RESEARCH ARTICLE

Health-related Quality of Life among Breast Cancer Patients and its Influencing Factor in a Chinese Population

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Abstract

Aim: The aim of this study was to investigate the quality of life (QOL) of breast cancer patients by using the Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaires. Methods: A total of 522 adult patients who were admitted to our hospital with breast cancer were collected during the period of Jun. 2007 to Dec. 2009. Results: Our FACT-B questionnaire study suggested that women below 50 years old, employed, higher education and annual income, lower TNM stage and receiving modified radical mastectomy manifested significantly better QOL using the assessment tool of the FACT-B subscale. Moreover, regression analysis indicated patients with young age, low stage cancer, high education and income were more likely to have high score of QOL, with ORs (95% CI) of 2.8 (1.52-4.56), 2.1 (1.15-3.95), 3.1 (1.45-5.12) and 3.54 (1.54-5.43), respectively. Conclusion: Our study showed younger age, lower stage of cancer, higher education and income could influence the QOL of breast cancer patients in our Chinese population. Further large sample studies are still needed for confirmation.

Keywords: Quality of life - breast cancer - socioeconomic factors - Chinese population

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Introduction

Breast cancer is by far the most frequent cancer among women with an estimated 1.38 million new cancer cases diagnosed in 2008 (23% of all cancers), and ranks second overall (10.9% of all cancers). It is now the most common cancer both in developed and developing regions with around 690 000 new cases estimated in each region (population ratio 1:4) (IARC, 2008). It is estimated most of the breast cancer cases occur among women aged before 50 years (ACS, 2003). With the increasing numbers of breast cancer patients, the number of breast cancer younger survivors is growing. Previous studies conducted in Western counties indicated that better psychological morbidity and poorer quality of life (QOL) after breast cancer than older women (Avis et al., 2005; Al-Naggar et al., 2011; Park et al., 2011). The main reasons might be the worrying about body image and sexuality, psychological stress, anxiety, fear of recurrence, sleep dysfunction, fear of loss of fertility, pain, fatigue, and impaired physical functioning (Avis et al., 2005; Al-Naggar et al., 2011; Park et al., 2011; Park et al., 2011).

A number of factors may be associated with the HRQoL of breast cancer patients after surgery. Age and types of treatment have been known to be significant high risk factors for poor quality of life (Wenzel et al., 1999; Kwan et al., 2010; Park et al., 2011). Previous studies suggested that younger women had greater psychological morbidity and poorer QOL after breast cancer than older women (Wenzel et al., 1999; Kwan et al., 2010). However, such associations were only published in one study conducted in western countries. Moreover, the incidence of breast cancer is rapidly increasing in Chinese urban cities, few studies have focused on the quality of life among breast cancer cases in Chinese population. Therefore, we conducted a prospective study, and used the Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaires to investigate the QoL of breast cancer patients.

Materials and Methods

Participants and procedures

The study was performed in Second Affiliated Hospital of Guangzhou Medical University. Eligible subjects were adult patients who were admitted to this hospital with breast cancer during the period of Jun. 2007 to Dec. 2009. The eligibility criteria for our study were no evidence of systemic metastasis, no evidence of psychosis, dementia, or suicidal behavior, and those who agreed to participate in this study. A total of 564 patients were invited to participate on the day of admission and 522 agree to participate (92.6%). A reference sample was collected from people who requested general health examinations during the same period. The criteria of control group were people without bone tumor and frequency matched to patients

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with bone tumor by age (within 5 years) and sex.

The study was approved by the Second Affiliated Hospital of Guangzhou Medical University. All participants signed informed consents before participation.

Health-related quality of life

The Functional Assessment of Cancer Therapy-Breast (FACT-B) questionnaires was used to assess their quality of life among breast cancer patients. The FACT-B instrument measured on 5-point rating scales, including measures for physical, social/family, emotional, and functional wellbeing. The FACT-B included a collection of items of breast cancer-related concerns pertaining to various QOL domains, including physical well-being, social/family well being, emotional well-being, functional well-being and additional concerns. A total of FACT-B score was calculated by summing the subscales. The instrument was used to ask respondents to rate how true each statement is for the last 7 days. Response scales range from 0 (not at all) to 4 (very much). The cronbach a in this study was 0.911 for the total FACT-B, 0.832 for PWB, 0.832 for SWB, 0.817 for EWB, 0.820 for FWB, and 0.723 for BCS.

Face-to-face interviews were conducted to collect information on demographic characteristics and QoL from the reference group.

