

Breast Cancer and Lifestyle Risks Among Chinese Women in the Klang Valley in 2001

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Summary

Breast cancer is one of the commonest cancers among women in Malaysia. The relation between lifestyle practices and the risk of breast cancer in Chinese women aged 21-55 years were assessed using data collected from June to October 2001, via a face-to-face interview in a case control study in the Breast Clinics of Kuala Lumpur Hospital and University Malaya Medical Centre. A total of 89 cases with breast cancer were compared with 85 controls without the disease. Our study showed that breastfeeding had an odds ratio of 4.43 after adjustment for confounders. The results add to the evidence of a protective association between breast feeding practices and breast cancer particularly among Chinese women receiving treatment at two government hospitals in the Klang Valley.

Key Words: Breast cancer, Lifestyle, Case control study, Women, Lactation

Introduction

Breast cancer is one of the commonest cancers in women in the world. Its incidence is increasing in most countries and appears to be greatest in the industrialised countries particularly Western Europe, the United States and Canada¹. The highest reported incidence rates were among white women in the San Francisco Bay Area, California (104.2 per 100,000) and the lowest in the Gambia (3.4 per 100,000). The reasons for the international differences are unclear, but variations in registering patients and the definition of breast cancer could contribute to the differences apart from the well studied risk factors².

The first report of the National Cancer Registry 2002³, and the Penang Cancer Registry 1996, reported breast cancer as the commonest cancer among in Malaysian women⁴. Cancer of the breast is 30.4% of all female cancer and the cumulative lifetime risk is 1:19³. Chinese woman in Malaysia has 1 in 14 chance of developing breast cancer as compared to a Malay woman with 1 in

24 chance. The age standardized incidence per 100,000 population in Peninsular Malaysia for Chinese woman is 70.1 and Malay woman is 41.9 whereas for Singaporean Chinese is 39.5 and 33.9 for Singaporean Malay woman³.

Breast cancer causes personal, family and societal burden and impose added expenditure on health. Only 20% to 40% may be attributed to accepted risk factors including body weight, diet, endogenous hormone levels and reproductive factors such as age at menarche, menstrual cycle length, parity and lactation. Unidentified environmental exposures could also be related. According to the Canadian Breast Cancer Initiatives, accepted risk factors with relative risk of greater than 4.0 includes age of more than 50 years, family history of a relative with premenopausal bilateral breast cancer or two first degree relatives with any form of breast cancer, benign proliferative breast disease including atypical hyperplasia and lobular carcinoma in situ, atypical epithelial cells in nipple aspirate fluid and mutations in BRCA1 or BRCA2 gene². Chest

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irradiation, one first degree relative with any form of breast cancer, mammographically dense breast tissue, biopsy-confirmed benign proliferative breast disease and hyperplastic epithelial cells without atypia in nipple aspirate fluid are risk factors with a relative risk of 2.1 to 4.0. Risk factors with relative risk of 1.1 to 2.0 includes 30 years of age at first pregnancy, absence of bilateral oophorectomy before the age of 40, history of primary cancer of the ovary or endometrium, higher socio-economic status, never married, Whites, Jews, menopause at 55 years, menarche of 11 years and nulliparous. Possible risk factors with relative risk of less than 2.0 are long duration and high dose of hormone replacement therapy, oral contraceptives in women with benign breast disease and women who uses them at a late age (46 years-65 years), and women who used them before 20 years of age and or before their first pregnancy and not breastfeeding². Even though this has been a well-studied subject worldwide, there are still minimal information locally on breast cancer. This paper presents the results of a case-control study in women 21-55 years conducted at two government Breast Clinics in the Klang Valley between June to October 2001.

Materials and Methods

A cross sectional study was conducted in the Faculty of This case-control study, a part of a bigger study on breast cancer was carried out from June to October 2001, among Chinese female patients residing in the Klang Valley and receiving treatment at the Breast Clinics in Kuala Lumpur Hospital and University Malaya Medical Centre.

This study was carried out following official consent from both the hospitals and their ethical committees as well as the individual patients. Confidentiality was maintained throughout the study. A hundred and seventy-four patients agreed to participate in this study. The cases were 89 Chinese women, between 21 to 55 years of age, residing in the Klang Valley and receiving treatment either at the Breast Clinics in Kuala Lumpur Hospital or University Malaya Medical Centre. They were confirmed cases of breast cancer stage I, II or III based on histological examinations, having the disease for the past five years and with no concurrent cancers. They were able to converse either in English or Malay language. Cases were identified and selected using purposive sampling from the clinic registers. They were interviewed after completion of their hospital

consultation. Some information like diagnosis were validated from the patients' case notes.

