

## Utility of Pap Smears and Mammograms in Midlife Urban Malaysian Women

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### ABSTRAK

Kanser payu-dara dan kanser serviks merangkumi 30.4% dan 12% kesemua kes kanser di Malaysia. Oleh demikian saringan kanser organ reproduktif pada ketika wanita mendekati menopause adalah penting. Kajian ini melapurkan hasil penilaian kemasukan 495 wanita kawasan bandar Malaysia berusia 45 tahun ke atas yang telah mengambil bahagian dalam projek gaya hidup sihat secara sukarela. Mereka terdiri daripada 58.0% wanita premenopaus dan 42.0% posmenopaus dengan min umur 51.27±5.35 tahun. Lebih dua pertiga terdiri dari kaum Cina diikuti oleh Melayu dan India. Pada keseluruhan, calitan Pap abnormal didapati pada 7.6% iaitu 1.3% *cervical intraepithelial neoplasia* (CIN), 6.1% infeksi *human papilloma virus* (HPV) dan 0.2% *atypical squamous cells of undetermined significances* (ASCUS). Infeksi yis dan lain organisma dijumpai pada 6.9% dan 1.9% masing-masing. Wanita posmenopaus menunjukkan 2.8 kali ganda insiden kanser serviks sementara wanita premenopaus mempunyai kadar infeksi yang lebih tinggi, 11.8% lawan 4.7% ( $p=0.024$ ). Kadar infeksi HPV adalah setara pada kedua-dua kumpulan. Kajian ini mendapati 1.3% mengidap kanser payu-dara, 3.6% memerlukan biopsi dan 3.4% perlu pemantauan berkala. Wanita posmenopaus memiliki lebih mamogram abnormal ( $p<0.0005$ ) jenis merbahaya yang memerlukan pemantauan. Akan tetapi kadar kanser payu-dara adalah lebih rendah pada posmenopaus berbanding kepada premenopaus, 0.010 lawan 0.015. Hasil kajian ini telah mengenalpasti saringan aktif kanser serviks dikalangan wanita posmenopaus kerana kadar kanser adalah lebih tinggi. Untuk mengesan perubahan abnormal payu-dara, proses saringan harus bermula lebih awal, di kalangan wanita pre- dan posmenopaus yang berusia 45 tahun ke atas.

*Kata kunci:* Calitan Pap, Mamogram

### ABSTRACT

Cancers of the breast and cervix made up 30.4% and 12% of all cancer cases in Malaysia. Thus screening for reproductive organ cancers as women approached menopause becomes exceedingly important. The study reports the baseline assessment tests of 495 disease free urban Malaysian women aged 45 years and above who volunteered in a healthy lifestyle intervention study. The sample comprised of 58.0% premenopausal and

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42.0% postmenopausal women with an average age of 51.27±5.35 years old. Over two thirds were Chinese followed by Malays and Indians. Overall, abnormal Pap smears were seen in 7.6% comprising of 1.3% cervical intraepithelial neoplasia (CIN), 6.1% human papilloma virus (HPV) infection and 0.2% atypical squamous cells of undetermined significance (ASCUS). Yeast and other infections were found in 6.9% and 1.9% respectively. Comparatively, postmenopausal women had a 2.8 fold higher cancerous changes whereas premenopausal women had a higher infection rate, 11.8% vs. 4.7% respectively ( $p=0.024$ ) with comparable HPV infection rates in both. This study found 1.3% had breast cancer (BC) with 3.6% requiring a biopsy while 3.4% needed regular follow up. Postmenopausal women had more abnormal mammograms ( $p<0.0005$ ) of a graver nature, requiring monitoring although the rate of BC was lower than the premenopausal, 0.010 versus 0.015. The findings identified better vigorous screening for malignant carcinoma of the cervix in postmenopausal women as the incidence was higher. As for breast abnormalities, screening should begin at an earlier age, amongst pre- and postmenopausal women from 45 years old and above.

