

RESEARCH COMMUNICATION

Eight Year Survival among Breast Cancer Malaysian Women from University Kebangsaan Malaysia Medical Centre

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Abstract

Survival after diagnosis of cancer is one of the major outcome measurements and a key criterion for assessing quality of cancer control related to both the preventive and the therapeutic level. The purpose of this study was to determine the 8-year survival time in Malaysia based on socio-demographic and clinical characteristics. A retrospective study of 472 Malaysian women with breast cancer from the Medical Record Department at Universiti Kebangsaan Malaysia Medical Centre (UKMMC) was therefore performed with survival analysis carried out using the Kaplan-Meier with log-rank test for univariate analysis and Cox-regression for multivariate analysis. Women who had cancer or family history of cancer had a longer 8-year survival time ($p = 0.008$) compared with others who did not have such a history. Tamoxifen use, positive oestrogen receptor status, and race were prognostic indicators for 8-year survival time ($p = 0.036$, $p = 0.018$, $p = 0.053$, respectively) in univariate analysis. Multivariate analysis showed that being Malays and having no family history of cancer were independent prognostic factors for shorter survival time ($p = 0.008$, $p = 0.012$, respectively). In conclusion, being Chinese and having a family history of cancer are predictors of longer survival among the Malaysian breast cancer women.

Key Words: Breast cancer - survival time - women - UKM Medical Centre - Malaysia

Asian Pacific J Cancer Prev, **10**, 1075-1078

Introduction

Breast cancer is the most common cancer in Malaysian women and the commonest cause of death because of cancer for women in Malaysia (Lim and Halimah, 2003). Breast cancer is the most frequent solid tumour in women and the second leading cause of cancer deaths among women (Eidson et al., 1994). Because of lacking in approach to primary prevention of breast cancer, interventions have focused on improving early detection and optimizing treatment. Survival after diagnosis of cancer is one of the major outcome measurements and key criteria for assessing quality of cancer control related to both the preventive and the therapeutic level (Fish et al., 2005). Low socioeconomic status has been suggested as a cause for many of the advanced stage at diagnosis and poor survival (Muss et al., 1992; Ansel et al., 1993).

There is also strong evidence of differences in survival between ethnic groups in the USA (Richardson et al., 1992; Lannin et al., 1998). Identifying factors associated with poor prognosis may improve our knowledge of the disease and promote the development of access to new preventive or therapeutic strategies to improve overall survival time.

The purpose of the present study was to determine the 8-year survival time among Malaysian breast cancer women based on socio-demographic and clinical characteristics.

Materials and Methods

This is a retrospective study conducted among 472 patients who were diagnosed with breast cancer. Patients were obtained from the Surgery and Oncology Department in UKMMC. Patients who were diagnosed during 1st January 1999 till 31st December 2006 were included in this study and then followed-up till 31st December 2007. Unknown date of diagnosis and coexistence of other cancer were excluded from this study. Males were excluded because a limited number of males are diagnosed with breast cancer each year. The Medical Record Department's staff provided the files of these patients. The patients or patients' family members were contacted through the phone to confirm if the patients are still alive or not. From this exercise, three patient categories were identified: some patients were still alive, some have died, and others could not be traced. Inability to trace some patients was because of missing, wrong number or

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address, out of service telephone number or patients did not return for further follow-up. The dates of death of those who have died were obtained and condolences were given. Those who were unable to be traced, the last date of follow-up was obtained. Analysis was performed using the SPSS (Statistical Package for Social Sciences) software package (version 13.0). The Kaplan Meier method was used to produce survival time according to patient's sociodemographic and clinical characteristics. Cox proportional hazards modelling was used to analyse associations with the main exposure.

Results

Four hundred and seventy-two (472) patients were enrolled in this study. Mean age of participants was 50.3 (±10.82) years, minimum age was 23 years old and maximum age was 86 years old. Mean survival time was 6.7 years. 323 (68.4%) women were still alive, while 93 (19.7%) were lost to follow-up. Fifty-six (11.9%) breast cancer patients died during the study period.

