



Quality of Life among Female Breast Cancer Patients in a University Hospital in Malaysia

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Authors' contributions

This work was carried out in collaboration between both authors. Author ZE designed the study, wrote the protocol, collected data, performed the statistical analysis, interpreted the results, and wrote the drafts of the manuscript. Author VK helped in designing the study, reviewing the results and discussion. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: To assess the Quality of Life (QOL) among female breast cancer patients in a university hospital in Malaysia.

Study Design: The study was designed as a cross-sectional study.

Place and Duration of Study: The study was conducted at the Surgery and Oncology Clinic in University Kebangsaan Malaysia Medical Centre (UKMMC) between 22nd May 2014 and 27th June 2014.

Methodology: A total of 133 female breast cancer patients were selected by universal sampling, out of which 117 patients responded. The QOL was measured both by the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ-C30) and breast cancer specific supplementary module (QLQ-BR23).

Results: The global health status/QOL mean score was 67.81 (SD±18.92). Mean age of the respondent was 54 years (SD±18.39). Nearly half of the Malay breast cancer patients (45.6%) diagnosed at the stage of III & IV. In the functional scales, the highest mean score was observed for cognitive functioning 83.19 (SD±22.26); whereas emotional functioning had the lowest mean score 62.96 (SD±26.39). The respondents were satisfied with their body image with a mean score

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of 81.34 (SD±24.26) but greatly affected by sexual functioning with a mean score of 31.48 (SD±26.96). Most prevalent general symptoms reported in this study were fatigue, insomnia, pain, appetite loss and financial difficulties; and most prevalent breast cancer specific symptom was found upset by hair loss.

Conclusion: Specific measures should be taken for the routine breast cancer screening, awareness and education programmes to promote early detection and diagnosis of the breast cancer. The planned rehabilitation protocol should be addressed by health care professionals to further improve the QOL among breast cancer patients.

Keywords: Quality of life; EORTC QLQ-C30; breast cancer; Malaysia.

1. INTRODUCTION

Breast cancer is the most frequently diagnosed cancer among women in all over the world. One in four of all diagnosed cancers in women are the breast cancer [1]. It has been estimated that in 2012 about 232,570 new cases of invasive breast cancer were diagnosed and there were about 40,000 deaths from breast cancer in the United States [2]. Almost 50% of breast cancer cases and 58% of deaths occur in less developed countries where the majority of cases are diagnosed in late stages [3].

The number of breast cancer cases in Malaysia has increased during the last three decades at an alarming rate and has become the most frequent cancer in females (32.1%). It is estimated that one in 19 women in Malaysia are at risk, compared to one in eight in Europe and the United States [4].

The five-year survival rate for breast cancer is between 70% and 90% in developed countries and 57% in the developing countries and it is continuously improving with increased awareness, early detection, the advances in treatment as well as better characterization of prognostic factors [5,6]. However, diagnosis and treatment of breast cancer is a very stressful event that emerges as anxiety or depression and it is mainly related to uncertainty about the future, side effects of treatment, destruction of self-image, social relationship, progressive physical deterioration, thoughts of near death and the extra financial burden [7-10].

The high survival rates of breast cancer patients emphasize the need to address the quality of life (QOL) among breast cancer survivors in Malaysia. It is explicit that QOL is a complex concept based on an individual's perception of physical, psychological and social wellbeing and satisfaction [11]. Some studies reported that QOL predicts survival in late stage breast cancer cases [6,12]. Evidence suggests that

improvements in QOL by effective protocol results in decreased morbidity and thereby reduce medical costs [13]. Hence attention to the QOL is important as it forms an essential part of modern cancer care and serves as a measurement tool for the success of care provided to patients with chronic illness [7].

Ensuring a good quality of life of breast cancer patients has become an important outcome of treatment and for making informed clinical and health policy decisions pertaining to the care of these patients. Hence more information is needed on QOL of breast cancer patients to ascertain what sorts of services are required to improve their QOL. This study can help to formulate effective rehabilitation protocols by promising strategy for enhancing the QOL of breast cancer patients. This study aims to assess the QOL among female breast cancer patients in University Kebangsaan Malaysia Medical Centre (UKMMC).

