

Risk Factors for Breast Cancer among Women in Klang Valley, Malaysia

Rabeta Mohd Salleh^a, Suzana Shahar^b, Ahmad Rohi Ghazali^c, Normah Haron^b, Poh Bee Koon^b

^a Dietetic Programme, School of Health Sciences, Universiti Sains Malaysia, Health Campus, 16150 Kubang Kerian, Kelantan.

^b Department of Nutrition and Dietetic, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur.

^c Department of Biomedical Sciences, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur.

ABSTRACT: There has been an explosion in the incidence of breast cancer throughout the world. A case-control study was done to identify the lifestyle risk factors for breast cancer among women in Klang Valley. This study was carried out among 70 newly diagnosed breast cancer patients and 138 controls, aged 29-65 years old in Klang Valley. The inclusion criteria for cases were (i) newly diagnosed breast cancer (stage I to III) (ii) not undergone any therapy for cancer (iii) no other chronic diseases such as hypertension and diabetic (iv) not pregnant and lactating (v) not in menstruation for those who are not menopause yet. The control group comprised women, who were healthy, not diagnosed with cancer and other chronic disease, not pregnant, not lactating and not menstruating. Demographic data were obtained through standardized pre-tested questionnaire by trained interviewers. Smoking, alcohol consumption, family history, age at menarche, usage of oral contraceptive pill and hormone-replacement therapy, breast-feeding, chi-square test did not show any significant differences between cases and control. Women who got her first pregnancy at the age of more than 30 years old were at five time higher risk of getting breast cancer [*adjusted* OR=4.5 (95% CI=1.8-11.1)] ($p<0.05$) compared to those who got her first pregnancy at the age less than 30 years old. In conclusion, certain lifestyle factors were associated with risk of getting breast cancer. Effort should be taken to increase awareness and understanding of the importance of healthy lifestyle to prevent breast cancer occurrence.

Keywords: Risk factor, breast cancer, women

Introduction

Breast cancer was the commonest cancer among Malaysian women (Yip *et al.*, 2006) with increasing incidence of breast cancer among women. For instances, a total of 3738 female breast cancer cases were reported in 2003 and accounted for 31.0% of all cancers (Lim and Halimah, 2004). Breast cancer was a cancer of the affluent countries, and the incidence rate increases with industrialization and economic development (Yip *et al.*, 2006).

A growing body of epidemiologic literature has investigated the association of behavioral and

lifestyle variables and breast cancer incidence (Lemon *et al.*, 2004). Lifestyle-related and reproductive factors were strongly associated with breast cancer (Norsa'adah *et al.*, 2005). Therefore it was prudent to know the risk factors in breast cancer in order that appropriated screening and prevention measures can be carried out for every individual (Rozanim *et al.*, 2006).

A cohort study demonstrated that Japanese women who had consumed at least a moderate amount of alcohol had an increased risk of breast cancer (Lin *et al.*, 2005). Family history of breast cancer was an established risk factor for breast cancer (Silvera *et al.*, 2005). Family history, however, probably represents more than major gene effects (Carpenter *et al.*, 2003). Multiparity, young age at first child and breast-feeding are associated with a reduced risk of breast cancer in the general population (Andrieu *et al.*, 2006). An early age at first full-term birth is associated with a reduction in the subsequent development of breast cancer among women in the general population (Kotsopoulos *et al.*, 2007). Studies suggest that the use of oral contraceptive (OCP) in women with a strong

Corresponding Author:
Dr. Rabeta Mohd Salleh
Dietetic Programme
School of Health Sciences
Health Campus, Universiti Sains Malaysia
16150 Kubang Kerian, Kelantan.
Email: rabeta75@gmail.com

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family history of breast cancer may further elevate their breast cancer risk (Gabrick *et al.*, 2000).

Observational studies and randomized trials have demonstrated that hormones replacement therapy (HRT) increases the recipient's risk of developing breast carcinoma (Chen *et al.*, 2004). Rozanim *et al.* (2006) reported that hormone-replacement therapy (HRT) was not significantly associated with breast cancer risk. HRT was associated with beneficial total cholesterol, low density lipoprotein (LDL-C) and high density lipoprotein (HDL-C) levels in sedentary and active nonathlete women (Hagberg *et al.* 2003). Lactation reduced the risk of breast cancer (Freund *et al.*, 2005). Study has shown that lactation yielded an odds ratio of [3.07 (95% CI 1.60 to 5.93)] when adjusted with age (Hejar *et al.* 2004).

Although above mentioned factors have been a well-studied topic worldwide, there are still minimal information and awareness on breast cancer in Malaysia. This case-control study was done to identify the lifestyle risk factors for breast cancer in women in Klang Valley, Malaysia.

Materials and Methods

A retrospective case-control study was done among 70 newly diagnosed breast cancer patients and 138 controls aged 29-65 years in Klang Valley, with 80% statistical power to examine the lifestyle related risk factors for breast cancer in women. The study was carried out from January 2005 to Jun 2006. Study procedures were approved by ethical committee Ministry of Health of Malaysia [KKM/JEPP/Jld. 11 (148)] and Hospital Universiti Kebangsaan Malaysia (UKM 1.5.3.5/244/PPP2). Each subjects provided informed consent.

