± 5.17	19.07 ± 3.85	22.37± 5.15	24.63 ± 4.24	111.74 ± 17.25
	p:0.419	p:0.435	p:0.548	p:0.689	p:0.100	p:0.613
Tamoxifen						
Yes	22.24 ± 5.29	24.90 ± 3.92	18.73 ± 4.51	23.27± 4.95	23.31 ± 5.94	112.45 ± 18.82
No	19.68 ± 6.95	23.11 ± 4.13	17.79 ± 4.79	21.79± 5.18	22.54 ± 5.83	104.92 ± 21.03
	p:0.037*	p:0.030*	p:0.321	p:0.151	p:0.529	p:0.066
Surgery						
Mastectomy	20.69 ± 6.21	24.07 ± 3.93	18.67 ± 4.55	22.53± 5.03	22.67 ± 6.37	108.60 ± 20.34
Lumpectomy	23.00 ± 5.35	24.86 ± 4.09	18.94 ± 4.18	23.41± 4.75	23.89 ± 6.08	114.36 ± 19.52
	p:0.058	p:0.331	p:0.765	p:0.384	p:0.344	p:0.168
Tumour size (cm)						
<= 2	22.22 ± 5.45	24.15 ± 4.28	19.50 ± 3.73	22.89± 6.28	23.52 ± 5.77	111.92 ± 20.61
> 2	20.75 ± 6.55	24.79 ± 3.39	19.12 ± 4.30	23.08± 4.93	23.29 ± 6.16	111.10 ± 19.82
	p:0.320	p:0.470	p:0.699	p:0.884	p:0.876	p:0.865
Histological grade						
Grade I	21.42 ± 5.40	24.71 ± 4.51	18.45 ± 4.60	24.03± 5.24	23.35 ± 5.26	111.97 ± 19.57
Grade II	21.62 ± 6.12	24.63 ± 3.47	18.61 ± 4.60	22.37± 5.19	22.84 ± 6.55	110.47 ± 20.52
Grade III	20.09 ± 7.03	23.03 ± 4.59	18.19 ± 4.82	22.19± 4.96	22.94± 6.23	105.90 ± 21.31
	p:0.531	p:0.165	p:0.923	p:0.277	p:0.932	p:0.472

*Statistically significant

PWB = Physical Well-Being, SWB = Social Well-Being, EWB = Emotional Well-Being, FWB = Functional Well-Being, BCS = Breast Cancer Subscales, TQOL = Total Quality of Life.

In multivariate analysis (Table 4), age, marital status, monthly household income, surgery and histological grade were significantly associated with QOL. Age was significantly associated with total QOL, with every increase of one year in age, the QOL increases 0.65 points. This means that older women have a higher QOL then younger once. Marital status was significantly associated with total QOL. Divorced/widowed women had on average of 17.73 points lower total QOL compared to the single women (p = 0.001).

This means that single women had higher QOL than divorced/widowed women. Monthly household income was significantly associated with total QOL, with every increase of one RM, the QOL increases 0.002 points. This means that women with higher monthly household income have a higher QOL. Surgery was significantly associated with total QOL, women who underwent lumpectomy had an average of 15.81 points higher QOL scores compared to the women who underwent mastectomy. This means that women underwent lumpectomy had better QOL than women underwent mastectomy. Histological grade was significantly associated with total QOL, with every increase of one stage, the QOL decreases 7.45 points. This means that women with advance grade had lower QOL than women of early stage grade.

Table 4 Prediction Model for Total QOL by Multiple Linear Regression

Predictive factors	b	SE	Beta	p value
Constant	78.89			
Age	0.65	0.31	0.30	0.041
Marital Status				
Single	Ref	Ref	Ref	Ref
Divorced/Widowed	- 17.73	6.14	- 0.38	0.001
Monthly household income (RM)	0.002	0.001	0.37	0.022
Surgery				
Mastectomy	Ref	Ref	Ref	0.001
Lumpectomy	15.81	4.71	0.45	
Histological grade	- 7.45	3.19	- 0.34	0.023

F value = 5.74, p = 0.001, $R^2 = 0.47$

DISCUSSION

This study showed no effect of the race, size of tumour, type of surgery, radiotherapy and chemotherapy on QOL. Age, marital status, monthly household income, type of surgery and histological grade were found to have significant impact on QOL.