2. MATERIALS AND METHODS

2.1 Design and Sample

The study was carried out at the Surgery and Oncology Clinic on Clinic Day in UKMMC during 22nd May 2014 to 27th June 2014 among female breast cancer patients. Inclusion criteria for recruiting patients were: Female primary and recurrent breast cancer patients of all ages and of any stages, who had survived at least one year after being diagnosed by a registered physician, must be Malaysian and who can speak either English or Malay. Excluded from this study were those who had secondary breast cancer and were terminally ill not able to speak.

2.2 Instrument

A self-administered questionnaire assessing socio-demographic profile, clinical characteristics and the QOL of the patients was used in this study. European Organization for Research and

Treatment of Cancer Quality of Life Questionnaire C30 (EORTC QLQ-C30) version 3.0 and breast cancer specific supplementary module (QLQ-BR23) version 3.0 were used to assess the QOL of the patients. EORTC QLQ-C30 is a standardized questionnaire which was constructed by the EORTC Quality of Life Study Group to measure the QOL of cancer patients. It comprises of 30 items containing five function scales: physical (PF), emotional (EF), social (SF), role (RF), and cognitive (CF); and three symptom scales: fatigue (FA), nausea/vomiting (NV), and pain (PA). A number of single items are also included: dyspnoea (DY), insomnia (SL), appetite loss (AP), constipation (CO), diarrhoea (DI), and financial difficulties (FI). The last two items of the questionnaire assess the global health and overall quality of life. Most items are responded to a four point scale ranging from 1 (not at all) to 4 (very much). The two items assessing global health and overall quality of life are responded to in seven categories ranging from 1 (very poor) to 7 (excellent). The EORTC QLQ Breast Cancer Module (QLQ BR-23) is a supplementary questionnaire for assessing specific QOL issues relevant to patients with breast cancer which was developed for patients varying in disease stage and treatment modality. It comprises of 23 items divided into four functioning scales: body image (BRBI), sexual functioning (BRSEF), sexual satisfaction/enjoyment (BRSEE), and future perspective (BRFU); and four symptom scales: systemic therapy side effects (BRST), breast symptoms (BRBS), arm symptoms (BRAS), and being upset by hair loss (BRHL). The items are responded to in the same four categories ranging from 1 (not at all) to 4 (very much) as most items in the EORTC QLQ-C30. All of the scales and single-item measures range in score from 0 to 100. The raw score of the participants' characteristics were calculated. Then a linear transformation was done according to EORTC scoring manual to standardize the raw score so that it ranges from 0 to 100 [14].

EORTC QLQ-C30 is validated both in English and Malay language. For English language, Marianne Jensen Hjermstad et al. [15] demonstrated the test/retest reliability of the instrument measured by Pearson's correlation coefficient. It was high for all functional scales, with a range from 0.82 for cognitive and role function to 0.91 for physical function. The correlation coefficient for global QOL was 0.85. For the symptom scales: nausea/vomiting, fatigue, and pain-the coefficients were 0.63, 0.83,

and 0.86 respectively. The single-item coefficients ranged from 0.72 for diarrhoea to 0.84 for financial impact. Internal consistencies of the Malay version of EORTC QLQ-C30 were high for Global Health Status (0.91), Functional domains (ranging from 0.50-0.89) and Symptomatology domains (ranging from 0.75-0.99). Correlation Coefficient ranged from 0.05 to 0.99 for Global Health Status and Functional domains, and ranged from 0.13 to 1.00 for Symptomatology domains [16]. The validity and reliability of the English version of EORTC QLQ-BR23 is well documented. The cronbach's alpha coefficient was ranging from 0.70 to 0.91 [17].

