

Breast cancer screening: How knowledgeable are female staff of a public university?

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ABSTRACT

Introduction: Breast cancer is the most common cancer among women worldwide and in Malaysia. It has better cure rate if detected early. However, the practice of breast cancer screening in Malaysia is still low. The objective of this study is to determine the knowledge and its associated factors as well as sources of information on breast cancer and breast cancer screening among female staff in a public university in Malaysia. **Materials and Methods:** This was a cross sectional study conducted in 2005 involving 394 female staff including academic and non-academic staff, which was selected by cluster sampling. A self-administered questionnaire on socioeconomic characteristics and family history of breast cancer was used for data collection. Chi-square Test and Fisher's Exact Test was used for testing an association using SPSS 12.0. **Results:** The response rate was 84.3%. Only 50.9% had high knowledge on breast cancer and breast cancer screening and this was significantly associated with occupational status, monthly family income and educational level ($p < 0.05$). The usual source of information was mass media (92.2%) while the most preferred source is the health team (71.4%). **Conclusion:** As mass media was a major source of information, all types of mass media could efficiently be utilized to disseminate knowledge by presenting specific programmes associated with breast cancer and breast cancer screening.

KEYWORDS: Breast cancer, screening, knowledge, information literacy.

INTRODUCTION

Breast cancer is the third most common cancer worldwide and the second leading cause of cancer death. It accounts for up to 18% of all cancer incidences in women worldwide.¹ There are approximately 1 million new cases in the world each year.¹ In Malaysia, 3738 female breast cancer cases were reported in 2003, making it the most commonly diagnosed cancer in women.^{2,3} It accounted for up to 31% of all new cancer cases in women.³ Breast cancer is the second leading cause of cancer admissions in the Ministry of Health hospitals in Malaysia and is responsible for 6-8% of all cancer deaths. It is the fourth leading cause of cancer deaths since 1991.⁴

Screening and early detection of breast cancer in a high risk person based on the features of breast changes will lead to early treatment and better outcome. Breast cancer screening tests are available in government and private clinics and hospitals. Every woman has the opportunity to undergo the screening tests. Yet, the practice of regular screening of breast cancer is still low despite health education programmes held by the government. The Second

National Health and Morbidity Survey (NHMS II) data conducted by Ministry of Health Malaysia in 1996 showed that the overall prevalence for breast cancer screening was 46.8%.⁵ The prevalence of breast self-examination (BSE) was reported to be 34.1%, followed by clinical breast examination (CBE) 31.1%.¹⁰ Although mammography was claimed to be the best method to detect breast abnormalities, only 3.8% of women carried out the procedure.⁵

A study done in 2003 among 185 educated Appalachian women showed that these women believe breast self-examination leads to early cancer detection but they lacked the knowledge about breast cancer risk factors and screening guidelines, particularly the timing and effective methods of breast self-examination. However, higher level of knowledge on breast self-examination was related to perceived practice proficiency ($r = 0.21$, $p < 0.001$). Those who were more motivated to practice ($r = 0.42$, $p < 0.001$) and those who were taught by health care providers about cancer screening instructions had higher level of knowledge.⁶ Another study also showed that the level of knowledge on breast cancer screening among Chinese American women was low. More than half of 332 Chinese American women had heard of clinical breast examination (51.8%), but only one third had heard of mammogram (32.3%) and breast self-examination (35.2%).⁷

Sources of information on breast cancer screening are also important in order to plan the best media to disseminate the information to the public whereby it can also help to increase their knowledge. The main source of information regarding breast self-examination among 122 working women in Medical and Nursing Faculties affiliated to Ain Shams University, Abbassia, Cairo, Egypt was peer group (47.5%). This is because working women spent most of their time with their

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friends at the work place. Meanwhile, 30.4% reported acquiring information from mass media (such as TV, radio, newspapers and magazines). Mass media was the most important source of information because 82% of the working women had improved their level of knowledge on breast self-examination after being exposed to mass media. Thirteen percent of working women acquired the information from books and 9.0% received the information from health team such as nurses and physicians.⁸

The purpose of this study is to determine the level of knowledge and sources of information on breast cancer screening among female staff in a public university in Malaysia. Female staffs were chosen instead of the general population because the assessment of their level of knowledge could contribute to better understanding on the challenges in providing services to women with regards to breast cancer screening programme. The result may help to strengthen future health programmes on the breast cancer screening activities.