As far as the age is concerned, this study showed that there was a significant association between age and QOL in multivariate analysis. Similar finding was reported by Janni et al. (2001)[13] that younger patients usually manifested greater QOL disruption by cancer threat than older patients. Other studies also reported a significant association between QOL and age[14-16]. However, there are also other studies showed age did not affect QOL[17-21]. Regarding the body mass index (BMI), there was no association with the overall QOL. Possible explanation is that obesity is closely linked to a variety of chronic diseases such as diabetes mellitus, hypertension, coronary heart disease, gall-bladder disease, sleep apnea and respiratory problems, and many chronic diseases may be associated with lower QOL. This result is consistent with another study in which obesity is associated with a poor QOL in patients with and without breast cancer[22]. A study from China showed that BMI was significantly associated with overall QOL[23]. Patients who exercise regularly maintain normal body weight. This is supported by a study conducted by McNeely et al[24]. that identified exercise as a promising approach to improve QOL in breast cancer patients.

Low socioeconomic status and poverty are considered risk factors of cancer disease; inadequate education, unemployment, chronic malnutrition, higher smoking rates, psychosocial stress, and noxious environmental agents are all associated with poverty [25]. This study found a significant association between monthly household income and the overall QOL. The finding is consistent with a previous study which reported that income was a significant predictor of QOL[16, 17, 26] .Merkin et al[27]. also reported in a study of New York City women that low income led to limited availability of primary preventive measures

and detecting breast cancer at an early stage in the disease. The family income was significantly associated with the overall QOL[28]. Similar findings were noted with another study [23]. However our result in contrast to Pinar et al[14]. which reported that no effect of financial status was found on QOL.

In Malaysia, more female students were reported to be pursuing a higher education with a female to male ratio of 65:35 in Malaysian public universities[29]. In this study, there was no significant association between the educational level and the overall QOL. This result was inconsistent with previous studies that showed that there was a significant relationship between the level of education and the QOL[12,17,30-32]. The possible explanations for the higher QOL among more educated patients are as follows: a study found that the educated cancer patients had greater satisfaction with medical interaction and had better QOL than uneducated patients[33]. Women with low levels of education and income were less likely to be screened for breast cancer, would delay seeking care in the presence of symptoms, and were diagnosed in later stages of the disease[34-37]. More educated patients required less time and attention from the health team members who provided information regarding patients' medical treatment and follow-up care, compared to time required of health care team members from less educated patients[38]. Pandey et al[28]. stated that education was found to be significantly helping a patient cope with breast cancer[28]. However, other studies found that no significant association between educational level and QOL. A study by Ganz et al[16]. Rabin et al. (2008) 2[1] stated that education did not influence QOL.

The labour force participation rate of women in Malaysia increased from 44% in 1980 to 47.8% in 1990[39]. In this study, there was no significant association between employment status and QOL. A study reported that there was a significant decrease in depression and better QOL among working women than non-working women [38]. Another study reported that working women had better QOL. One possible explanation is that the financial status had a large impact on patients' treatments[17].

Some studies showed association between the histological grade and QOL. This study found a significant association between histological grade and QOL. This is consistent with Isikhan et al[40]. who indicated that cancer patients who were diagnosed early had better QOL than those diagnosed late. Patients who had histological grade one had better overall QOL[17]. Pandey et al[28]. found that the histological grade was found to influence functional well-being and breast specific scales. This result of present study, however, was inconsistent with findings of some other studies[18,21,23,41].

CONCLUSION

Multivariate analysis indicated that age, marital status, monthly household income, surgery and histological grade are indicative of patients QOL. That means that being old, single, having high income and underwent lumpectomy with early stage have better QOL.

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