**Key Words:** Pap Smears, Mammogram

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## INTRODUCTION

In the coming decade, the global burden of cancer shall change as developing countries adopt a more westernised lifestyle (Parkin 1998). Cancers as a group in Malaysia had risen from 6.7% of all medically certified deaths in 1966 to 10.8% in 1998 (Lim 2002) with the burden of cancer cases approaching the pattern of developed countries.

Based on the National Cancer Registry data, one in four Malaysians will develop cancer during his or her lifetime. The cancer burden was estimated to be of about 40,000 new cases per year per entire population (Looi et al 2004). Furthermore, peculiar to Malaysia, the overall female incidence of 148.4 per 100,000 was higher than the male incidence of 118.9 per 100,000 persons. The ratio of male to female incidence was 1:1.2 unlike other countries such as Singapore (1:0.97), United Kingdom, Norway (1:0.94) and Hong Kong (1:0.76) (NCR 2002).

Cervical carcinoma (CC) was the third most frequently occurring malignancy worldwide. Mortality rates were much lower than incidence rates with an average five year survival of above 50% worldwide. Due

to an earlier occurrence, the total years of life lost to the malignancy was substantial (Herrero 1996). In 1990, nearly 80% of CC cases were estimated to occur in developing countries (Parkin et al 1999). CC mortality rates in Malaysia declined from 1985 to 1993 and then increased in 1997. In addition, the incidence of CC was among the highest with an overall incidence higher than all developed countries. The age standardised incidence rate of Chinese in Malaysia was higher than in China, Hong Kong, most parts of Asia, superceded only by some Latin American and African countries (NCR 2002). In 1995, CC was the third most common cause of death due to solid tumours among females followed by carcinoma of the breast and the respiratory tract in Malaysia. In addition, the distribution pattern changed in relation to ethnicity. In Chinese and Malay females, the prevalence of CC ranked second to breast cancer (BC) whereas the pattern was reversed in Indian females (Cheah & Looi 1999).

BC is the most common form of malignancy among women worldwide, accounting for 21% of overall cancer diagnosis. It also caused the most deaths, with almost 50% dying from this disease

(Parkin 1998). Despite the fact that Malaysia had good treatment centers for reproductive cancer, mortality rates from BC and CC were high because of the failure of early detection. BC mortality rates have risen since 1985. Between 1993 and 1996, 35% of the BC cases presented at stages 3 or 4, and 93% of these women had tumours with a mean size of 5.3cm (Hisham and Yip 2003). The reported incidence rate of BC in Malaysia appeared lower compared to other developed countries although the difference may be attributable to underreporting which could undermine efforts to acquire accurate figures. Worldwide, a 4-5 fold variation exist with the highest rates observed in Europe and North America and the lowest in Asia (Hisham and Yip 2003; Hisham & Yip 2004).

Women between the ages of 40-59 have a 1 in 11 chance of developing some type of invasive cancers. In comparison, women from ages 1-39 have a 1 in 51 chance of being diagnosed with cancer. The most frequent cancers in Malaysian women were cancers of the breast, cervix, colon, ovary, leukaemias and lung. Together, cancers of the breast, cervix, ovary and corpus uteri, afflicting 30.4%, 12%, 5% and 3.6% respectively made up half (51%) of all cancer cases (NCR 2002). Thus screening especially cancers of reproductive organs as women approached menopause becomes exceedingly important (Givens & Ling 2003).

This study reports the incidence of breast and cervical cancers in a general population of urban women aged 45 years who volunteered in a lifestyle intervention program, with hopes of providing a health insight in these women.

## **MATERIALS AND METHODS**

Data for this study was obtained from entry assessment of subjects who participated in a lifestyle intervention program. Briefly, healthy women aged 45 years and above with intact uterus, non HRT users were

recruited from November 1999 to October 2002 via distribution of flyers to residential areas around the hospital, including subjects from other areas who responded after being informed by friends. After an initial screening of 745 women by telephone, 522 subjects were accepted into the study. Five women were later excluded for surgically induced menopause leaving only 517 subjects.