MATERIALS AND METHODS

This cross-sectional study was conducted in April 2005 in a public university in Malaysia. There were a total of 58 departments in the university. The staffs were able to access health services provided by the Health Center of the university, nearby government clinics and hospitals, and panel clinics. Of the 58 departments, only 15 departments were systematically selected. Cluster sampling of the female academic and non-academic staff in the selected departments were chosen based on the list given by each departments. Sample size was determined based on the WHO manual.⁹

A self-administered questionnaire was used. It was divided into four sections, which comprising information on socioeconomic status, family history, knowledge on breast cancer screening, sources of information and preferred sources of information. There were 8 main questions on knowledge, mainly on symptoms, risk factors, screening and treatment of breast cancer. The knowledge questions were subdivided into 41 questions, so the total questions were 41. Knowledge was categorised into high or low by the median of the total scores. Knowledge was assessed by asking Yes or No questions with 1 point given to each correct answer. A 'Don't know' answer was given 0 points. The full marks were 41. To determine the level of knowledge, a score equal to or above the median was considered to have high knowledge while a score below the median was considered to have low knowledge.

The questionnaire was reviewed by a behavioral scientist. Pre-testing was carried out on 40 women working in the university. Upon completion of the pre-testing, necessary changes were made to the questions according to the feedback from the respondents.

Socioeconomic status	n	%
1. Age (n=331)		
<30years	131	39.6
30-50 years	179	54.1
> 50 years	21	6.3
2. Race (n=332)		
Malay	321	96.7
Chinese	6	1.8
Indian	4	1.2
Others	1	0.3
3. Religion (n=332)		
Islam	323	97.3
Buddhist	3	0.9
Hindu	4	1.2
Christian	2	0.6
Others	0	0
4. Marital status (n=331)		
Single	110	33.2
Married	214	64.7
Divorcee	2	0.6
Widow	5	1.5
5. Occupational status (n=332)		
Academic staff	91	27.4
Non-academic staff	241	72.6
6. Monthly family income (n=332)		
< RM1000	42	12.7
RM1000-RM2000	93	28
RM2001-RM3000	65	19.6
RM3001-RM4000	43	13
RM4001-RM5000	29	8.7
> RM5000	60	18.1
7. Educational level (n=331)		
UPSR	2	0.6
PMR	12	3.6
SPM	83	25.1
STPM/A-level/Matriculation	8	2.4
Diploma	47	14.2
Bachelor	87	26.3
Master	69	20.8
PhD	23	6.9
8. Family history of breast cancer (n=329)		
Yes	35	10.6
No	294	89.4

The questionnaires were distributed personally to the respondents. The respondents were given a period of three days to complete the questionnaires and the completed questionnaires were collected personally.

Table 2. Distribution of correct and wrong answers on knowledge of breast cancer screening among the respondents

Statement	Correct		Wrong		Don't know	
	n	%	n	%	n	%
1. Symptoms of breast cancer						
a) Lump(s) in the breast	281	84.6	32	9.6	19	5.7
b) Nipple retraction	171	51.5	65	19.6	96	28.9
c) Bloody discharge from the nipple	232	69.6	36	10.8	64	19.3
d) Puckering of the skin of the breast	153	46.1	62	18.7	117	35.2
e) Swelling of the axillary's lymph nodes	264	79.5	34	10.2	34	10.2
f) Weight gain	154	46.4	20	6	158	47.6
2. Risk factors of breast cancer						
a) Young age (< 40 years old)	180	54.2	78	23.5	74	22.3
b) Onset of menses before 12 years old	85	25.6	134	40.4	113	34
c) Menopause after 55 years old	101	30.4	114	34.3	117	35.2
d) Diets high in fat	210	63.3	48	14.5	74	22.3
e) Family history of breast cancer	287	86.4	32	9.6	13	3.9
f) Past history of breast cancer	237	71.4	80	24.1	15	4.5
g) First pregnancy after 35 years old	114	34.3	110	33.1	108	32.5
h) Nulliparity at age of 40 years	130	39.2	95	28.6	107	32.2
i) Overweight	87	26.2	133	40.1	112	33.7
j) Physically active	275	82.8	19	5.7	38	11.4
k) Taking OCP	68	20.5	136	41	128	38.6
3. Methods of breast cancer screening						
a) Breast Self-Examination	318	95.8	11	3.3	3	0.9
b) Clinical Breast Examination	296	89.2	24	7.2	12	3.6
c) Pap smear test	183	55.1	101	30.4	48	14.5
d) Mammography	199	59.9	30	9	103	31
4. Best time for breast cancer screening						
a) During menses	152	45.8	44	13.3	136	41
b) After menses	199	59.9	25	7.5	108	32.5
c) Same date every month (for women after menopause)	111	33.4	31	9.3	190	57.2
5. Places for breast cancer screening						
a) Home	280	84.3	35	10.5	17	5.1
b) Government clinics	310	93.4	11	3.3	11	3.3
c) Private clinics	313	94.3	3	0.9	16	4.8
d) Government hospitals	312	94	4	1.2	16	4.8
e) Private hospitals	307	92.5	5	1.5	20	6
6. Presence of abnormal lump(s) in the breast means cancer						
7. Recommendation for breast cancer screening by MOH						
a) Women below 40 years old should be discouraged from	142	42.8	42	12.7	148	44.6

