

Knowledge and Practice of Breast Self Examination and Pap Smear Screening Among a Group of Electronics Women Workers

H L Chee, PhD*, S Rashidah, PhD**, K Shamsuddin, DrPH***, S Y Sharifah Zainiyah, MPH*

*Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, **Women's Health Development Unit, School of Medical Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, ***Department of Community Health, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur

Summary

A total of 486 Malaysian women electronics workers participated in a study of reproductive health knowledge and cancer screening. The practice of Breast Self Examination (BSE) was found to be related to educational attainment; while ever having had a Pap smear was found to be related to being older than 30 years old, being ever married, living with family or relatives, and not staying in hostels. Knowledge on reproductive health was found to be higher for older women, married women, living with family or relatives, not staying in hostels, ever having done BSE and ever having had a Pap smear.

Key Words: Breast self examination (BSE), Pap smear, Electronics women workers

Introduction

After cardiovascular diseases, malignant neoplasms, or cancers, constitute the second leading cause of medically certified and inspected deaths in Malaysia¹; and among the ten leading causes of cancer deaths are cancers of the breast (7.5% of all cancer deaths) and the cervix (2.8% of all cancer deaths)². Furthermore, cancer of the breast is the leading cause of death among women in Malaysia.

Early detection of these conditions is important for effective treatment and remedial measures, and

can be easily carried out through the simple procedures of breast self-examination (BSE) and the Pap smear screening test. Both these procedures are promoted by the Ministry of Health as part of its wellness paradigm and early detection programmes^{3,4}.

It should be noted that currently there is controversy regarding the use of BSE, which erupted when the Canadian Task Force on Preventive Health Care recommended that women aged 40-69 should not be routinely taught BSE, stating that it found no evidence of effectiveness^{5,6}. Instead, the taskforce claimed, there was evidence

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Corresponding Author: Chee Heng Leng, BT 11-2, Prima 16, No. 2, Jalan 16/18 46350 Petaling Jaya, Selangor

of harm from increased benign biopsies, physician visits and anxiety. Those who disagree point to the fact that many tumours are picked up at an early stage by women themselves and BSE once a month contributes to women's awareness of how her breasts should normally be.

This has not yet affected Malaysian policy, where women between 20 and 65 years old are given Pap smear tests and taught BSE when they present themselves for postnatal care and family planning services in any of the Ministry of Health network of primary health care facilities³. Women who do not utilise public health care services for these purposes, in particular, single women and women who are past their reproductive ages, would need to make a conscious effort to seek out and learn about these secondary prevention measures.

One way to assess the effectiveness of governmental outreach programs and campaigns on breast and cervical cancer prevention would be to monitor the extent to which women know about and comply with recommendations on breast examination and Pap smear. As routine information for breast examination and Pap smear is either unavailable or incomplete, these were identified as two core study areas in the nationwide National Health and Morbidity Survey II (NHMS II) that was carried out in 1996^{3,4}. While the NHMS II provides an overall view of the practices of women in Malaysia, it would also be important to conduct smaller but more targeted studies on specific groups of women that could identify the factors which predispose toward compliance. As such studies are still limited in this country, it was considered a priority area of study for women's health.

In a study of the health of working women and relationship to lifestyle factors, women workers in the electronics industry were targeted as an important group. One of the objectives in this study was to determine the knowledge and practice of the women with respect to reproductive health, BSE and the Pap smear examination, and to study the related factors. It is

hoped that this study would contribute toward filling in the information gap that currently exists on BSE and Pap smear practice among women in Malaysia.

Materials and Methods

The Malaysian Industrial Development Authority (MIDA) list of electronics factories (1st November 1997) was used to identify all the factories in the Bandar Baru Bangi Industrial Zone that fulfilled the criteria of having a female workforce numbering 500 or more, being in operation for two years or more, and producing semiconductors, electronics components or final electronics products. Out of seven such factories in the Bandar Baru Bangi Industrial Zone, only five agreed to participate.

The minimum sample size required was estimated to be 500. As the five Bangi factories were unable to provide the total number of respondents required, cooperation was sought from another factory that fulfilled the inclusion criteria. This factory, located in the Sungei Way Industrial Zone, agreed to participate in the study, making a total of six participating factories.