2.3 Ethical Consideration

The study was approved by Medical Ethics Committee, International Medical University (Project Number: M.ScPHI01/2014(01) and the Research Ethics Committee of University Kebangsaan Malaysia (Approval Number: 1.5.3.5/244/FF-2014-255). Written permission was obtained from the EORTC Quality of Life Study Group in Brussels, Belgium for European Quality Of Life Questionnaire (EORTC) Cancer specific QLQ-C30 version 3.0 and EORTC-Breast cancer specific-BR23 version 3.0 questionnaires.

2.4 Data Collection

This research was conducted on a voluntary basis where the selected respondents voluntarily agreed to take part in this study. Written informed consent was obtained from all respondents who agreed to take part in this study prior to the commencement of the survey. Participants were informed about the purpose and the design of the study. In addition to that, briefing on the questionnaire in both English and Bahasa Malay was conducted to ensure the accuracy of collecting information. Besides these, the respondents are allowed to enquire any questions pertaining to the questionnaire. Data were collected by the researcher through interviewer administered questionnaire.

2.5 Statistical Analysis

The collected data were tabulated and analysed by using the Statistical Package for the Social Sciences version 20.0 (SPSS; Chicago, IL, USA). Non-responses were treated as missing values and therefore excluded from the analyses. Data analysis consisted of descriptive statistics

including the calculation of frequencies of demographic and clinical variables as well the QOL items. Mean, median scores and Standard Deviation (SD) were calculated for the QOL items.

3. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Demographic characteristics of the participants

Of the total 133 female breast cancer patients defined by the inclusion and exclusion criteria, 117 patients agreed to participate in this study (Non-response rate was 12%). A summary of the respondents' demographic characteristics is provided in the Table 1. More than half of the respondents (61.54%) were aged 50 years and above. More than half of the respondents were Malay (58.1%), followed by Chinese (29.9%) and Indian (12%). About 13% respondents reported that they had no formal education and 16.3% had only primary education, while 39.3% had secondary education and almost one-third (31.6%) had a tertiary level of education.

The majority of the respondents were married (77.8%) and others were single. Of the total respondents, half of them were housewives (52.1%) followed by employed (31.6%), retired (14.5%) and unemployed (1.7%). Nearly half of the respondents (41.0%) had a household income in between RM2000 and RM4000. The majority of the respondents (61.5%) had chronic co-morbidity. Table 2 shows the presence of chronic diseases among the respondents.

3.1.2 Clinical characteristics of the sample population

Table 3 summarizes the clinical characteristics of the sample population. Half of the respondents (50.4%) reported that they were diagnosed within 6 months after the onset of symptoms of breast cancer (most likely lump, pain, discharge through nipple and distortion of the shape of the breast). About 43% of the respondents had passed less than 2 years after their diagnosis of breast cancer. An equal number of respondents had passed 2 to 5 years after diagnosis, while 14.6% had passed more than 5 years after their cancer diagnosis. More than one-third of the patients (36.8%) were diagnosed with stage II, followed by 23.9% at stage III, 20.55% at stage I and 12% at stage IV. Only 6.8% patients were

diagnosed at stage 0. Two-third of the patients (68.4%) underwent for mastectomy and rest of them for breast conserving surgery. One-third (31.6%) of the respondents went through breast reconstructive surgery. Majority of the respondents (80.3%) had received radiotherapy. About 72% of the patients had received chemotherapy. One-fourth of the total respondents (23.9%) had previous history of breast cancer.

Table 1. Demographic characteristics of respondents (n=117)

Socio-demographic variables	Total sample (117)	
	N	%
Age		
< 50 years	45	38.46
≥ 50 years	72	61.54
Ethnicity		
Malay	68	58.1
Indian	14	12.0
Chinese	35	29.9
Educational level		
No formal education	15	12.8
Primary	19	16.3
Secondary	46	39.3
Tertiary	37	31.6
Marital status		
Single	4	3.4
Married	91	77.8
Divorced	4	3.4
Widowed	18	15.4
Employment status		
Housewife	61	52.1
Employed	37	31.6
Retired	17	14.5
Unemployed	2	1.7
Household income		
Less than RM2000	41	35.1
RM2000- RM4000	48	41.0
More than RM4000	28	23.9
Chronic disease		
Yes	72	61.5
No	45	38.5

Table 4 describes the time since the previous history of breast cancer among the respondents. The majority of them (78.6%) had a previous history of breast cancer within 5 years. While 14.3% had it in between 5 years - 10 years and 7.1% more than 10 years ago.