Table 1 presents patients characteristics. About the age, 70.5% of the study population were diagnosed at younger age. In terms of race, 51.9% of the patients were Malays. On the BMI, 60.4% of the study population were overweight during or soon after diagnosis. For marital status, 86.7% of the study population were married. Most of the patients were diagnosed with large tumour size (more than half of the subjects, 259 subjects representing 75.7% of the total sample). As far as histological grade, majority of the study population were represented with stage I or II at diagnosis (67.6%). 67.1% of the study

Table 1. Patient Characteristics

Characteristic	Number	(%)
Age group (years)		
≤ 55	332	70.5
> 55	139	29.5
Race		
Malay	245	51.9
Chinese	187	39.6
Indian	40	8.5
BMI		
Underweight	22	7.0
Normal-weight	103	32.6
Overweight	191	60.4
Marital status		
Married	370	86.7
Non-married	57	13.3
Tumour size (cm)		
< 2	83	24.3
≥ 2	259	75.7
Histological grade		
Grades I & II	227	67.6
Grade III	133	32.4
Type of surgery		
Mastectomy	286	67.1
Lumpectomy	140	32.9
Chemotherapy		
Yes	362	84.0
No	69	16.0
Radiotherapy		
Yes	312	72.4
No	119	27.6
Tamoxifen		
Yes	254	58.9
No	177	41.1
Family history		
Yes	114	28.5
No	286	71.5
Oestrogen receptor		
Positive	225	52.8
Negative	178	44.2
Progesterone receptor		
Positive	207	52.9
Negative	184	47.1

population underwent mastectomy; while the remaining underwent lumpectomy. About 84.0% of the study population received chemotherapy and 72.4% received radiotherapy. More than half of the patients (58.9%) had received Tamoxifen therapy. In term of family history of breast cancer, 28.5% of the study population had family history of any cancer. Slightly more than half of the study population were oestrogen receptor positive (52.8%) and progesterone receptor positive (52.9%).

In univariate analysis, factors associated with longer 8-year survival time including having family history of cancer (p = 0.008), having positive oestrogen receptor (p = 0.018) and having use Tamoxifen (p = 0.036). However, age, race, body mass index (BMI), marital status, tumour size, histological grade, surgery type, chemotherapy, radiotherapy and progesterone receptor were not associated with 8-year survival time (Table 2).

Factors that remained independently associated with the risk of dying after adjusting for all other variables in multivariate Cox regression were race and family history of cancer (Table 3). Tamoxifen use was not significantly associated with the risk of dying in these women after adjusting for other factors. The Malay women had 2.87 (95% CI 1.31-6.28) times the risk of dying than Chinese women. Women who had no family history of cancer were 3.75 (95% CI 1.33 – 10.58) times more likely to die than women who did have family history of cancer.

Table 2. Survival Time According to Patients' Characteristics

Variable	Mean	SE	95% CI	p value
Age group (years)				
> 55	7.13	0.18	6.70 - 7.57	0.100
≤ 55	6.59	0.22	6.24 - 6.95	
BMI				0.395
Normal weight	6.73	0.63	6.26 - 7.20	
Overweight	6.41	0.30	5.83 - 7.00	
Underweight	5.03	0.25	3.90 - 6.16	
Marital status				0.465
Non-Married	6.62	0.17	6.04 - 7.21	
Married	6.60	0.30	6.26 - 6.94	
Race				0.053
Chinese	7.10	0.22	6.77 - 7.44	
Indian	6.45	0.17	5.69 - 7.21	
Malay	6.41	0.38	5.98 - 6.85	
Tumour size (cm)				0.109
<2	6.71	0.17	6.36 - 7.06	
≥2	6.68	0.22	6.25 - 7.12	
Grade				0.190
I & II	6.88.	0.17	6.53 - 7.24	
III	6.38	0.28	5.82 -6.95	
Type of surgery				0.057
Lumpectomy	6.66	0.18	6.18 - 7.14	
Mastectomy	6.62	0.24	6.27 - 6.97	
Chemotherapy				0.140
No	6.86	0.16	6.37 - 7.35	
Yes	6.69	0.26	6.37 - 7.02	
Radiotherapy				0.175
Yes	6.90	0.17	6.56 - 7.23	
No	6.20	0.24	5.70 - 6.70	
Tamoxifen				0.036*
Yes	6.99	0.17	6.64 - 7.33	
No	6.43	0.23	5.97 - 6.89	
Family history of cancer				0.008*
Yes	6.71	0.23	6.25 - 7.16	
No	6.59	0.16	6.20 - 6.97	
Oestrogen receptor				0.018*
Positive	7.04	0.20	6.65 - 7.44	
Negative	6.17	0.20	5.73 - 6.60	
Progesteron receptor				0.057
Positive	6.53	0.17	6.18- 6.88	
Negative	6.24	0.19	5.81- 6.67	

Mean (years); *Significant at p<0.05.