In each of the six participating factories, purposive criterion sampling was used to select respondents for the study. Volunteers who fulfilled the criteria of being Malaysian citizens, women production workers up to the level of line leader, and have worked for at least one year in the present factory were included in the sample. Respondents were asked to fill in a questionnaire in the presence of research assistants, who explained whatever they could not understand. Data was collected from April to September 1999.

Data on socio-demography that was collected included educational attainment, marital status, and living situation, whether they were living with family, relatives, friends, or by themselves, and whether they were living in their own house, a rented house, or a hostel. Practice of BSE and pap smear were measured by answers to the questions

of whether they have ever done the respective examinations. Knowledge was assessed by seven questions on various aspects of reproductive health, including one on the purpose of doing pap smear and another on the frequency at which BSE should be done.

The data was analyzed using the SPSS (Ver. 10.0). The t-test was used to test for differences in mean number of correct answers to questions on knowledge on reproductive health and cancer screening, while the chi-square test and relative risk were used to test for association between the practice of cancer screening and socio-demographic variables.

Results

The group of women in this study was relatively young (mean age 26.7±6.2 years), with 72.8% below the age of 30 years (Table I). They were predominantly Malays (87.2%) and were generally well educated, as 68.7% have attained upper secondary schooling or higher (62.1% upper secondary schooling and 6.6% higher than upper secondary schooling). The majority were single (72.8%), living with friends (65.0%), and in hostels (64.2%).

Seventy seven percent have heard of the BSE, but only 46.9% knew how to conduct the examination (Table II). A smaller proportion (37.4%) had ever done the examination, and out of this group, 56.0% did it once a month. This means that only 21.0% of the women carried out BSE once a month. Likewise, more than half of the women (57.8%) had heard of the Pap smear test, but only a very small proportion (6.4%) had ever taken the test. Out of those who had ever had a Pap smear, 67.7% had one within the last three years.

Table III shows the percentage of women workers who scored correctly on each of the seven questions designed to test knowledge on reproductive health. The question '*Pap smear is a test for early detection of cervical cancer*' had the

highest percentage of correct scorers (72.8%), while the other two questions with high percentage of correct scorers were the questions '*Women above 35 and below 18 years old have higher risk if she is pregnant*' (56.6%) and '*Using condom can prevent sexually transmitted diseases*' (44.9%).

The question '*Breast self examination should be done monthly before menses*' was designed to test knowledge on the correct timing for performing BSE, and there were 10.9% who answered correctly. Overall, one fifth of the women answered correctly for four or more questions (19.7% answered correctly 4-5 questions, 0.2% answered correctly 6-7 questions), while 29.5% of the women either did not get any correct answers or only managed to get one correct answer, and 50.6% answered 2-3 questions correctly.

The mean number of correct answers for the questions on reproductive health knowledge were compared for various socio-demographic variables (Table IV). Significantly higher means were found for the women workers who were more than 30 years old ($p<0.01$), ever married ($p<0.001$), those who were living with family or relatives as compared to those who were living alone or with friends ($p<0.001$), and those who were not living in hostels ($p<0.001$). Women who had ever done BSE ($p<0.01$) and Pap smear ($p<0.001$) also had higher means, that is, better knowledge. However, there were no significant differences between women who did BSE more frequently and those who did it less frequently, and between women who had a Pap smear within the last three years and those who had it more than three years ago.

In Table V, tests of association between the practice of BSE and Pap smear and various socio-demographic variables are shown. The only variable found to be significantly associated with ever having done BSE was educational attainment ($\chi^2=7.36$, $p<0.01$). A lower educational level (primary to lower secondary as compared to upper secondary and higher) increased the risk of not having had BSE (RR=1.23, 95% CI 1.07-1.41).

The pattern for the Pap smear, however, was different from the BSE, as the variables found to be significantly associated with ever having had the Pap smear were age ($\chi^2=32.2$, $p<0.001$), marital status ($\chi^2=84.9$, $p<0.001$), living with whom ($\chi^2=50.7$, $p<0.001$), and staying in hostel ($\chi^2=45.4$, $p<0.001$). Women who were at higher risk of never having had the Pap smear were 30 years old and younger (RR=1.19, 95% CI 1.09-1.31), never married (RR=1.31, 95% CI 1.19-1.44), living alone or with friends rather than with family or relatives (RR=1.21, 95% CI 1.13-1.30), and staying in hostels (RR=1.19, 95% CI 1.12-1.28). In fact, none of the never married women had ever had a Pap smear test.

