Breast cancer knowledge and participation in breast screening practices among Southeast Asian women living in Sydney

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ABSTRACT

Objective: This study explores the factors that influence breast-screening participation in Southeast Asian (SEA) women living in Sydney. Internationally SEA women have displayed low participation in breast screening due to a lack of general breast cancer knowledge and knowledge regarding available screening practices. Ethnicity, socio-demographic and acculturation variables often shape perceptions regarding preventative health behaviour (breast screening) and impact on health belief measures, however the influence of these variables in an Australian setting is unknown.

Design: A cross-sectional questionnaire-based study was conducted on a sample of 183 SEA women specifically Filipino, Indonesian, Thai and Vietnamese. Data on socio-demographic variables, knowledge and participation in breast screening were analysed using quantitative techniques in SPSS.

Result: Filipino women demonstrated more knowledge than the other three ethnicities; however all ethnic groups demonstrated poor to average knowledge regarding breast cancer. Knowledge regarding breast cancer symptoms was significantly related to participation in mammography for each ethnic group.
Notable barriers to breast screening included pain, being too time-consuming, lack of a GP recommendation and fear of cancer detection.

Conclusion: The low participation demonstrated in these communities' highlights the immediate need to initiate culturally sensitive health interventions for SEA women in Sydney, which can be used for other ethnic groups similar to the ones included in this study. It is essential to increase general breast cancer knowledge as it plays an important role in initiating breast screening.

***Keywords:* Breast cancer knowledge; Breast screening practices; Southeast Asian women**

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INTRODUCTION

Breast cancer is a malignant neoplasm that forms in the cells of the breast, which, if left untreated can invade, and damage surrounding tissues and spread to other areas of the body. This can ultimately result in death (Australian Institute of Health and Welfare 2012). Survival from breast cancer has increased significantly from 72% between 1982-1987 to 89% in 2010 of all diagnosed cases expected to have at least a 5-year survival period after diagnosis (AIHW, 2012). This has largely been attributed to the introduction of BreastScreen Australia, which creates breast cancer awareness campaigns and offers free mammography screenings every 2 years for women over the age of 40 (AIHW, 2012). This increase in survival has not been equally shared amongst ethnic groups, as many Southeast Asian (SEA) women are diagnosed with breast cancer at later stages leading to an increased mortality rate (Mishra, Luce, & Hubbell, 2001; Wu, West, Chen, & Hergert, 2006).

In Australia women from culturally and linguistically diverse (CALD) backgrounds experience higher mortality rates of breast cancer (Cancer Institute NSW, 2010), this may be due to the fact that CALD women are 50%- 60% less likely to participate in cancer screening practices (Hall, 2009; Nguyen, Belgrave, & Sholley, 2011; Rashidi & Rajaram, 1999; Weber, Banks, Smith, O'Connell, & Sitas, 2009; Weber et al., 2014; Wu et al., 2006). Further, this could be due to cultural and socioeconomic factors, which prevent SEA women from engaging in breast-screening practices, reducing the likelihood of early stage detection (Donnelly, 2006; Mishra et al., 2001). Breast cancer is more common in white women, however recent breast cancer incidence data have shown that SEA women should no longer be considered to have a low risk of breast cancer (Stotter et al. 2014). Incidence rates are lower in SEA women compared to high resource countries such as Australia where mortality rates are much higher in SEA women (Kimman et al. 2012). Further during 2008 47% of SEA women diagnosed with breast cancer were under the age of

50 (Youlden et al. 2014).

This demonstrates that SEA women are more likely to be diagnosed with breast cancer at a younger age (below the age of 50) than women from many other ethnic groups (Kimman et al. 2012). Breast cancer screening programs have been shown to be underused and therefore less successful in ethnic communities (Wu and Bancroft 2006)

Migrant women often don't seek medical attention whilst asymptomatic due to the belief that health is the absence of disease or illness (Donnelly, 2006; Jafri, 2011b; Nguyen & Belgrave, 2011). Length of residence in the host country has been linked to an increased perceived susceptibility to breast cancer and increased participation in breast-screening practices (Mishra et al., 2001; Nguyen et al., 2011; Samuel et al., 2009; Weber et al., 2009; Yi & Reyes-Gibby, 2002) however it currently takes up to 35 years for migrant women to equal the participation rate of native-born women in mammography (Hall, 2009).

Underuse of healthcare services is common among CALD populations (Jafri, 2011a) and lack of knowledge regarding healthcare agencies is a common barrier for new immigrants (Wu & Bancroft, 2006).