undergoing mammography						
b) Women aged 40-49 years old should be screened annually	222	66.9	24	7.2	86	25.9
c) Women aged 50-75 years old can be screened annually or biennially	148	44.6	37	11.1	147	44.3
d) Women above 75 years old do not need screening	129	38.9	40	12	163	49.1
8. Treatment options for breast cancer patients						
a) Breast cancer is incurable even if detected in the early stage	302	91	12	3.6	18	5.4
b) Radiotherapy	178	53.6	36	10.8	118	35.5
c) Chemotherapy	268	80.7	12	3.6	52	15.7
d) Lumpectomy	308	92.8	8	2.4	16	4.8
e) Mastectomy	294	88.6	14	4.2	24	7.2
f) Hormone therapy	122	36.7	51	15.4	159	47.9
g) Breast cancer is self-limiting	296	89.2	4	1.2	32	9.6

The distribution and collection of the questionnaires were followed up three times in every two days before the subjects were considered as non-respondents.

The data collected was analysed using SPSS 12.0 for Windows. Descriptive and analytical methods were used to interpret the result. To test for associations between the independent and dependent variables, statistical tests such as Chi-square Test and Fisher's Exact Test were used. All tests were significant at $p < 0.05$.

Approval from the Ethical Committee of Faculty of Medicine and Health Sciences was obtained. Permission was also obtained from the various departments from which the sample was derived before proceeding with the data collection. Written personal consent was obtained from each respondent. The information given by the respondents was strictly confidential. The information was used exclusively for this research. The identities of the respondents were kept anonymous.

RESULTS

Three hundred and ninety-four female staffs were identified in the selected departments. Three hundred and thirty two female staff responded to the study with a response rate of 84.3%. Table 1 shows the socioeconomic characteristics and family history of breast cancer of the female staff in the university. The mean age of respondents was 34.7 years and the majority of the respondents were in the age group of 30-50 years. There were 72.6% of the respondents who were non-academic staffs. Out of 332 respondents, 321 (96.7%) of them were Malays, 323 (97.3%) were Muslims and 110 (33.2%) were married. About 26.3% of the respondents had Bachelor's degree. Most of the respondents (18.1%) had monthly family income more than RM 5000.00. Only 10.6% had family history of breast cancer.

Table 2 shows that 84.6% of the respondents knew that the presence of lumps in the breast is one of the symptoms of breast cancer, but only 46.1% of the respondents knew that puckering of the skin of the breast is a symptom of breast cancer. Regarding the risk factors of breast cancer, 86.4% of the respondents answered correctly that a positive family history is one of the risk factors. However, 41.0% of the respondents did not have the knowledge of taking oral contraceptive pills as a risk factor. Although almost all the respondents knew that breast self-examination and clinical breast examination are the methods of breast cancer screening, only 59.9% knew that mammography is a breast cancer screening method. Majority of the respondents knew breast cancer screening is available.