Other exclusion criteria included pregnancy, immigrants, those on treatment for hypertension, diabetes mellitus, hyperlipidaemia and chronic illnesses. Those with secondary causes of osteoporosis such as a thyroid or endocrine condition e.g. Cushing's disease, hyperthyroidism, hyperparathyroidism, malabsorption, hypogonadism and prolonged immobilisation, were also excluded. The study protocol was approved by the hospital ethics committee as part of a Masters of O&G study thesis (Nur Azurah 2003).

All subjects gave written informed consent before participation in the study. Recruits were interviewed for medical history and examined by a designated physician who also obtained cervical smears. Height and weight were measured to the nearest 0.1 unit with a balance beam weighing machine and stadiometer (Health-O-Meter, USA). Information acquired by questionnaires included personal characteristics and lifestyle. All activities were carried out in the general gynaecology clinic by trained personnel.

Pap smears were taken by the attending physician on the first or second visit. After the first visit, 29 women were disqualified from the study upon discovery of illness needing medication (diabetes mellitus n=9, hypertension n=5, thyroid dysfunction n=1, severe osteoporosis n=1) or surgery (hysterectomy n=5, breast cancer n=6, thymus cancer n=1, nasopharyngeal cancer n=1). Pap smears were not taken for 22 of these women. A mammogram by appointment was done 6-8 weeks after the initial visit in the radiology unit; 24 subjects were lost to follow up. The study reports a

total of 495 and 471 subjects for Pap smears and mammogram respectively with subjects followed up to year 2005.

Data were analysed using SPSS for Windows version 11.0 software. Continuous variables were expressed as mean and standard deviation, and compared by the Student's t test. Categorical data was compared using the Chi-squared test and relationships with Pearson or Spearman correlation where appropriate, followed by logistic regression analysis. The differences were considered significant if  $p < 0.05$ .

## RESULTS

### *Subject characteristics*

The average age of participants was  $51.27 \pm 5.35$  years old (age range 45-79 years). Over two thirds were Chinese followed by Malays and Indians, reflecting an urban distribution as opposed to the general population with Malays being the major ethnic entity. The study sample comprised of 300 (58.0%) premenopausal (age range 45-58 years) and 217 (42.0%) postmenopausal women (age range 45-79 years), similarly distributed between the major ethnic groups (Table 1). The post-menopausal group at mean age of  $55.53 \pm 5.27$  years was 7.4 years older than those premenopausal,  $48.14 \pm 2.67$  years ( $p < 0.0005$ ). The mean and median age of menopause was  $49.97 \pm 2.90$  years and 50.00 years respectively with no significant difference between the ethnic groups. Malays were the youngest, followed by Chinese, Indians and others with respective mean age of  $50.14 \pm 4.33$ ,  $51.51 \pm 5.53$ ,  $54.47 \pm 7.83$  and  $57.00 \pm 10.53$ , a significant difference ( $p = 0.039$ ). The average and median age of menarche was  $13.57 \pm 1.73$  and 13.00 years old. Indians reaches menarche at  $12.55 \pm 1.62$  years; earlier than Malays, Chinese and others with a respective mean of  $13.36 \pm 1.32$ ,  $13.72 \pm 1.87$  and  $13.20 \pm 0.84$  years ( $p < 0.005$ ).