Breast screening practices and breast cancer awareness amongst the SEA women in Australia is an underexplored field. In 2010 the SEA population made up 3.5% of the total Australian population and was the third largest migrant group (Australian Bureau of Statistics 2012). The majority of current research on perceptions toward breast cancer and participation in breast-screening practices amongst SEA women has been conducted in the US, Canada and Britain (Samuel et al. 2009, Nguyen, Belgrave, and Sholley 2011, Kumsuk, Flick, and Schneider 2012, Gomez et al. 2010, Sabado 2014, Wu and Bancroft 2006, Nguyen and Belgrave 2011, Dang, Lee, and Tran 2010, Clark and NatipagonShah 2008) or conducted in native SEA countries (Iskandarsyah, de Klerk, et al. 2014, Iskandarsyah et al. 2013, Iskandarsyah, Klerk, et al. 2014). A study in the Australian context has not yet been conducted. This study is an attempt to fill this gap by exploring these perceptions in SEA women, in particular Filipino, Indonesian, Thai and Vietnamese women. It investigates their knowledge of breast cancer and participation in breast cancer screening.

Australian breast-screening guidelines recommend the monthly self- examination of the breast (BSE) for all post-pubescent women as well as a biannual mammogram for women aged 50-74 (AIHW, 2012). Breastscreen Australia is a federally funded program that provides free mammography for all women over the age of 40, however they actively target women aged 50-70 years old as this is the most common age group in which breast cancer is first diagnosed. Breast self-examination (BSE) is the physical self-examination of the breasts by palpation for feel for any lumps or other anatomical changes to the breasts. Similarly CBE also examines the external surface of the breast however it is performed by a healthcare professional such as a nurse or general practitioner (Miller and Baines, 2011). Mammography is an x-ray of the breast that is able to detect smaller, nonpalpable tumours and is estimated to reduce mortality rates by 30-41% in Australia (Roder et al,2008).

Acculturation refers to the process of adapting to a new culture and it has been shown to be an important factor in participation in breast screening (Yi and Reyes-Gibby 2002, Kumsuk, Flick, and Schneider 2012) and is typically measured by the length of residence in the host country and English-speaking ability. Language barriers reduce access to healthcare services and restrict meaningful dialogue between physicians and patients making access to information more difficult (Jirojwong and MacLennan 2003). Asian women who migrate to western countries have an increased risk of breast cancer compared to women of their native country, likely due to the adoption of a western lifestyle in SEA countries (Shin et al. 2010). SEA women often have lower breast screening rates than other minorities after they have migrated to western countries with advanced healthcare such as the US (Islam, Kwon, Senie, & Kathuria, 2006), which illustrates the impact of native culture when barriers such as access have been removed. Asian migrants in the US have been shown to have a higher perceived susceptibility to breast cancer as well as have higher participation rates in breast screening practices (Yi and Reyes-Gibby 2002, Kumsuk, Flick, and Schneider 2012, Sabado 2014). Similarly the only study conducted in Australia found that Thai women who were more acculturated were more likely to participate in BSE (Jirojwong and MacLennan 2003).

Whilst many studies have documented breast cancer incidence and mortality rates and the attitudes and beliefs of SEA women there is currently little literature on this phenomenon in SEA women living in Australia. A study on Thai women living in

Brisbane, Australia on the use of breast self-examination (BSE) found that only 25% performed BSE regularly (Jirojwong and MacLennan 2003). This is the first study in Australian, which focuses on perceptions, barriers and facilitators of breast screening practices among four ethnic groups living in Sydney. These groups are Filipino, Indonesian, Thai and Vietnamese. This study is an attempt to reduce the gap in the literature. It investigates how the cultural issues of the SEA immigrant women impact on their breast screening practices including clinical examination, mammography and BSE. These ethnic groups were selected as the proportion of migrant population from these countries in Sydney are much greater compared to other communities from

SEA. Further they were selected because they have poorer healthcare systems and public health campaigns, which significantly reduce participation in breast screening practices (Mishra, Luce, and Hubbell 2001).

This study aims to investigate the above findings and will explore the following questions:

1. What factors affect Filipino, Indonesian, Thai and Vietnamese women's decision to carry out breast screening and is there a difference in participation between ethnic groups?

2. Are ethnicity, religious and cultural values related to breast screening practices?

3. What are the barriers to participation in breast self-examination

4. What are the barriers to access to healthcare services including CBE and mammography between women from selected SEA ethnic groups living in the Sydney metropolitan area?