The total score for knowledge on breast cancer screening was 41, the highest score of the respondents was 39 and the lowest score was 3 (mean score was 25.77 ± 6.38 and the median score was 27). Among the 332 respondents, 169 (50.9%) of them had good knowledge, while 163 (49.1%) of them had poor knowledge. Table 2. Distribution of correct and wrong answers on knowledge of breast cancer screening among the respondents.

Table 3 shows that there were significant association between the level of knowledge of breast cancer screening and occupational status ($\chi^2 = 9.736$, $p = 0.002$), monthly family income ($\chi^2 = 23.889$, $p = 0.000$) and educational level ($\chi^2 = 23.564$, $p = 0.000$).

Table 4 displays that most of the respondents (92.2%) received the information from mass media (e.g. television, radio, newspaper and magazine). Other main sources of information were health promotion activities (73.8%), health education brochures (73.8%), books (69.6%), internet (66.9%), and friends (64.8%). Table 5 shows that 237 (71.4%) participants preferred to get the information from health team. Other pref-

Table 3. Associations between level of knowledge and socioeconomic characteristics and family history of breast cancer among the respondents

Socioeconomic status	High knowledge		Low knowledge		χ^2 p
	n	%	n	%	
1. Age (n = 331)					
<30 years	63	48.1	68	51.9	0.616
30-50 years	94	52.5	85	47.5	0.735
> 50 years	11	52.4	10	47.6	
2. Race (n = 332)					
Malays	163	50.8	158	49.2	0.060
Non-Malays	6	54.5	5	45.5	0.525 ^a
3. Religion (n = 332)					
Muslim	165	51.1	158	48.9	0.154
Non-Muslim	4	44.4	5	55.6	0.477 ^a
4. Marital status (n = 331)					
Married	116	54.2	98	45.8	2.884
Single/ Others	52	44.4	65	55.6	0.057 ^a
5. Occupational status (n=332)					
Academic staff	59	64.8	32	35.2	9.736
Non-academic staff	110	45.6	131	54.4	0.001 ^a
6. Monthly family income (n= 332)					
< RM1000	11	26.2	31	73.8	23.889
RM1000-RM2000	39	41.9	54	58.1	0.000
RM2001-RM3000	34	52.3	31	47.7	
RM3001-RM4000	27	62.8	16	37.2	
RM4001-RM5000	21	72.4	8	27.6	
> RM5000	37	61.7	23	38.3	
7. Educational level (n=331)					
Primary and secondary education	35	33.3	70	66.7	23.564
Diploma	22	46.8	25	53.2	0.000
Bachelor	52	59.8	35	40.2	
Master	45	65.2	24	34.8	
PhD	15	65.2	8	34.8	
8. Family history of breast cancer (n=329)					
Yes	20	57.1	15	42.9	0.523
No	149	50.7	145	49.3	0.294 ^a

^aFisher's Exact Test

Table 4. Sources of information on breast cancer screening among the respondents

Sources of information	n	%
1. Mass media	306	92.2
2. Health promotion activities	245	73.8
3. Health education brochures	245	73.8
4. Books	231	69.6
5. Internet	222	66.9
6. Friends	215	64.8
7. Health team	195	58.7
8. Family members	117	35.2
9. Others	7	2.1

Table 5. Preferred sources of information on breast cancer screening

Sources of information	n	%
1. Health team	237	71.4
2. Health education brochures	182	54.8
3. Mass media	167	50.3
4. Internet	164	49.4
5. Health promotion activities	157	47.3
6. Books	113	34
7. Friends	72	21.7
8. Family members	32	9.6
9. Others	3	0.9

erable sources of information were health education brochures, mass media, internet and health promotion activities, which were 54.8%, 50.3%, 49.4%, and 47.3%, respectively.

DISCUSSION

Among the 332 female staff who participated in this study, 169 (50.9%) had good knowledge, while 163 (49.1%) had poor knowledge. The prevalence of good knowledge among the respondents was 50.9%. In comparison, the prevalence of having satisfactory knowledge on breast self-examination among 122 working women in Cairo, Egypt, in 2001 was only 11.5% while another study among Chinese-American women also showed that the level of knowledge on breast cancer screening was poor.^{7,8} The prevalence of good knowledge among respondents in this study was higher compared to other studies. The difference is probably because this study was conducted in a university setting. Moreover, 68.5% of the respondents in this study had tertiary level education.