Statistical analysis

Means and SDs of subscales were evaluated for descriptive data. Proportion was evaluated for categorical data. Analysis of variance (ANOVA) was performed to compare between groups. Conditional logistic regression was also performed to estimate odds ratios (ORs) and 95% confidence intervals (Cls) of risk factors for low HRQoL one year after treatment. We chose the medians score of QoL measurement values as cutting points. The inclusion of variables into the model was determined according to both statistical and biological considerations. If the potential confounding factors altered the effect estimates by more than 10%, they were included in the multi-variate models. The final model included the following variables: age, income, employment status, and TNM stage. Data analyses were conducted by using the SPSS version 16.0 software (SPSS Inc, Chicago, USA). A two-sided P value < 0.05 was determined as statistically significant.

Table 1. Demographic and Clinical Variables

Variables	Breast cancer group N=522	%
Age		
<50	190	36.4
≥50	332	63.6
Employment status at surgery		
Employed	399	76.4
Unemployed	123	23.6
Education (years)		
<9	179	34.2
≥9	343	65.8
Annual income (RMB)		
<10000	147	28.2
≥10000	375	71.8
Operation method		
Conservation surgery	179	34.3
Modified radical mastectomy	343	65.7
TNM stage		
I (0+1)	217	41.5
II (IIA+IIB)	142	27.2
III (IIA+IIB+IIC)	163	31.3
Radiation therapy		
No	242	46.4
Yes	280	53.6
Chemotherapy		
No	163	31.3
Yes	359	68.7

Results

The baseline characteristics of the remaining 522 participants were presented in Table 1. There were 190 males and 332 females among these cancer patients, and the same numbers among reference group. The mean age of patients and controls was 58.5±6.1 and 57.9±5.7 years, respectively. About 65% of the patients taken modified radical mastectomy, and radiation therapy

Table 2. Comparing the QOL with Reference to the Demographic Characteristics of Breast Cancer Patients

Variables	PWB	SWB	EWB	FWB	BCS	TQOL
Age						
<50	20.6±4.8	16.7±5.8	16.9±5.5	15.6±5.7	20.8±5.8	86.4±17.6
≥50	18.5±5.2	15.0±4.7	15.3±5.3	13.4±6.2	18.5±6.4	78.2±18.9
P value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Employment status at surgery						
Employed	21.6±5.3	19.5±7.7	17.9±6.5	15.6±6.7	19.8±6.3	87.9±16.6
Unemployed	17.2±6.1	13.0±5.1	14.0±5.0	15.0±4.6	19.5±6.8	76.5±19.2
P value	<0.05	<0.05	<0.05	0.13	0.33	<0.05
Education (years)						
<9	21.8±6.2	20.1±6.1	16.9±5.4	15.1±5.7	20.5±7.2	86.3±17.1
≥9	18.0±5.7	14.2±5.5	17.0±5.2	16.4±5.2	18.6±6.4	77.8±17.4
P value	<0.05	<0.05	0.41	<0.05	<0.05	<0.05
Annual income (RMB)						
<10000	15.5±5.8	15.2±5.6	16.4±5.0	14.6±5.8	20.5±7.2	79.0±18.2
≥10000	19.4±5.6	17.2±6.4	17.9±6.7	17.2±7.3	18.6±6.4	84.7±16.8
P value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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

Table 3. Comparing the QOL with Reference to the Treatment Characteristics of Breast Cancer Patients

Variables	PWB	SWB	EWB	FWB	BCS	TQOL
Operation method						
Conservation surgery	19.8±5.8	18.7±6.2	16.7±5.7	16.5±5.6	18.7±6.9	83.5±16.8
Modified radical mastectomy	19.5±5.9	18.2±5.5	16.8±4.9	17.7±5.7	20.5±6.2	83.9±15.1
P value	0.29	0.17	0.58	<0.05	<0.05	0.39
TNM stage						
I (0+1)	22.6±7.5	21.5±7.4	18.1±6.0	18.0±6.2	22.4±7.5	88.7±15.9
II (IIA+IIB)	16.2±6.5	13.6±5.2	15.2±4.4	16.1±4.2	14.7±5.3	80.4±16.1
III (IIA+IIB+IIC)	15.2±6.3	11.2±6.1	13.4±4.8	13.0±5.5	12.8±5.0	75.6±16.5
P value	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Radiation therapy						
No	19.5±6.3	17.2±7.0	17.6±6.1	17.2±6.6	19.2±6.8	83.9±17.9
Yes	18.6±6.5	16.5±6.3	17.3±6.0	16.9±6.7	19.7±7.0	84.1±18.6
P value	0.06	0.11	0.29	0.3	0.8	0.55
Chemotherapy						
No	18.4±6.0	16.6±7.6	16.7±5.2	15.6±6.1	18.5±6.5	84.7±17.7
Yes	17.3±6.2	16.1±6.4	17.1±5.5	15.0±4.6	19.2±6.1	83.9±18.4
P value	<0.05	0.22	0.78	0.11	0.12	0.32