METHOD

A cross-sectional study was conducted from July to September 2015. A sample of 183 participants was recruited using convenience and snowball sampling techniques from various ethnic organisations, churches, social groups and migrant resource centres in the Sydney metropolitan area. Women over the age of 35 and of Filipino, Indonesian, Thai and Vietnamese ethnicity were deemed eligible for the study. Women who had lived in Australia for less than one year or those with a previous history of breast cancer were excluded from the study.

The study was granted ethical clearance by the University of Sydney Human Ethics Research Committee (project no. 2015/295). Participants were given a participant information statement (PIS) outlining the study and if they agreed to participate they signed a consent form provided. Participants who completed their survey online were asked to select the 'agree' option if they agreed, which allowed them to access to the survey (selecting 'disagree' meant they could not complete the survey).

A questionnaire consisting of 67 questions was the instrument used in the study. Data was collected on socioeconomic status, migrant status, religion, breast cancer knowledge, BSE and mammography knowledge and participation in BSE, CBE and mammography. It also collected information on health beliefs and breast screening practices. The questions within the survey were derived from questionnaires proven to be valid in previous studies conducted on similar ethnic groups (Karahan, Hossain, and O'Loughlin 2013)

The de-identified responses were numerically coded and entered into the Statistical Package for the Social Sciences (SPSS) version 22.0 for statistical analysis. Single response answers were coded 0 for no and 1 for yes. Likert scales were ranked from most favourable (1) to least favourable (5) and coded as such. Scales were constructed to assess knowledge of breast cancer based on the symptoms of breast cancer and breast cancer treatment options. Internal reliability for both scales was confirmed by a Cronbach's Alpha coefficients of 0.789 (symptoms) and 0.765 (treatments) p = <0.000 for both scales.

RESULTS

1. Demographic Variables

Data was collected from 4 groups of Southeast Asian women living in Sydney metropolitan area specifically Filipino, Indonesian, Thai and Vietnamese.

Participants were almost evenly distributed into the four age groups: 35-40; 41-50; 51-60 and over 61, as shown in Table 1. Filipino and Indonesian women were more likely to be aged 50 and over while Thai and Vietnamese women were younger on average. With regards to religion all Filipino participants were Christian/Catholic, the majority of Indonesian women were Muslim (61%) and the majority of Thai and Vietnamese women were Buddhists (94.4, 81.3). The majority of Filipino and Thai (50%, 58%) and 35% of Indonesian women held university qualifications whilst the majority of Vietnamese women had only secondary education (53%). Filipino women were more likely to be employed (55.4%) followed by Vietnamese (42.9%). while more than two-thirds of Indonesian and Thai women were unemployed at the time of the survey. More than 50% of Filipino and Thai women had family incomes over $50,000 whereas the majority of Indonesian and Vietnamese women had family incomes < $50,000 at the time of the survey. Most women in each ethnic group were married, and a smaller proportion was widowed/divorced or separated and only a small proportion of women were single, which may be due to the fact that the majority of women were 40 years and above.

Table 1: Demographic variables by ethnic group

	Ethnicity									
	Filipino		Indonesian		Thai		Vietnamese		Total	
Number of participants	56		59		36		32		181	
Age	f	%	f	%	f	%	f	%	f	%
35 – 40	5	8.9	15	25.4	21	58.3	4	12.9	45	24.7
41 – 50	13	23.4	16	27.1	7	19.4	11	35.5	47	25.8
51 – 60	18	32.1	10	16.9	4	11.1	11	35.5	43	23.6
61 +	20	35.7	18	30.5	4	11.1	5	16.1	47	25.8
	x^2 = 39.567 df = 9 p = 0.000									
Education										
<12 years	7	12.5	23	39.0	9	25.7	19	59.4	58	31.9
13 – 14 years	21	37.5	13	22.0	5	13.9	4	12.5	43	23.5
15+ years	28	50.0	23	39.0	21	58.3	9	28.1	81	44.3
	x^2 = 27.739 df = 6 p = 0.00									