Table 2. Presence of chronic diseases among the respondents

Chronic diseases	Total sample (72)	
	N	%
Diabetes		
Present	42	58.3
Absent	30	41.7
Hypertension		
Present	66	91.7
Absent	6	8.3
Bronchial asthma		
Present	3	4.2
Absent	69	95.8
Others		
Present	4	5.6
Absent	68	94.4

Table 3. Clinical characteristics of respondents (n=117)

Clinical characteristics	Total sample	
	N	%
Delay in diagnosis		
< 6 months	59	50.4
6 months – 24 months	36	30.8
> 24 months	22	18.8
Time since diagnosis		
<2 years	50	42.7
2-5 year	50	42.7
>5 years	17	14.6
Stage at diagnosis		
Stage 0	8	6.8
Stage I	24	20.5
Stage II	43	36.8
Stage III	28	23.9
Stage IV	14	12.0
Type of surgery		
Breast conserving surgery	37	31.6
Mastectomy	80	68.4
Breast reconstructive surgery		
Yes	38	32.5
No	79	67.5
Radiotherapy		
Yes	94	80.3
No	23	19.7
Chemotherapy		
Yes	84	71.8
Before Surgery	13	15.7
After Surgery	71	84.3
No	33	28.2
Previous history of breast cancer		
Present	28	23.9
Absent	89	76.1

Table 4. Time since previous history of breast cancer

Previous history of breast cancer	Total sample (28)	
	N	%
Less than 5years	22	78.6
5years - 10 years	4	14.3
More than 10 years	2	7.1

Table 5 summarizes the stage at diagnosis by ethnicity. Nearly half of the Malay breast cancer patients (45.6%) diagnosed at stage III & IV. Whereas more than three quarter of the Indian (78.6%) and Chinese breast cancer patients (77.2%) diagnosed at stage 0, I, and II.

Table 5. Stage at diagnosis by ethnicity

Ethnicity	Stage at diagnosis	
	III and IVN (%)	0, I and IIN (%)
Malay	31 (45.6)	37 (54.4)
Chinese	8 (22.8)	27 (77.2)
Indian	3 (21.4)	11 (78.6)

3.1.3 Quality of life among respondents

Table 6 represents the mean and median score of the QOL scales of EORTC Cancer specific QLQ-C30 and Breast Cancer specific-BR23 questionnaires among the respondents. The mean overall global QOL was 67.81 (SD ±18.92).

The highest mean score was observed for cognitive functioning 83.19 (SD±22.26) and social functioning 80.63 (SD±24.75), followed by role functioning 79.63 (SD±27.25) and physical functioning 75.33 (SD±21.41) whereas emotional functioning had the lowest mean score 62.96 (SD±26.39). According to the symptom scales, the mean scores ranged between 4.84 and 36.56, corresponding, respectively, to diarrhoea and fatigue with great variety in the distribution in score. Among EORTC Breast Cancer specific-BR23 functional scales, highest mean score was observed for body image 81.34 (SD±24.26). The lowest mean score was found for sexual functioning 31.48 (SD±26.96). Symptoms score were ranging from 9.76 to 44.90, corresponding respectively the breast symptoms and upset by hair loss.

3.2 Discussion

In this study, we have found that the prevalence of breast cancer patients were high among Malay women (58.1%). The highest prevalence of breast cancer has also been found among Malay

women in other studies [5,18]. Diagnosis at late stages and delayed diagnosis were seen mostly in Malay patients [5,18-20] which are consistent with this study. Current study reported that almost half of the Malay breast cancer patients (45.6%) diagnosed at stage III and IV and nearly (29.4%) one third Malay breast cancer patients diagnosed after 24 months of onset of symptoms of cancer. Some other studies reported that Malay were prone to alternative therapy, hence they were delayed to go to hospital and diagnosed late [21,22].