**Table 1 :** Sociodemographic, reproductive, lifestyle and anthropometric variables

	<b>N=517</b>	<b>N (%) or Mean<math>\pm</math>sd</b>
<b>Ethnic distribution</b>		
Malay		143 (27.7)
Chinese		347 (67.1)
Indian		22 (4.3)
Others		5 (1.0)
<b>Sociodemographics</b>		
Age (yrs)		$51.27 \pm 5.35$
Age of menarche (yrs)		$13.57 \pm 1.73$
Menopausal age (yrs)		$49.97 \pm 2.90$
Income (RM)		$3311 \pm 3141$
<b>Education</b>		
No formal schooling		21 (4.1)
Primary level		113 (21.9)
Secondary level		278 (53.8)
College/tertiary level		104 (20.1)
Unknown		1 (0.2)
<b>Marital status</b>		
Married		401 (77.6)
Widowed		47 (9.1)
Never married/divorced		68 (13.1)
Unknown		1 (0.2)
<b>Reproductive history</b>		
Post-menopausal		217 (42.0)
Breastfed (n=449)		299 (66.6)
Breastfeeding duration (month)		$11.14 \pm 24.60$
Ever user of OCP		197 (38.1)
OCP duration (month)		$19.29 \pm 42.83$
Pregnancy (Gravida=1 or more)		450 (86.9)
Parity (Para=1 or more, n=450)		$3.28 \pm 1.38$
Regular menses (before age 35 yrs)		456 (88.2)
Days of menstrual cycle		$27.93 \pm 2.95$
<b>Lifestyle</b>		
Never smoke		501 (96.9)
Never drink alcohol		466 (90.1)
<b>Anthropometry</b>		
Weight (kg)		$59.41 \pm 9.50$
Height (m)		$1.55 \pm 0.05$
Body mass index (kg/m <sup>2</sup> )		$24.64 \pm 3.89$

The mean height, weight and body mass index (BMI) of the sample population was  $1.55\pm 0.05\text{m}$ ,  $59.41\pm 9.50\text{kg}$  and  $24.64\pm 3.89\text{kg/m}^2$  respectively. The premenopausal group was similar in weight, height and BMI to the postmenopausal group. Malays were the heaviest,  $62.39\pm 10.00\text{kg}$  with significantly higher BMI,  $26.15\pm 4.30\text{kg/m}^2$ , compared to the others (both  $p<0.0005$ ). Weight and BMI of Chinese, Indians and other races were  $58.30\pm 9.14\text{kg}$ ,  $58.03\pm 7.75\text{kg}$  and  $57.20\pm 9.76\text{kg}$ ;  $24.08\pm 3.60\text{kg/m}^2$ ,  $23.98\pm 2.83\text{kg/m}^2$  and  $23.61\pm 2.40\text{kg/m}^2$  respectively. Overall, 56.3% had BMI between 18.5 to  $<25\text{kg/m}^2$ , 32% were overweight and 8.6% obese.

### **Cervical cytology**

Overall, over four fifths of women (83.5%) had normal Pap smear readings (Table 2). Abnormalities in Pap smear cytology were seen in 7.6% comprising 1.3% cervical intra-epithelial neoplasia (CIN), 6.1% HPV infection and 0.2% ASCUS. Yeast infections such as moniliasis and other organisms made up 8.9%.

A 2.8 fold higher CIN grade 1 or 2 was demonstrated in postmenopausal women compared to the premenopausal, 2.1% vs. 0.7% although not statistically significant. One premenopausal subject had atypical squamous cell of undetermined significance (ASCUS) and required colposcopy. In contrast, premenopausal women had a higher infection rate compared to postmenopausal, 11.3% vs. 4.2% respectively ( $p=0.024$ ).

One in seven (6.9%) had unsatisfactory smears, 3.9% versus 10.8% in pre and postmenopausal women respectively. Unsatisfactory smears were 2.8 fold higher among the postmenopausal due to atrophic vaginal changes.

The distribution of abnormal cytology between the ethnic groups showed no significant difference. The occurrence of abnormal smears did not correlate with all the variables studied. The study data

emphasised vigorous screening for carcinoma of the cervix to be implemented in postmenopausal women as the incidence of invasive CC was higher.

### **Mammogram**

Over 90% of women had normal findings on mammogram while 39 (8.3%) showed some abnormalities (Table 3). In this study, 6 (1.3%) had breast cancer, 17 (3.6%) required a biopsy while 16 (3.4%) needed regular follow up. The distribution of abnormalities differed between pre and postmenopausal women with postmenopausal having more abnormal mammograms ( $p<0.0005$ ) although the incidence of breast cancer (BC) was similar. In women with BC, one underwent total mastectomy while three had surgical removal of the lesion with one woman requiring chemotherapy. Two other cases were treated with tamoxifen.