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

Table 4. Odds Ratios (OR) and 95% Confidence Intervals (CI) of Low QoL Scores on TQOL Among Breast Cancer Patients

Characteristics	Odds ratios (95% CI)	P value
Age		
<50	1.0 (Ref.)	-
≥50	2.8(1.52-4.56)	<0.05
Employment status at surgery		
Unemployed	1.0 (Ref.)	-
Employed	2.1(1.15-3.95)	<0.05
Annual income (RMB)		
<10000	1.0 (Ref.)	-
≥10000	3.1(1.45-5.12)	<0.05
TNM stage		
III (IIA+IIB+IIC)	1.0 (Ref.)	-
II (IIA+IIB)	1.75(0.92-2.14)	0.32
I (0+1)	3.54(1.54-5.43)	<0.05

and chemotherapy were used for more than 50% of the patients.

We found patients aged below 50 years old had higher scores in terms of PWB, SWB, EWB, FWB and BCS as well as TQOL than those above 50 years old (Table 2). Patients with better socioeconomics (Employed and higher education) had higher scores in terms of PWB, SWB and TQOL. Similarly, patients receiving modified radical mastectomy had higher QOL scores in terms of FWB and BCS. Moreover, we found patients with higher annual income and higher TNM stage had higher scores in all domains of QOL (Table 3). However, receiving radiation therapy and Chemotherapy or not did not influence the QOL of breast cancer patients.

By multiple regression analysis, we found patients with young age, low stage cancer, high education and income were more likely to have high score of QOL, with ORs (95% CI) of 2.8 (1.52-4.56), 2.1 (1.15-3.95), 3.1 (1.45-5.12) and 3.54 (1.54-5.43), respectively.

Discussion

This study examined the QOL among breast cancer patients in Chinese populations and the influencing factors for the QOL of them. Results from these analysis suggested that women below 50 years old, employed, higher education and annual income, lower TNM stage and receiving modified radical mastectomy manifested significantly better QOL in terms of the assessment tool of FACT-B subscale. Moreover, the regression analysis indicated patients with young age, low stage cancer, high education and income were more likely to have high score of QOL.

Similar with previous study, we found younger breast cancer patients had higher QOL than old patients in most of the QOL domains by FACT-B subscale (Ohsumi et al., 2009; Park et al., 2011). Park et al reported breast cancer survivors in Korea had higher scores in terms of physical well being, social well being, functional well being and breast cancer subscale. On the contrary, previous several studies suggested the older age patients are related to higher QOL (Mor et al., 1994; Ganz et al., 1998; Wenzel et al., 1999; Avis et al., 2005; Kwan et al., 2010). A study conducted in United State showed younger breast cancer patients are associated with problems with respect to partner relationships, sexual functioning, and body image, and less adaptive coping strategies, and the younger patients were more likely to have chemotherapy than older patients. Therefore, they were related to lower overall QOL than older breast cancer patients (Kwan et al., 2010). The inconsistency of these studies may be explained by differences in population background, source of subjects, sample size and by change.

We observed advanced stage cancer, lower education and income are association with lower QOL. Patients have higher educational levels and more income were more likely to better access to information and resources for problem solving as well as better coping skills, which might explain better QOL among women with higher socioeconomics. Moreover, higher education would more likely to get education and information about breast cancer and its management, which would be helpful to improve the QOL among patients. Advance stage cancer is related

to more pain and chemotherapy treatment, and serious physical activity as well as more psychological problems. Therefore, advanced stage cancer, lower education and income may impact the QOL of breast cancer patients.

This study has several limitations. Firstly, the breast cancer patients enrolled in our study might not represent for tumor patients in Chinese population and the findings from this study may not be applied for Chinese populations in other places. Second, because of practical difficulties, we did not follow up the patients to assess the long term HRQoL of patients after discharge. Third, the sample size was limited and may not have enough statistical power to find the other influence factors for QOL.

In conclusion, our study found the breast cancer patients with younger age, lower stage of cancer, higher education and income were associated with higher score of QOL by FACT-B subscale assessment. More large sample studies from Chinese population are still needed.

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