The controls were selected randomly from the Outpatient Departments of both hospitals. They were 85 Chinese women, aged 21-55 years without concurrent cancers and residing in the Klang Valley. They were interviewed after completion of their consultation with the doctors.

The cases were matched with controls by age and socio-economic factors.

Data were collected using a structured pre-tested questionnaire. Face-to-face interviews were carried out by one of the authors. The questionnaire collected information on demographic background of age, education level and monthly income. The reproductive history, age of menarche, age at first childbearing, number of children, age at menopause were also obtained. Other host characteristics studied were previous diseases, past experience of chest x-ray and chest radiotherapy and lastly, family history of breast cancer. The personal habits studied were hormone replacement therapy (HRT), breastfeeding, alcohol consumption, smoking and passive smoking.

The data were analysed using Statistical Package for Social Science (SPSS) version 10.0. Univariate comparisons were made using chi-square, t-test. Multiple logistic regression were also carried out. The p value below 0.05 were considered as statistically significant.

Results

A total of 89 cases and 85 controls were taken into analysis after prior selection. The associations between breast cancer and selected risk factors are in Table I, which summarizes the demographic and background information of the respondents, Table II and Table III shows the host characteristics and the personal habits of cases and controls respectively.

Demographic background

The ages for both cases and control were normally distributed, with a significance level of ($p > 0.05$). The mean age of cases and control were 46.35 ± 6.74 and 44.51 ± 7.30 years, respectively. The mean age at diagnosis of breast cancer for cases was 44.65 ± 6.54 years. More than 90 percent of the total respondents received formal education and 50 percent of the

respondents attained secondary education. More than 80 percent of the respondents were married and about 90 percent earned a monthly income of RM999 and above. Fifty-three percent earned between RM1000 to RM2999 monthly.

Host characteristics

All the host characteristics studied, age of menarche, age at first childbearing, number of children, age at menopause, previous diseases, past experience of chest x-ray and chest radiotherapy and lastly, family history of breast cancer did not show any significant elevated risk for breast cancer when adjusted with age and other risk factors (i.e. education level, marital status, monthly income, age of menarche, age of first childbearing, age

at menopause, and family history). The results are shown in Table II.

Personal habits of respondents with breast cancer

The personal habits studied were hormone replacement therapy (HRT), breastfeeding, alcohol consumption, smoking and passive smoking shown in Table III. Hormone replacement therapy, alcohol consumption and smoking yielded insignificant odds ratio and confidence interval. Breastfeeding yielded an odds ratio of 3.07 (95% CI 1.60 – 5.93) when adjusted with age. However, after adjustment for potentially confounding factors, the odds ratio increased to 4.43 (95% CI 1.92-10.23). There was a significant difference for both, feeding months per child and number of children fed ($p < 0.05$) between cases and control.

Table I: Socio-demographic Characteristics of the Respondents

Background Data	Case	Control	Total	Age-adjusted		Multivariate	
	n=89(%)	n=85 (%)	n=174 (%)	OR	95% CI	OR	95% CI
Education level							
Never been to school	6 (6.7)	3 (3.5)	9 (5.2%)	1.00		1.00	
Primary	24 (27.0)	31 (36.5)	55 (31.6%)	0.51	0.12-2.32	0.72	0.14-3.80
Secondary	44 (49.4)	44 (51.8)	88 (50.6%)	0.70	0.16-3.08	1.21	0.22-6.56
Tertiary	15 (16.9)	7 (8.2)	22 (12.6%)	1.96	0.34-11.41	4.86	0.62-38.41
Marital Status							
Single	15 (16.9)	16 (18.8)	31 (17.8%)	1.09	0.48-2.44	0.53	0.16-1.77
Married	74 (83.1)	69 (81.2)	143(88.2%)	1.00		1.00	
Monthly family income							
<RM 999	13 (14.6)	6 (7.1)	19 (10.9%)	1.00		1.00	
RM1000-2999	47 (52.8)	45 (52.9)	92 (52.9%)	0.56	0.19-1.64	0.60	0.19-1.96
RM3000 – 4999	22 (24.7)	26 (30.6)	48 (27.6%)	0.43	0.14-1.33	0.34	0.09-1.36
>RM 5000	7 (7.9)	8 (9.4)	15 (8.6%)	0.48	0.12-2.00	1.32	0.06-1.80