The global health status/QOL among female breast cancer patients was found to be 67.81 (SD±18.92) and is consistent with similar studies conducted in Malaysia. A study by Azlina Yusuf et al. [23] reported that mean score range of global health status/QOL among the Malay was 60.3-84.8 and among Chinese was 65.0-91.1. Another study conducted by Laila Mahmoud et al. [9] in Penang reported the mean score of the

QOL was 71 (SD±25). The findings of this study are somewhat comparable with other international studies conducted in Australia (Mean 78; SD±17), Sweden (Mean 65.1; SD±23.1), Germany (Mean 65.5; SD±22.4), Lebanon (Mean 59.64; SD±29.09) and Spain (Mean 75.00) [24-28].

This study reported that female breast cancer patients in UKMMC scored better in almost all functional scales. Patients were less affected in concentrating and remembering things (Cognitive functioning: Mean score 83.19; SD±22.26), whereas they were emotionally more upset as tension, depression and irritability (Emotional functioning: Mean score 62.96; SD±26.39) were found to be higher among them. These findings were consistent with other studies by Azlina Yusuf et al. [23] in Malaysia, T. S. Lee et al. [25] in Australia, A. Waldmann et al. [26] in Germany and H. Abu-Saad Huijjer et al. [27] in Lebanon.

Table 6. Mean and median score of QOL scales of EORTC cancer specific QLQ-C30 and breast cancer specific-BR23 questionnaires among the study population

Variables	Mean (±SD)	Median(Range)
EORTC QLQ 30 global health status/QOL functional scales	67.81 (18.92)	75.00(25 - 100)
Physical functioning	75.33 (21.41)	86.67 (0 - 100)
Role functioning	79.63 (27.25)	100 (0 - 100)
Emotional functioning	62.96 (26.39)	75.00 (0 - 100)
Cognitive functioning	83.19 (22.26)	100 (16.67 - 100)
Social functioning	80.63 (24.75)	100 (0 - 100)
Symptoms scales		
Fatigue	36.56 (27.34)	33.33 (0 - 100)
Nausea and vomiting	6.84 (4.71)	0 (0 - 100)
Pain	20.66 (14.63)	16.67 (0 - 83.33)
Dyspnoea	12.54 (10.04)	0 (0 - 100)
Insomnia	23.18 (14.17)	0 (0 - 100)
Appetite loss	20.80 (13.46)	33.33 (0 - 100)
Constipation	5.13 (4.92)	0 (0 - 66.67)
Diarrhoea	4.84 (3.19)	0 (0 - 100)
Financial difficulties	18.52 (15.31)	0 (0 - 100)
BR23 functional scales		
Body image	81.34 (24.26)	100 (8.33 – 100)
Future perspective	51.28 (32.91)	66.67 (0 - 100)
Sexual Functioning	31.48 (26.96)	33.33 (0- 66.67)
Sexual enjoyment	45.89 (22.32)	33.33 (0 - 100)
Symptoms scales		
Systemic therapy side effects	18.23 (12.29)	11.90 (0 - 71.43)
Breast symptoms	9.76 (7.72)	0 (0 - 91.67)
Arm symptoms	20.79 (13.10)	22.22 (0- 77.78)
Upset by hair loss	44.90 (24.11)	33.33 (0 – 100)

Most prevalent general symptoms reported in this study were fatigue, insomnia, pain, appetite loss and financial difficulties and these results are similar with other studies in Malaysia [9,23]. These findings are similar with some international studies conducted in USA, Germany, Lebanon, Kuwait and Australia where they reported higher rates of fatigue [26,27,29,32], insomnia [8,26,31-33], pain [29,31,34], appetite loss [8,27,31] and financial difficulties [8,26,31]. In this study diarrhoea was found to be the least prevalent symptom among the breast cancer patients; that is consistent with other studies which reported the similar findings [8,26,31].