The findings of this study indicated that knowledge on breast cancer screening was significantly associated with occupational status ($\chi^2=9.736$, $p = 0.001$), monthly family income ($\chi^2=23.889$, $p=0.000$), and edu-

cation level ($\chi^2 = 23.564$, $p=0.000$). As this research was conducted in a university setting, there was not much variation in the type of occupation among its staff. Therefore, the occupation status was grouped into two large groups of academic and non-academic staffs. More than half of the academic staff (64.8%) has high knowledge on breast cancer screening compared to 45.6% of non-academic staff. It may be because the latest information on breast cancer screening was better circulated among the academic staff than the non-academic staff, as a result of higher education level among them. Comparison with other studies was lacking due to limited researches in the published material in similar settings.

Monthly family income was found to be significantly associated with the level of knowledge on breast cancer screening. This finding is consistent with other studies. In a study done in 2003 among urban African American women, annual household income was significantly associated with knowledge about mammography, breast cancer and its treatment ($p<0.01$).¹⁰ It is also similar to another study done in 2004 among female Chinese immigrants in New York where women with a higher income were twice as likely to have higher knowledge of breast cancer risk (OR=2.12, $p=0.014$).¹¹

In this study, the association between the level of knowledge and educational level was found to be significant ($\chi^2 = 23.564$, $p<0.001$). This finding was consistent with the study conducted in Medical and Nursing Faculties of Aim Shams University, which showed that university graduates had a higher percentage of satisfactory knowledge (25.4%) than the secondary school graduates (7.8%).⁸ Also, a study among Appalachian women showed that there were higher knowledge scores for those having at least some college education ($p=0.003$).⁶ This relationship was further supported by a study among African-American in three rural counties in Georgia, which were named group A, B and C. A significant difference among groups on education was reported ($\chi^2=29.26$, $p=0.001$), and more women in group A and B reached higher levels of education than women in group C. When assessing the knowledge of breast cancer, more women in group A and B thought that pain, soreness, and burning in the breast were symptomatic of breast cancer compared to women in group C ($\chi^2=12.24$, $p=0.002$). Women in group C were less likely to identify discharge from the nipple ($\chi^2=10.52$, $p=0.005$), swelling or enlargement of the breast ($\chi^2=8.95$, $p=0.011$), changes in the shape of the breast or nipple ($\chi^2=14.22$, $p=0.001$), and discoloration ($\chi^2=15.73$, $p<0.001$) as signs and symptoms of breast cancer than participants in groups A and B.¹²

In this study, **Table 4** displays that most of the respondents received breast cancer screening information from mass media (92.2%), followed by health promotion activities (73.8%) and health education brochures (73.8%). However, a study among Filipino-American women documented that their most commonly reported source of breast cancer screening information

was healthcare professional (61%) followed by printed media (43%), television (20%), family and friends (12.5%), health education programs (9%), and the internet (2%).¹⁴ Meanwhile, another study conducted in the Medical and Nursing Faculties of Ain Shams University showed that peer group (47.8%) was the main source of breast cancer screening information.⁸

Table 5 shows that 237 (71.4%) participants preferred to receive breast cancer screening information from the health team. Other preferred sources of information were health education brochures, mass media, internet and health promotion activities, which were 54.8%, 50.3%, 49.4%, and 47.3%, respectively. These findings were inconsistent with the results in the study among Korean American women which showed that the respondents preferred to receive such information by mail (76.4%), telephone (34.1%), and education programmes (35.8%).¹³

As this study was conducted in semester break April 2005 many of the female staffs were not available during the period of data collection because they

were away for learning visits, seminars, training or holiday. Therefore, this study is expected to be more successful if it was conducted during the semester period. As this research uses a self-administered questionnaire, the message in the questionnaire might be misunderstood and therefore information bias cannot be excluded.

CONCLUSION

As a conclusion, 50.9% of respondents had high knowledge of breast cancer screening. There was significant association between the level of knowledge of breast cancer screening and occupational status, monthly family income and educational level. Majority of the respondents considered the mass media as a major source of information on breast cancer screening while the most preferred source of information was from the health team itself. However, the health team was considered only as the seventh major source of information. Therefore, the health team in Malaysia should play a more active role in educating women regarding breast cancer and recommend appropriate screening for women, especially women at risk.

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