OR = Odds Ratio

Table II: Risk estimates of host characteristics between cases and controls

Host characteristics	Case (n)	Control (n)	Age-adjusted		Multivariate†	
			OR	CI (95%)	OR	CI (95%)
Age of menarche						
<13 years (n=89)	40	44	0.60	0.32-1.09	0.62	0.31-1.24
>13 years (n=85)	49	36	1.00		1.00	
Age of first childbearing						
<29 years (n=111)	54	57	1.00		1.00	
>29 years (n=21)	11	10	1.23	0.48-3.18	1.16	0.41-3.41
Nulliparous (n=42)	24	18	1.63	0.77-3.41	1.42	0.47-4.26
Age at menopause						
<50 years (n=33)	21	12	1.00		1.00	
50-54 years (n=30)	20	10	1.26	0.43-3.72	1.41	0.44-4.46
>55 years (n=7)	3	4	0.43	0.08-2.24	0.46	0.07-2.83
Premenopausal (n=104)	45	59	0.43	0.19-1.08	0.47	0.17-1.30
Previous disease						
Medical (n=35)	16	19	0.82	0.40-1.79	1.00	0.43-2.33
Breast (n=16)	10	6	1.75	0.59-5.20	1.53	0.45-5.16
Gynaecological (n=12)	8	4	1.77	0.50-6.30	1.30	0.33-5.16
None (n=111)	55	56	1.00		1.00	
Family history of Ca Breast						
First degree family (n=18)	12	6	2.34	0.82-6.74	1.95	0.61-6.24
Second degree family (n=18)	10	8	1.45	0.53-4.00	1.38	0.47-4.10
None (n=138)	67	71	1.00		1.00	

OR = Odds Ratio

† The odds ratio for each variable in the table were adjusted for age, education level, marital status, monthly income, age of menarche, age at first childbearing, age at menopause, and family history of breast cancer

Table III: Risk estimate of personal habits between cases and controls

Personal habits	Case (n)	Control(n)	Age-adjusted		Multivariate†	
			OR	CI (95%)	OR	CI (95%)
Hormone therapy						
Yes (n=74)	36	38	0.88	0.48-1.62	0.85	0.43-1.71
No (n=100)	53	47	1.00		1.00	
Breast feeding						
Yes (n=83)	33	50	1.00		1.00	
No (n=91)	56	35	3.07	1.30-5.93*	4.43	1.92-10.23*
Alcohol consumption						
Yes (n=80)	36	44	0.70	0.38-1.30	0.88	0.43-1.77
No (n=94)	53	44	1.00			
Smoking						
Yes (n=17)	10	7	1.54	0.55-4.33	2.03	0.60-6.82
No (n=157)	79	78	1.00		1.00	
Passive smoking						
Yes (n=97)	55	42	1.65	0.96-3.02		
No (n=77)	34	43	1.00			

* Significant at 95% confidence interval

† The odds ratio for each variable in the table were adjusted for age, education level, marital status, monthly income, age of menarche, age at first childbearing, age at menopause, and family history of breast cancer

Feeding months per child (t = -2.129, p = 0.035)*

Number of children fed (t = -2.558, p = 0.011)*

Discussion

Our study did not show any increased risk of breast cancer among women with high educational level, married, and earned monthly high income as compared with other studies^{5,6}. This could be due to better acceptance and utilization of screening modalities like breast self examination, clinical breast examination as well as mammography among those women. Early age of menarche and attaining menopause at a later age were also insignificant as observed in other studies^{5,6,7}. In our study, the age of first child bearing, number of children, previous diseases were not significant. Nulliparous women produced an age-adjusted odds ratio of 1.63 (CI 0.77-3.41). This is in oppose to Romieu⁵ who reported a decreasing trend of breast cancer risk with an increasing number of live born children. A family history of breast cancer were 2 fold as compared to women without breast cancer (OR 2.34 CI 0.82-6.74). Smoking, active or passive had two fold increased risk of developing breast cancer though insignificant. This is similar to other studies^{6,8,9}.