The inclusion criteria for cases (i) pathologically newly diagnosed breast cancer (Stage I to III) (ii) had not undergone any therapy for cancer (iii) no other chronic diseases such as hypertension and diabetic (iv) no evidence of pregnancy and not lactating (v) absent of menses for pre menopausal women. The control group comprised women, who were healthy, not diagnosed with cancer and other chronic disease, not pregnant, not lactating and not in menstruation time as well as cases. The cases were matched with controls by age (± 5 years) and menopausal status.

Demographic data were obtained through a standardized pre-tested questionnaire by trained interviewers. The questionnaire included the information of background of subjects, education level, family history of breast cancer, history of physical activity, personal habits such as alcohol

consumption and smoking habit. Reproductive history such as use of contraceptive pills (OCP), breast-feeding and hormone replacement therapy (HRT) were also asked.

All of the variables asked were analyzed using Statistical Package for Social Science (SPSS) software version 15.0. Multivariate analysis, i.e. logistic regression (LR) was used to calculate Adjusted Odds Ratio by controlling for confounding factors.

Results and Discussion

The mean age of cases and control were 47.1 ± 7.8 and 46.2 ± 6.5 years, respectively. The youngest patient was 29 years old and the oldest patient was 65 years old. About 57 cases (76%) were in 40-59 years age group (Yip, 2006). Yip (2006) reported that more than 30% of cases were in this age group. A comparative study between Malaysian and Singaporean women showed that the median age at presentation with breast cancer was the same in both countries (Abdullah and Yip, 2004). The mean age of the cases was consistent with the figure reported in the Second Report of The National Cancer Registry in 2003 (Lim and Halimah, 2004), of which 64.1% of the cases diagnosed were in women between 40 and 60 years of age. Breast cancer in Malaysian women occurs more commonly in younger women, aged between 40 and 49 years, compared to the West, where the peak prevalence is in the 50 to 59 year old age group (Abdullah and Yip, 2004).

It was observed that out of 70 cases of breast cancer, 3 of them (4%) were never married. It was further found that more women in the cases group (5%) were not schooling as compared to controls (0.7%). Cases and controls were similar with respect to their socio demography status which includes marital status, living arrangement and education status. About 50% of the cases were not working compared to 23% in the control group ($p < 0.05$). Monthly household income of most of the case subjects were RM1500-3000 (53%), as compared to 46% in their control group. About 35% of monthly household income of controls was more than RM3000.

There were only 4% of cases used to consume alcohol with differences between cases and control being not significant. Results of most epidemiologic studies in animals have shown that alcohol intake is associated with increased breast cancer risk (Dumitrescu and Shields, 2005). Our result suggests that baseline intake of alcohol is a more important determinant of postmenopausal breast cancer risk than earlier lifetime exposure

(Tjonneland *et al.* 2004). Breast cancer risk was shown to increase as daily consumption of alcohol increases, with a risk of 1.37 (95% CI-1.07-1.75) being observed among women who consumed 15 or more grams of alcohol per day (Nasca *et al.* 1990). This study did not show any significant differences between cases and control who consume alcohol. Alcohol consumption may be considered a social activity and less percentage in alcohol use reported by breast cancer patient may be a reflective of an overall decrease in social activities.

A higher percentage of cases having a family history of breast cancer but the differences were not significant. The Crude Odds Ratio (OR) of getting cancer for smokers and those with a family history were 10.9 and 1.2, respectively but the differences between cases and control were not significant. Family history constitutes the strongest known risk factor for development of breast cancer (Charpentier and Aldaz, 2002). However, how their inactivation contributes to the onset or development of breast cancer is still largely unknown (Stewart and Kleihues 2003). Previous study shows that the incidence of breast cancer among current smokers was higher than that among non-smoker [OR 1.32 (95% CI = 1.10 to 1.57)] (Reynolds *et al.* 2004). This study shows that women who got her first menarche before 11 years old did not have higher risk getting breast cancer.

Parity has a dual association with breast cancer risk in African-American women: among women younger than 45 years, parity is associated with an increased risk; among women 45 years and older it is associated with a decreased risk (Palmer *et al.* 2003). Women who got her first pregnancy at the age of more than 30 years old were at three time higher risk of getting breast cancer [OR = 3.1 (95% CI = 1.39 to 6.98)] ($p < 0.05$). These result consistent with a previous study reported by Ramon *et al.* (1996), age at first full-term pregnancy was associated with breast cancer risk with an estimated odds ratio of [3.5 (95% CI 1.41 to 9.83)] for women with their first birth after 30 years in comparison with those whose first birth was before age 21. Exposure to high doses of placental hormones such as estrogens and/or progesterone during pregnancy may play an important role in reducing subsequent breast cancer susceptibility (Persson, 2000). However, chi-squared test did not show any significant differences between cases and control for the usage of oral contraceptive pill and hormone-replacement therapy.

The evidence of an association of lactation with a reduction in the risk of breast cancer among women has been limited and inconsistent

(Newcomb *et al.*, 1994). In pre menopausal women who breastfed for more than 25 months, the OR was 0.95 (95% CI:0.5-3.5), and in postmenopausal women, the OR was 1.27 (95% CI: 0.5-3.1), compared to women who had not breastfed (Tessaro *et al.* 2003).

Conclusion

A breast cancer awareness campaign with emphasis on breast self-examination is important (Abdullah and Yip, 2003). Lifestyles factor such as first pregnancy at the age of more than 30 years old were at five time higher risk of getting breast cancer. Effort should be taken to increase awareness and understanding of the importance of healthy lifestyle in reducing the risk of breast cancer.

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