Employment										
Employed	31	55.4	20	34.5	14	38.9	13	40.6	78	42.9
Unemployed	25	44.6	38	65.5	22	61.1	19	59.4	104	57.1
	x^2 = 5.530		df= 3		p = 0.137					
No. of years employed										
0 -10	10	30.3	9	40.9	16	84.2	14	58.3	49	50.0
10 – 20	8	24.2	9	40.9	3	15.8	5	20.8	25	25.5
20+	15	45.5	4	18.2	0	0	5	20.8	24	24.5
	x^2 = 21.744		df = 6		p = 0.001					
Martial status										
Married/ De facto	34	60.7	43	72.9	30	85.7	20	64.5	127	70.2
Widowed/Divorced/ Separated	19	33.9	12	20.3	2	5.7	10	32.3	43	23.8
Single	3	5.4	4	6.8	3	8.6	1	3.2	11	6.1
	x^2= 11.459		df = 6		p = 0.075					
Family income										
20,000 – 50,000	25	46.3	25	56.8	15	46.9	20	66.7	85	53.1
50,000 – 100,000	14	25.9	15	34.1	9	28.1	8	26.7	46	28.7
100,000+	15	37.8	4	9.1	8	25.0	2	6.7	29	18.1
	x^2= 10.259		df = 6		p = 0.114					

2. Acculturation variables

In order to assess each participant's level of acculturation, three questions were asked; duration living in Australia, English speaking ability and language spoken at home. The results show that Vietnamese and Indonesian are more likely to be recent migrants (living in Australia <10 years), while Filipino and Thai women were more likely to be living in Australia for more than 10 years. Fluency in English was self- rated as fluent/very fluent for Filipino (60%) and Vietnamese women (62.5%), whilst the majority of Indonesian and Thai women rated their English ability as satisfactory (45.8%, 50%). The majority of women of the selected ethnic groups spoke a language other than English at home (see Table 2).

Table 2: Acculturation variables by ethnic group

	Ethnicity									
	Filipino		Indonesian		Thai		Vietnamese		Total	
Duration in Australia										
Less than 10	25	46.3	25	56.8	15	46.9	20	66.7	85	53.1
11 – 20	14	25.9	15	34.1	9	28.1	8	26.7	46	28.7
21+	15	27.8	4	9.1	8	25.0	2	6.7	29	18.1
	x^2 = 23.853		df = 6		p = 0.001					
English-speaking ability										
No English/ Poor	4	7.3	14	23.7	9	23.7	2	6.3	29	16.3
Satisfactory	18	32.7	27	45.8	16	50.0	10	31.3	71	39.9
Fluent/Very fluent	33	60.0	18	30.5	7	21.9	20	62.5	78	43.8
	x^2= 41.753		df = 6		p = 0.000					
Speaks English at home										
Yes	8	14.3	7	11.9	2	5.6	2	6.3	19	10.4
No	88	85.7	52	88.1	34	94.4	30	93.8	164	89.6
	x^2= 2.545		df = 3		p = 0.467					

3. Knowledge of breast cancer and breast screening practices

Breast cancer knowledge

To assess the level of knowledge of breast cancer for each ethnic group two knowledge scales were created based on the symptoms of breast cancer and treatment options available. The first assessed knowledge of breast cancer symptoms. There were seven symptoms in the questionnaire and participants were asked to tick all they were aware of, consisting of: lumps; changed size or shape of breasts; nipple discharge; crusting, ulcer or redness of nipples; redness/dimpling of breasts; swollen underarms and breast swelling. By adding the response to each item, a knowledge scale based on knowledge of breast cancer symptoms was constructed. The lowest possible scale score is 0 if no symptoms were known and the highest possible scale score was 7 if all symptoms were known. The knowledge of breast cancer treatment was assessed based on five options presented to participants in the questionnaire consisting of: prescription drugs; chemotherapy; surgery; radiation therapy and hormone therapy. The responses to each item were added and a scale was constructed based on knowledge of breast cancer treatments. Again zero was the lowest possible score if no treatment options were known and the highest possible score was five if all were known. Whilst both scales were significant the difference between ethnic groups was only significant for knowledge of breast cancer symptoms. The results are shown in table 3.

Table 3: Knowledge of breast cancer symptoms and treatment options by ethnic group

Ethnicity	Mean	SD	F-value	df	P-value
Knowledge of breast cancer symptoms					
Filipino	4.0638	2.51434			
Indonesian	3.1379	2.53708	5.752	3	<0.001
Thai	3.4828	2.53011			
Vietnamese	1.7097	2.28318			
Knowledge of breast cancer treatment options					
Filipino	2.6170	1.43789			
Indonesian	2.2542	1.52682	4.781	3	<0.095
Thai	2.2286	1.51630			
Vietnamese	1.7419	1.52682			