Breastfeeding was shown to have an odds ratio of 4.43 after adjustment for confounders in our study. A number of studies on lactation and their risks to breast cancers have been undertaken, producing varied results. Our results are concordant with those of recent studies that have reported a protective effect of lactation on breast cancer risk. Among parous and nulliparous women, those women who had ever lactated had half the risk of developing premenopausal breast cancer, as compared to women who never lactated in King County, Washington State¹⁰. In a study among Mexican women, it was observed a strong protective effect of for as short as three months to after 36 months or more of lactation⁵.

Breast feeding was also found to reduce the risk of breast cancer in women aged 20-40 years and 30% in women aged 50 to 74 years¹¹. In an Icelandic cohort study of 80,219 women, there was a reduced risk of breast cancer with breast feeding for women diagnosed at all ages¹².

Our study showed that the duration of breast feeding was associated with a reduction in breast milk among both pre-menopausal and post menopausal women especially with the first child ($t = -2.129$, $p < 0.05$). There was also significant difference based on the number of children breast fed ($t = -2.558$, $p < 0.05$). Studies in China among women who breastfed for 2 years or longer and 6 years or more have had more than 50% reduction in

risk of developing breast cancer^{13,14}. Mc Tiernan and Thomas observed a protective effect for 12 or more months of lactation¹⁰. Case control studies in the British Columbia and Japan, reported a decreased risk with increasing duration of breast feeding^{15,16}.

An increasing duration of lactation from 4 to 12 months and 2 years was associated with a reduced risk of breast cancer among premenopausal women¹⁷. Siskind from Australia reported a slightly elevated risk of breast cancer among pre-menopausal women who breast-fed their first live born for 1 month or less to women who did not breastfeed their first live born⁷.

A study done on women who developed postmenopausal breast cancer from statewide tumour registries in Massachusetts, New Hampshire and Wisconsin, reported a relative risk of 0.87 (CI 0.78-0.96) among women who have breast fed for at least 2 weeks as compared to women who never lactated. The relative risk of women who breast fed for at least 24 months or more was 0.73 (95% CI 0.56-0.94)¹⁸. However studies among South African women, the Nurses Health Study, US and a study in New York showed weak to no association between the risk and the number of children breast fed and length of breast feeding^{19,20,21}.

Different hypothesis may explain the protective effect of lactation. Direct action on the pituitary gland or ovarian activity would change the woman's postpartum hormonal status, thus reducing estrogen levels through suppression of ovulation^{10,21}. The cumulative estrogen levels would be reduced, which could inhibit initiation or growth of breast cancer. Another hypothesis is that lactation may 'flush out' carcinogens. Furthermore fat-soluble carcinogens and pollutants are not stored as efficiently in lactating breasts. Breast feeding also caused some changes to the breasts which are resistant to mutagenic changes that leads to cancer.

In our study, differences due to ethnicity and religion were addressed by selecting only Chinese women. We also did not undertake the study of patients receiving treatment at the private sector. Our study did not gather information on reasons for not breast feeding. Published studies carried out in Mexico and Ipoh, Malaysia indicated the reasons as insufficient milk, lack of confidence, lack of knowledge on the nutritional value of breast milk, rejection by infant, lack of postpartum guidance, the existing practice of providing infant formula during hospital stay and health problems faced by either the mother or the infant^{5,22}.

The National Health Morbidity Survey 1996 reported the prevalence of breastfeeding as 88.6% (87.2-90.1%) for a duration of 7 months²³. Findings of the survey also showed that 10.0% (8.4-11.6%) were predominantly breastfed, 46.9% (44.4-49.5%) were given other milk besides breast milk and only 11.7% (9.8-13.6%) were breast fed for 2 years. The Malays had a high prevalence of ever, exclusive, predominant and mean duration of breast feeding with 97%, Indians 83% and Chinese the lowest with 61%. The Malaysian Family Life Survey (MFLS) in 1988 however was a lower 85% (NHMS2)²⁴. Breastfeeding is certainly a cost-effective intervention that needs to be promoted.

Conclusion

Our study shows that among the Chinese female cancer patients receiving treatment at Hospital Kuala Lumpur

and University Hospital and residing in the Klang Valley in 2001, breastfeeding was a significant protective factor in breast cancer, 4.43 (95% CI 1.92-10.23) especially the number of children breast fed and the duration of feeding each child.

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