The overall detection rate for BC was less than 0.013. The rate of BC among premenopausal was 50% higher than in postmenopausal women (0.015 versus 0.010) although it was not statistically significant. The distribution of abnormal mammograms between the ethnic groups showed no significant difference. Likewise, the rate of BC between Malays (0.016) and Chinese (0.012) was not significant statistically. Among Malay women, the BC rate was twice as high among the postmenopausal compared to premenopausal while the reverse was observed among the Chinese.

Most of the breast biopsies reported benign lesions and subjects were advised to have regular follow ups. A repeat mammography was advised for those with microcalcifications ( $n=12$ ), macrocalcification ( $n=1$ ), benign nodules ( $n=2$ ) and other structural abnormalities on the first mammogram. More premenopausal women ( $n=10$ ) had dense or fibrous breasts compared to the postmenopausal although the difference was not significant.

The occurrence of abnormal mammo-

**Table 2:** Distribution of normal and abnormal cervical smears by menopausal status and ethnicity

N	All		Malay		Chinese		Indian		Others		
	PreM	PosM	PreM	PosM	PreM	PosM	PreM	PosM	PreM	PosM	
	461	271	190	83	44	176	135	10	9	2	2
<b>Cytology diagnosis, n (%)</b>											
Negative	385 (83.5)	220 (81.2)	165 (86.4)	66 (79.5)	41 (93.2)	143 (81.2)	114 (84.4)	9 (90.0)	8 (88.9)	2 (100.0)	2 (100.0)
Benign Cellular Changes*	41 (8.9)	32 (11.8)	9 (4.7)	10 (12.0)	2 (4.5)	22 (12.5)	6 (4.4)	-	1 (11.1)	-	-
Candida	32 (6.9)	17 (6.3)	5 (2.6)	8 (9.6)	2 (4.5)	19 (10.8)	3 (2.2)	-	-	-	-
Other infections	9 (1.9)	5 (1.8)	4 (2.1)	2 (2.4)	-	3 (1.7)	3 (2.2)	-	1 (11.1)	-	-
Positive	35 (7.6)	19 (7.0)	16 (8.4)	7 (8.4)	1 (2.3)	11 (6.2)	15 (11.1)	1 (10.0)	-	-	-
ASCUS	1 (0.2)	1 (0.4)	-	-	-	1 (0.6)	-	-	-	-	-
HPV	28 (6.1)	16 (5.9)	12 (6.3)	7 (8.4)	-	8 (4.5)	12 (8.9)	1 (10.0)	-	-	-
CIN/Ca	6 (1.3)	2 (0.7)	4 (2.1)	-	1 (2.3)	2 (1.1)	3 (2.2)	-	-	-	-
Unsatisfactory	34	11	23	1	4	10	19	-	-	-	-
Total sampled	495	282	213	84	48	186	154	10	9	2	2

\*p<0.024 (comparison between pre and postmenopausal group)

**Table 3:** Distribution of normal and abnormal mammograms by menopausal status and ethnicity

N	All		Malay		Chinese		Indian		Others		
	PreM	PosM	PreM	PosM	PreM	PosM	PreM	PosM	PreM	PosM	
	471	268	203	84	43	171	150	10	9	3	1
<b>Radiology diagnosis, n (%)</b>											
Normal	432 (91.7)	250 (93.3)	182 (89.7)	78 (92.9)	37 (86.0)	159 (93.0)	135 (90.0)	10 (100.0)	9 (100.0)	3 (100.0)	2 (100.0)
Abnormal*	39 (8.3)	18 (6.7)	21 (10.3)	6 (7.1)	6 (14.0)	12 (7.0)	15 (10.0)	-	-	-	-
Biopsy	17 (3.6)	6 (2.2)	11 (5.4)	1 (1.2)	2 (4.7)	5 (2.9)	9 (6.0)	-	-	-	-
Follow-up	16 (3.4)	8 (3.0)	8 (3.9)	4 (4.8)	3 (7.0)	4 (2.3)	5 (3.3)	-	-	-	-
Cancer	6 (1.3)	4 (1.5)	2 (1.0)	1 (1.2)	1 (2.3)	3 (1.8)	1 (0.7)	-	-	-	-

\*p<0.0005 (comparison between pre and postmenopausal group)

grams was positively associated with education ( $\rho=0.120$ ,  $p=0.009$ ) and negatively with pregnancy ( $\rho=-0.108$ ,  $p=0.019$ ). Pregnancy was categorized as never pregnant or pregnant, being defined as one or more pregnancies with or without live birth. Logistic regression analysis of both factors demonstrated a  $R^2=0.037$  ( $p=0.013$ ) but only education was significant in the final model ( $R=0.115$ ,  $p=0.018$ ).