*Note: For knowledge of breast cancer symptoms there were 7 options and participants selected those they knew, the scale represents the average of each ethnic group from 0 (no knowledge of symptoms) to 7 (excellent knowledge of symptoms). For knowledge of treatment options there were five possible answers therefore the scale ranges from 0 (no knowledge of treatment options) to 5 (excellent knowledge of treatment options)

As demonstrated, the women from the Filipino community knew the most symptoms with a mean of 4. The Vietnamese community had the least amount of knowledge regarding breast cancer symptoms with an average of 1.7 on the symptom knowledge scale. Table 3 also shows that Filipino women knew the most about treatment options compared to the other three ethnicities. Indonesian and Thai communities had the same level of knowledge of treatment options whilst Vietnamese women again knew the least and the difference between ethnic groups was significant (p = <0.05). In this study more than 80% of Filipino, Indonesian and Thai women would seek help immediately after discovering any changes to their breasts while only just over half of Vietnamese women would seek help immediately, and more than one third (37.5%) of Vietnamese women were not sure how soon they should seek medical attention. These results were statistically significant (p = <0.000) (see Appendix C).

Knowledge of breast cancer screening

Breast self-examination (BSE) knowledge

In this study the majority of participants had heard of BSE, however knowledge on how often BSE should be performed and when to perform BSE during the menstrual cycle was lacking as seen in Table 4. BSE should be performed once a month therefore monthly was termed as correct while daily, weekly and annually were grouped together as incorrect. Only 32.6% of Filipinos, 18.8% of Indonesian, 25% of Thai and 46.4% of Vietnamese women knew BSE should be performed monthly and 35% of Filipino, 21% of Indonesians, 35 of Thai and 12% of Vietnamese women knew BSE should be performed 2-4 days post- menstruation. More than one third of Vietnamese, Indonesian and Thai participants were unsure about the timing of performing BSE, however Filipino women had significantly better knowledge regarding timing of BSE (p= <0.05).

Table 4: Knowledge of BSE by ethnic group

	Filipino		Indonesian		Thai		Vietnamese		Total	
BSE knowledge	f	%	f	%	f	%	f	%	f	%
Heard of BSE	46	82.1	48	81.4	27	75.0	28	87.5	149	81.4
	x^2 = 1.782 df = 3 p = < 0.619									
Knowledge of frequency										
Correct	15	32.6	5	18.5	13	46.4	9	18.8	42	28.2
Incorrect	27	58.7	10	37.0	8	28.6	21	42.8	66	44.3
Not sure	4	8.7	18	37.5	12	44.4	7	25.0	41	27.5
	x^2 = 20.613 df = 6 p = < 0.002									
Knowledge of timing										
Correct	13	35.1	10	20.8	7	35.0	3	11.5	33	25.2
Incorrect	9	24.3	2	4.2	1	5.0	3	11.5	15	11.5
Not sure	15	40.5	36	75.0	12	60.0	20	76.9	83	63.4
	x^2 = 17.666 df = 6 p = < 0.00									
BSE explained by:										
GP	32	60.4	16	27.6	17	47.2	20	62.5	85	47.5
Nurse and others	7	13.2	19	32.8	6	16.7	6	18.8	38	21.2
Never received explanation	14	26.4	23	39.7	13	36.1	6	18.8	56	31.3
	x^2 = 17.471 df = 6 p = < 0.008									

Knowledge of mammography screening

The majority of women in each ethnic group had heard of mammography (p = <0.004). For most women, their general practitioner (GP) was their source of information on mammography, most commonly amongst Filipino (60%), followed by Thai (46%) and Indonesian (28%) women (p = <0.002). The most common source of information amongst Vietnamese women was the breast cancer NSW invitation (p = <0.013) followed by relatives/friends 45.2% (p = <0.007). The majority of women in each ethnic group knew mammography should be performed every 2 years, however this was not significant (p = <0.153). This is shown in table 5.

Table 5: Knowledge of mammography by ethnic group

	Filipino		Indonesian		Thai		Vietnamese		Total	
Mammography knowledge	f	%	f	%	f	%	f	%	f	%
Heard of mammography	55	98.2	54	91.5	27	75.0	29	90.6	165	90.2
	x^2 = 13.557 df = 3 p = < 0.004									
Mammography information source										
GP	33	60.0	16	27.6	16	45.7	19	31.3	84	46.9
	x^2 = 15.074 df = 3 p = < 0.002									
Breast cancer NSW invitation	20	36.4	12	20.7	8	22.9	16	51.6	56	31.3
	x^2 = 10.635 df = 3 p = < 0.013									
Relatives/friends	12	21.8	8	13.8	12	34.3	14	45.2	46	25.7
	x^2 = 12.241 df = 3 p = < 0.007									
Knowledge of mammography frequency										
Every 2 years	34	60.7	28	47.5	15	41.7	24	75.0	101	55.2
Every 5-10 years	3	5.4	2	3.4	1	2.8	0	0	6	3.3
Not sure	19	33.9	29	49.2	20	55.6	8	25.0	76	41.5
	x^2 = 11.649 df = 6 p = < 0.070									

4. 4. Participation in breast screening practices

B BSE participation

A great majority of Filipino, Thai and Vietnamese women had previously performed BSE (92%, 70% & 77%) compared to only 34% of Indonesian women.