Following on the result that general knowledge on reproductive health was significantly higher for women who had ever done the BSE and Pap smear (Table IV), it was also found that ever had Pap smear was significantly associated with performance on the specific question '*Pap smear is a test to detect cancer of the cervix*' ($\chi^2=10.9$, $p<0.01$). Women who could not answer this question correctly faced a slightly increased risk of never having had the Pap smear (RR=1.10, CI 1.06-1.13). On the other hand, practice of BSE was not significantly related to whether or not women could answer the question '*BSE should be done every month before the menstrual period*'.

Table I: Socio-demographic Characteristics of Study Population

	Distribution of respondents (n=486)	
	No.	%
Age group (years)		
≤ 20	43	8.8
20-29	311	64.0
30-39	110	22.6
40-49	20	4.1
≥ 50	2	0.4
Age, mean (years) (\pm SD)	26.7 \pm 6.2	
Ethnicity		
Malay	424	87.2
Non-Malay	62	12.8
Educational attainment		
No formal schooling	6	1.2
Primary	37	7.6
Lower secondary	109	22.4
Upper secondary	302	62.1
Higher than upper secondary	32	6.6
Marital status		
Single	354	72.8
Married	106	21.8
Divorced/ widowed	26	5.3
Living with whom		
Alone	7	1.4
Family / relatives	163	33.5
Friends	316	65.0
Types of housing		
Own house	89	18.3
Rented house / room	77	15.8
Hostel	312	64.2
Others*	8	1.6

*Estate and government quarters, parents' house.

Table II: Breast Self-examination and Pap Smear (n=486)

	Distribution of respondents	
	No.	%
Breast self-examination		
Have heard about it	374	77.0
Know how to conduct the examination	228	46.9
Have done the examination	182	37.4
How many times (N=182)		
Once a month	102	56.0
Once every 2 months	24	13.2
Once every 3 months	16	8.8
Once every 6 months	15	8.2
Annually	25	13.7
Pap-smear		
Have heard about it	281	57.8
Have done the examination	31	6.4
Last examination (N=31)		
≤ 3 years	21	67.7
>3 years	10	32.3

Table III: Knowledge on Reproductive Health (n=486)

	Distribution of respondents	
	No.	%
1. A women can get pregnant if she has sex a week after menses	22	4.5
2. Women above 35 and below 18 years old have higher risk if she is pregnant	275	56.6
3. A woman should have her first antenatal checkup after six months of being pregnant	121	24.9
4. Women who have never had sex could have itchiness in her private parts	86	17.7
5. Pap smear is a test for early detection of cervical cancer	354	72.8
6. Breast self-examination should be done monthly before menses	53	10.9
7. Using condom can prevent sexually transmitted diseases	218	44.9

Table IV: Comparison of Knowledge on Reproductive Health (n=486)

	Mean no. of correct answers (±SD)	t	p
Age		2.72	0.007**
≤ 30 years (N=379)	2.23 ± 1.33		
> 30 years (N=107)	2.64 ± 1.39		
Ethnicity		0.20	0.839
Malay (N=424)	2.33 ± 1.32		
Non-Malay (N=62)	2.29 ± 2.29		
Marital Status		6.55	0.000***
Never married (N=354)	2.09 ± 1.31		
Ever married (N=132)	2.95 ± 2.95		
Educational attainment		1.53	0.127
Lower secondary and lower (N=152)	2.18 ± 1.44		
Upper secondary and higher (N=334)	2.39 ± 1.31		
Living with whom		4.29	0.000***
Alone/Friends (N=323)	2.14 ± 1.35		
Family/relatives (N=163)	2.69 ± 1.29		
Stay in the hostel		4.62	0.000***
Yes (N=312)	2.12 ± 1.32		
No (N=174)	2.70 ± 1.34		
Have ever done breast self-examination		3.23	0.001**
Yes (N=182)	2.58 ± 1.24		
No (N=304)	2.17 ± 1.39		
How many times (N=182)		1.29	0.200
Once a month - every 3 months (N=142)	2.51 ± 1.28		
Every 6 months, annually (N=40)	2.80 ± 1.11		
Have ever done pap smear		6.78	0.000***
Yes (N=31)	3.45 ± 0.93		
No (N=455)	2.25 ± 1.34		
How many times (N=31)		0.20	0.845
≤ 3 years (N=21)	3.43 ± 0.81		
> 3 years (N=10)	3.50 ± 1.18		