Findings from this study seemed to concur with the Malaysian epidemiological data that the incidence rate of BC peaked earlier with a higher incidence among premenopausal women. Screening for breast abnormalities in perimenopausal women at and above 45 years old was definitely indicated from these findings in order to provide women with quality health.

## DISCUSSION

The subjects in this study with an urban ethnic distribution, higher income and better education did not reflect middle aged Malaysian women in general. Furthermore, women who were highly motivated and health conscious volunteered to participate in this study. They could likely possess a better health status with lower risk factors for development of diseases, a bias of the recruitment process. Nevertheless, the data from this large study could be a useful reference for future research into the breast and cervical cancer incidences in this often neglected age group.

### ***Cervical cancer (CC)***

Postmenopausal women presented with a 2.8 fold higher CIN grade 1 or 2 compared to the premenopausal, in concordance with epidemiological evidence. The detection rate of CIN was 1.3%, similar to the pickup rate of 1.4-1.8% in women age 40 years and above, seen at UHKL over a 5 year period (Lim 2002). Generally, the peak incidence of invasive cancer of the cervix was in the fifth and sixth decades of life (Parkin et al 1999; Wright et al 2002).

Unsatisfactory smears were 2.8 fold more among the postmenopausal. This was attributed to atrophic changes of the vagina and cervix resulting in inadequate cells for cytology reporting. Improvement of the smear could be made by wetting the cervix with normal saline prior to the procedure. Although premenopausal women had 2.5 fold higher infection rate compared to postmenopausal, a similar HPV infection rate was observed in both. HPV had been unequivocally recognized as the oncogenic agent causing dysplasia and CC in one third of all infected women (Parkin et al 1999; Reeves et al 1989; Waxman 2005).

Pathology data from HUKM supported the overall increasing trend of CC as CC mortality rates in Malaysia declined from 1985 to 1993 and then increased in 1997 (NCR 2002). The data also indicate that CC was manifesting at an earlier age. This could be due to lifestyle changes or earlier sexual activity in the younger group. Increasing incidence rate could possibly reflect higher public awareness of the disease and the initiative to seek medical attention. But a more likely scenario is the increasing prevalence of HPV infection, an aetiological factor in CC and the futility of sampling preinvasive lesions for adenocarcinoma (Adeeb et al 2007a).

Overall the data supported screening to be provided to all women particularly aged 40 and above as CC increased dramatically in women as they approached middle age. The study findings supported vigorous screening for CC which should be implemented in postmenopausal women as the incidence of malignancy was higher. Studies showed that approximately half of all women who died of cervical cancer had not had a Pap smear performed in the past five years. In countries where cervical smear screening was introduced, mortality rates from cervical cancer were reduced by 80% (Waxman 2005).

### ***Breast Cancer (BC)***

In this study, the rate of new BC cases was

6 per 471 women or 1273.9 per hundred thousand. For comparison, the incidence rate was 299.5 and 123.3 per hundred thousand for USA and Hong Kong respectively. It is recognised that case detection rate at the initiation of a screening program (i.e. first screening) tended to inflate the figures and did not reflect the true incidence rate of the general population (Leung et al 2002). From randomised trials, the highest detection rate at screening was 350 per hundred thousand in women aged 50 years and above (Miller et al 2000). Locally, the pick-up rate for new cases of breast diseases seen was 3.1% (Yip et al 1995). The possible explanation for the high figure in this study was the recruitment process whereby the subjects were self selected. These women were more health conscious and took the opportunity to avail themselves for a health examination upon participation.