Current study reported that female breast cancer patients scored high in body image (81.34; SD±24.26); hence sexual functioning was very low (31.48; SD±26.96). In a study by Azlina Yusuf et al. [23] in Malaysia reported high score in body image; however she reported high score in sexual functioning too which is not consistent with our study. A study by Ali Montazeri et al. [8] in Iran also reported high score in body image and sexual functioning among female breast cancer patients. A study carried out by A. Waldmann et al. [26] in Germany is consistent with findings in the study. Hormonal changes and menopausal symptoms after treatment could be the main causes of problems in sexual functioning [35]. The anxiety about future health found in the study correlates with other local and international studies [23,26,31]. Studies showed that cancer patients who relied on family members and peers for emotional support have less concern about the future and a likelihood of better QOL [36-39]. So, psychological support improves the QOL of the breast cancer patients.

In breast specific symptom scale, we found that breast cancer patients scored comparatively high in the scale of upset by hair loss, followed by arm symptoms and lowest score in breast symptoms. The study by Azlina Yusuf et al. [23] reported the same findings about hair loss and arm symptoms but breast symptoms were comparatively higher in that study which is not consistent with our study. Other studies by Shafika A. Alawadi et al. [31] in Kuwait and A. Waldmann et al. [26] in Germany also reported that breast cancer patients were more upset by hair loss. A cohort study in Philadelphia, USA by Joan M. Neuner et al. [40] reported arm symptoms were prevalent among breast cancer patients there. Other studies by Jean Yoon et al. [33] in Los Angeles, USA and A. Waldmann et al. [26] in Germany are

consistent with arm symptoms finding. Some international studies are not consistent with the finding of breast symptom [8,32,33].

Arm symptoms like lymphedema has been recognized as major adverse outcome of breast cancer treatment which occurs almost half of the treated patients with breast cancer [41]. The effects of lymphedema impact the QOL through altered sensation, pain or fine motor function [42]. A study by J. Ware et al. [43], 2004 reported that lymphedema was significantly associated with the reduction in physical and psychological domain of QOL. It has been suggested that early recognition of lymphedema has the potential to substantially improve the QOL among breast cancer patients [44].

Few limitations need careful interpretation of the results. Selection bias reflects the fact that the samples were primarily from single hospital which restricts the applicability of the findings to the female breast cancer patients all over Malaysia. Universal sampling was done to select patients in this study which causes sampling bias. Several types of response bias may also be possible while collecting data. Acquiescence bias is one of those where respondents tend to answer questions affirmatively when they have doubts. Another is central tendency bias where respondents tend to avoid extreme scores and give response towards centre of the scale range. Questions on sexuality may not have been answered truthfully due to cultural barriers which causes information bias. A qualitative or mixed method study with proper sampling involving large sample size from all over Malaysia can throw more light to confirm these findings. Psychological and physical needs should be addressed in the hospital by having rehabilitation programmes.

4. CONCLUSION

The global QOL among female breast cancer patients in UKMMC was comparable to similar local and international studies. However, Malays tend to be diagnosed with advanced stage of breast cancer. Specific measures should be taken for the routine breast cancer screening, awareness and education programme to promote early detection and diagnosis of the breast cancer. Most prevalent symptoms reported in this study were fatigue, insomnia, pain, appetite loss and financial difficulties. Though patients were satisfied with body image, their sexual function was mostly affected. These must be given more

attention by health care professionals to further improve QOL among breast cancer patients by addressing planned rehabilitation programmes.

CONSENT

All authors declare that 'written informed consent was obtained from the patient.

ETHICAL APPROVAL

The study was approved by Medical Ethics Committee, International Medical University (Project Number: M.ScPHI01/2014(01) and the Research Ethics Committee of University Kebangsaan Malaysia (Approval Number: 1.5.3.5/244/FF-2014-255).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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