**p < 0.01

***p < 0.001

Table V : Relationship Between Breast Self Examination (BSE), Pap Smear and Socio-demographic Factors (n=486)

	Ever done BSE				Ever had Pap Smear				p	RR ¹	95% CI	
	Yes (%)	No (%)	χ ²	p	RR ¹	95% CI	Yes (%)	No (%)				χ ²
Age												
≤ 30 years (n=379)	136 (35.9)	243 (64.1)	1.51	0.219	1.13	0.94-1.35	11 (2.9)	368 (97.1)	32.2	0.000***	1.19	1.09-1.31
> 30 years (n=107)	46 (43.0)	61 (57.0)	2.89	0.089	1.16	0.98-1.37	20 (18.7)	87 (81.3)	84.9	0.000***	1.31	1.19-1.44
Marital status												
Never married (n=354)	124 (35.0)	230 (65.0)	3.56	0.059	1.22	1.03-1.44	31 (23.5)	101 (76.5)	0.66	0.418	1.04	0.99-1.10
Ever married (n=132)	58 (43.9)	74 (56.1)	7.36	0.007**	1.23	1.07-1.41	0	354 (100)	0.77	0.379	1.03	0.98-1.08
Ethnicity												
Non-Malay (n=62)	16 (25.8)	46 (74.2)	0.08	0.772	1.03	0.89-1.19	2 (3.2)	60 (96.8)	50.7	0.000***	1.21	1.13-1.30
Malay (n=424)	167 (39.2)	258 (60.8)	1.54	0.215	1.10	0.95-1.28	29 (6.8)	395 (93.2)	45.4	0.000***	1.19	1.12-1.28
Educational attainment												
Lower secondary & lower (n=152)	43 (28.3)	109 (71.7)	0.08	0.772	1.03	0.89-1.19	7 (4.6)	310 (92.8)	50.7	0.000***	1.21	1.13-1.30
Upper secondary & higher (n=334)	139 (41.6)	195 (58.4)	1.54	0.215	1.10	0.95-1.28	24 (7.2)	145 (95.4)	45.4	0.000***	1.19	1.12-1.28
Living with whom												
Alone/friends (n=323)	119 (36.8)	204 (63.2)	0.08	0.772	1.03	0.89-1.19	2 (0.6)	321 (99.4)	50.7	0.000***	1.21	1.13-1.30
Family/relatives (n=163)	63 (38.7)	100 (61.3)	1.54	0.215	1.10	0.95-1.28	29 (17.8)	134 (82.2)	45.4	0.000***	1.19	1.12-1.28
Stay in hostel												
Yes (n=312)	110 (35.3)	202 (64.7)	1.54	0.215	1.10	0.95-1.28	2 (0.6)	310 (99.4)	45.4	0.000***	1.19	1.12-1.28
No (n=174)	72 (41.4)	102 (58.6)	0.08	0.772	1.03	0.89-1.19	29 (16.7)	145 (83.3)	50.7	0.000***	1.21	1.13-1.30

*p<0.05, **p<0.01, ***p<0.001

¹Relative risk of never having done BSE for the group in the upper row

²Relative risk of never having had the Pap smear test for the group in the upper row

Discussion

The prevalence of BSE and Pap smear examination and related socio-demographic factors have been studied among various groups of women. In a 1994-95 telephone survey of 818 Korean-American women in two Californian counties, for example, 62.9% were found to ever had a Pap smear, and 55% had a Pap smear test in the previous three years; while the characteristics that were significantly associated with having had a Pap smear in the previous two years were having had a routine check up, and being married and employed ⁷.

Other studies have found prevalences of Pap smear examination among other groups of women ranging from 76% to 46% and predisposing factors to be access to health care and coverage by health insurance, better knowledge, younger age, being married, higher education and higher income^{8, 9, 10}. For BSE, there have been prevalences reported that are around 40%, with the similar related factors of having health insurance, younger age, being married, higher education and higher income^{11, 12, 13}.

In Malaysia, the NHMS II collected information on BSE and Pap smear examination from a nationally representative sample of 16,497 women over 20 years old⁴. The prevalence rate for ever done BSE was 34.1%, which was higher than clinical breast examination (31.1%); while rates for mammography was extremely low (3.8%). Of those who did BSE, 47.8% did so monthly, but 30% did it more frequently than that.