In the developed world, BC was seen mainly in the postmenopausal group (Bush et al 2001; Chlebowski et al 2003). In Malaysia, the peak prevalence age group was between 40-49 years old and the median age was 50 years, a phenomenon also observed in this study. Similarly, benign breast diseases formed the majority of breast diseases seen (Yip et al 1995). Data from the population-based Singapore Cancer Registry for 1968-1992 revealed an average annual increase of 3.6% over the 25-year period for all women, from 20.2 per 100,000 women in 1968-1972 to 38.8 per 100,000 in 1988-1992. The rate of increase was highest in Malays (4.4%) and lowest in Indians (1.4%).

From the small number of cases in this study, the significant predictor of abnormal mammograms was education. The association of education to abnormal mammograms emphasised the relationship that educated women will actively seek healthcare (Cheah & Looi 1999). Population trends indicated that incidence rates were likely to increase sharply in the future and suggested the role of

demographic and lifestyle changes as possible risk factors (Seow et al 1996). Epidemiological factors associated with BC included increasing BMI, low physical activity, reproductive factors, diet, alcohol intake and hormone replacement therapy (Brewster & Helzlsouer 2001). Lifestyle practices such as breastfeeding offered a protection against breast cancer particularly among Chinese women in Klang valley, odds ratio 4.43 after adjustment for confounders (Hejar et al 2004).

Asian culture and women's mentality constituted a major obstacle in promoting prevention of BC. Women were not empowered with the knowledge they need to seek preventive screening, and older women were difficult to reach or given information because they were unlikely to visit maternal-child health or family planning clinics (Anon 1997). Studies had observed more advanced and larger tumours among Malays than other ethnic groups, mainly due to a later stage at presentation. The delay in presentation was attributed to a strong belief in traditional medicine, the negative perception of the disease, poverty and poor education, coupled with fear and denial (Hisham & Yip 2004). Cultural taboos prevented Malay women from examining their own bodies which resulted in denial of preventive care. Furthermore women fear their husbands would leave them after a mastectomy (Anon 1997). The availability of good health care and socioeconomic status of rural communities with limited health care facilities, lower education and poor income also influenced the presentation and detection of cancers. A higher risk for developing CC and prevalence pattern in ethnic Indians were partly a result of their socioeconomic deprivation (Cheah & Looi 1999).

It should be made known that women with a first degree family history of BC had a 1.7 fold increased risk of ovarian cancer (OC); an association with reciprocal ramifications. An increased risk of 2.2 fold was seen in

women with a first degree relative affected with OC. Corresponding risks of 7.1 to 10.7 fold were observed for those with two or three affected relatives. Screening a population for OC with at least one first degree affected relative gave a prevalence of 3.8/1000 women. Screening women with BC/OC diseases gave a prevalence of 50/1000 (Collins et al 1998).

Malaysian women above 40 years should be offered and encouraged to have mammogram screening as an earlier peak prevalent age for BC was observed. Additionally, postmenopausal women were noted to have abnormal mammogram of a graver nature with 2.5 fold more requiring biopsies and 30% more needed regular follow ups. For this reason, a bi-pronged approach could be advocated whereby younger women aged 40 years and above should have their first mammogram followed by a 5 year interval when the outcome was normal. Emphasis should be given for more frequent mammograms in those above 50 years old, possibly annually.

In summary, cancers of the cervix and breast formed two fifths of all malignancies in women (NCR 2002) but more importantly, both diseases were amenable to measures for early detection and treatment. Hence in cancer prevention, health education to increase awareness, screening and early treatment could reduce the burden of both diseases (Lim 2002). The study supports screening for CC in postmenopausal women as the incidence of CIN and HPV was higher whereas mammogram screening should be offered and encouraged in women above 40 years as an earlier peak prevalent age for BC was observed. Pap smear, ultrasound of the pelvis and mammogram should be used synergistically with clinical judgment after completing a detailed history of risk factors and physical examination. With the wide use of pelvic ultrasound for imaging, endometrial thickness and ovarian volume normogram (Adeeb et al 2007b) should be made available for the local population to

enable the clinician to tailor subsequent management and counselling.

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