Table 3. Multivariate Analysis Using Cox Regression[#]

	b	HR[exp(b)]	CI 95%	p value
Race				
Chinese	Ref			0.028*
Malay	1.05	2.87	1.31-6.28	0.008*
Indian	0.63	1.89	0.56-6.33	0.299
Tamoxifen use	0.32	1.38	0.75-2.54	0.300
History of cancer	Ref			
No history of cancer	1.32	3.75	1.33-10.6	0.012*

[#]Dependent variable: 0 = survived, 1 = died; *Significant at $p < 0.05$.

Discussion

This study had the advantage of drawing patients from a single institution. This ensured homogeneity in classification schemes and treatment choices available at a comprehensive cancer centre.

Age, marital status and BMI had no effect on survival time. However, different ethnic groups found to have significant impact on patients' survival in both univariate and multivariate analysis. Tamoxifen use, family history of cancer and oestrogen receptor status were found to have significant impact on survival time in the univariate analysis. Besides, the family history of cancer has the added significance in the multivariate analysis.

The study showed there are no significant differences in survival time among different ethnic groups in the univariate analysis and multivariate analysis. Chinese women had the highest 8-year survival time (7.10 years), followed by Indians (6.45 years) whereas the lowest 8-year survival time was in the Malays (6.41 years). In a Malaysian study reported by Ong and Yip (2003), there were significant differences in survival rate among the different ethnic groups. Also, Allen et al. (1991) showed that differences in survival rate exist between different ethnic groups, whether in the same country or in different countries. For instance, Japanese patients with breast cancer showed 5% to 15% 10-year survival advantage over Caucasian patients (Allen et al. 1991). Shorter survival time among the Malay women could be because of diagnosis at older age and having larger tumour size compared with other ethnic groups. Other possible reasons include physiological differences in tumour characteristics, histological type, and oestrogen receptor. Differences in socioeconomic status may also offer an explanation because Chinese have the highest income (Ong and Yip 2003). It is well documented that low socioeconomic status and poverty adversely affect survival for patients with cancer (Eley et al., 1994). Socioeconomic factors that may also contribute to differences in survival include aspects of health care system such as access to health care and quality of care (Freeman and Wasfie, 1989) as well as patient behaviour and lifestyle (Coates et al., 1990).

As for Tamoxifen, it is a hormone-blocking drug that interferes with the actions of oestrogen or progesterone, which stimulate the growth of cancer cells that have oestrogen and progesterone receptors. This drug is used when cancer cells have these receptors. In this study, Tamoxifen use had significant differences between patients who received it and those who did not receive it.

Evidence has shown the Tamoxifen treatment may extend survival time beyond 10 years, and can reduce the mortality in most of breast cancer patients irrespective of menopausal status, lymph node status, and adjuvant chemo- or radiotherapy (Chrapusta et al., 2004).

There was a significant difference in the survival among women who had family history of cancer and the others who did not have such a history in univariate and multivariate analysis. This may be partly because of the awareness among the patients to do regular screening, avoiding risk factors that can be avoided and practicing healthy lifestyle. Changes in certain genes are known to make women more susceptible to breast cancer. In families in which many women have had the disease, gene testing can show whether a woman has specific genetic changes known to increase the susceptibility to breast cancer. A woman's risk for developing breast cancer increases if her mother, sister, daughter, or two or more other close relatives, such as cousins, have a history of breast cancer especially at young age (Fimsek, 2000).

As for the oestrogen receptor (ER), its prognostic role was first noted in 1977 (Knight et al., 1977). It is now a well-established fact that ER absence is related to a poor survival outcome (Hawkins et al., 1996). In this study, there is a significant difference in the survival time between the patients who had ER positive and the others who had ER negative. Ong and Yip (2003) reported the ER status was a prognostic factor for the overall survival rate. Walt and colleagues (1976) reported that ER negative patients were more likely to develop visceral metastases and had a shorter survival time. On the contrary, another study reported a weak or non-significant impact of ER on overall survival rate (Molino et al., 1992).

In conclusion, race has a significant impact on survival time in the multivariate analysis. Malay women had the shortest survival time, followed by Chinese and then Indian. Women who received Tamoxifen therapy had longer survival time than those who did not. Women who had family history of cancer had longer survival time compared with women who had no family history of cancer in both univariate and multivariate analysis. Women with positive oestrogen receptor had longer survival time compared with those with negative ones. Multivariate analysis showed that being Chinese and had family history of cancer is likely to have longer survival.

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