The prevalence rates found in this study for women who ever did BSE (37.4% compared to 34.1% in the NHMS II) and did BSE monthly (56.0% of those who did BSE compared to 47.8% in the NHMS II) were comparable to the national rates. In contrast, a study of women attending a Well Person's Clinic in Ipoh from April 1995 to March 1997 found a very low prevalence rate of women who ever did BSE (1.3%)¹⁴. In this case, the sample of 1,303 women were largely Chinese

(56.9%), married (91.7%), and housewives (66.8%).

This study also concurs with the NHMS II in finding that BSE was practised by a higher proportion of women with higher education. The NHMS II had found rates of BSE ranging downwards from 67.6% for women with tertiary education, to 47.9% for women with secondary education, 26.9% for those with primary education and 10.2% for uneducated women. Professional, managerial and clerical professions had higher rates. Those who did BSE at the recommended interval were also more educated, with high income, and were professionals or housewives, and married.

The prevalence of ever having done Pap smear, however, was low for this study (6.4%, of whom 67.7% had a test within the last 3 years) when compared to the NHMS II (26%; of whom 74.8% had a test within the last 3 years)³. The rate found in this study was also low in comparison to a study of *Universiti Kebangsaan Malaysia* (UKM) women support and academic staff, where out of 470 women aged 18 to 55 years of age, 27.7% were found to have had a Pap smear within the last 3 years¹⁵.

In each of the three studies, that is, the NHMS II, the UKM study, as well as this study, it was found that Pap smear rates were significantly higher for married women. This could explain the low rates found among the electronics women workers in this study, who were largely single (72.7%) compared to the UKM sample who were largely married (70.6%). Furthermore, the NHMS had found that higher rates were significantly associated with higher education, employment (professionals and housewives higher than others), and higher household incomes. In comparing with the UKM study, the electronics women workers in the present study would have relatively lower education and household incomes, and were neither professionals nor housewives, which would further explain the relatively low rates of ever having done Pap smear.

Like the UKM study, this study also found a significant association between ever having done Pap smear and older age. Both these studies were among working women who were younger than 55 years old, and therefore, the sudden drop in Pap smear rates at age 50 that was reported in the NHMS II could not be discerned.

It has been pointed out that the NHMS II data reflects more favourable BSE and Pap smear rates among women in the reproductive age group compared to other age groups, suggesting the influence of contact with the health care system, and that this trend is more pronounced for Pap smear than BSE^{3,4}. This points to the importance of awareness raising and improved knowledge of these two screening tests for single and non-child bearing women who will need to be motivated to seek out these tests for themselves.

This study also found better knowledge on general reproductive health questions among older women, married women, and women living with family or relatives, as well as women who had ever done BSE and Pap smear, variables that are probably related to each other. This finding concurs with the UKM study, which had also found that having had Pap smear was related to having higher level of health knowledge and showing positive self-interest towards health. Further analysis in this study had found a significant relationship between ever having had Pap smear and the knowledge that it is a test to detect cancer of the cervix; although it failed to find a relationship between the practice of BSE and knowing when BSE should be done.

Conclusions

A group of electronics women workers was found to have prevalence rates for BSE that are comparable with rates found in the NHMS II. Prevalence rates for Pap smear examination

among them was however relatively low. This was traced to the characteristics of the sample being largely young, single women who were neither professionals nor housewives. The practice of BSE was found to be related to educational attainment; while ever having had a Pap smear was found to be related to being older than 30 years old, being ever married, living with family or relatives, and not staying in hostels. Knowledge on reproductive health was found to be higher for older women, married women, living with family or relatives, not staying in hostels, ever having done BSE and ever having had a Pap smear.

These findings concur with the results of the NHMS II as well as a study of working women in a university (the UKM study). They support the contention that the current practice of targeting women who use public health services for post-natal and family planning excludes women who do not fall within this ambit. The study results also support the contention that reproductive health knowledge, and particularly knowledge of the Pap smear, could be an important factor for women undergoing these screening tests.

This study is limited in that it cannot be used to represent electronics women workers as a whole, because it is based on a group of electronics women workers who volunteered to participate, rather than on randomly selected individuals. As such, the results could also be biased in the direction of individuals who are more health conscious, and more willing to cooperate. If this is so, the relatively low levels of compliance with recommendations is even greater cause for concern. Nevertheless, in reality, it is difficult to draw a truly representative sample from a factory population on a subject area that is not of priority to factory management. This study, therefore, provides information on an important group of women who should not be neglected in governmental outreach efforts in preventive screening.

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