Vietnamese women were the most likely to know BSE should be performed monthly (50%) compared to 27% of Filipino, 29% of Thai and 18% of Indonesian women however the difference between ethnic groups was not statistically significant. The majority of participants performed BSE, however more than 50% of each ethnic group performed BSE 'whenever' indicating a lack of knowledge on correct timing of BSE (see Table 6). More than two thirds of women in each ethnic group intended to perform BSE in the future, however a higher proportion of Filipino (85%) and Vietnamese (75%) women expressed an intention to perform BSE in the future (see Table 6).

Table 6: Participant practice of BSE by ethnic group

	Filipino		Indonesian		Thai		Vietnamese		Total	
BSE Participation	f	%	f	%	f	%	f	%	f	%
Performed BSE	33	91.7	34	33.7	14	70.0	20	76.9	101	77.7
	x^2 = 6.051 df = 3 p = < 0.109									
Participant frequency										
Monthly	11	26.2	5	14.7	3	16.7	10	50.0	29	25.4
Other	31	73.8	29	85.3	15	83.3	10	50.0	85	74.6
	x^2 = 9.196 df = 3 p = < 0.027									
Future intention	f	%	f	%	f	%	f	%	f	%
Yes	36	85.7	33	66.0	12	60.0	21	75.0	102	72.9
No/maybe	7	13.7	17	34.0	11	40.7	8	27.6	43	27.4
	x^2 = 8.307 df = 3 p = < 0.040									

CBE participation

As shown in Table 7 more Filipino women had participated in CBE than any other group (75%) and Indonesian women had the lowest rate of participation (56%), however the difference between ethnic groups in participation in CBE was not statistically significant. GPs were the most common healthcare professional to have performed CBE in all four ethnic groups. More than half of Filipino and Indonesian women had participated in CBE over a year ago (p = <0.028), while participation in CBE was more common in the last year for Thai and Vietnamese women (33.3% & 38.1% respectively).

Table 7: CBE participation by ethnic group

	Filipino		Indonesian		Thai		Vietnamese		Total	
CBE Participation	f	%	f	%	f	%	f	%	f	%
Ever had CBE	41	74.5	33	56.9	20	57.1	21	65.6	115	63.9
	x^2 = 4.669	df = 3	p = < 0.198							
CBE performed by										
GP	28	82.4	21	61.8	10	66.7	10	50.0	69	67.0
	x^2 = 6.660	df = 4	p = < 0.084							
Nurse	5	14.7	10	31.3	2	14.3	5	25.0	22	22.0
	x^2 = 3.240	df = 3	p = < 0.356							
Last had CBE										
Within the last year	20	47.6	14	42.4	14	66.7	13	61.9	61	52.1
Over a year ago	22	52.4	19	57.6	7	33.3	8	38.1	56	47.6
	x^2 = 4.171	df = 3	p = < 0.244							

Mammography participation

The majority of Filipino (73%), Indonesian (58%) and Vietnamese (59%) women reported having had a mammogram while Thai women had the lowest rate of participation (39%), (p = <0.013), however the difference in mammography participation between ethnic groups was not statistically significant (p = <0.013). Of the women who had previously had a mammogram the highest number of Vietnamese women (89%) had their last mammogram in the last 2 year, followed by Filipino women (73.2%) and Indonesian women (75%). Only 64.3% of Thai women, however, had a mammogram in the last two years. The difference between ethnic groups was not significant (p = <0.335).

Association between knowledge of breast cancer symptoms and treatment options and women's participation in breast screening was examined. A chi square test identified that participants with more knowledge of breast cancer symptoms were significantly more likely to participate in all three breast screening modalities compared to women with less knowledge in all four ethnic groups (see Table 8). When comparing each ethnic group, Filipino and Thai women demonstrated more knowledge on symptoms of breast cancer and participated in BSE compared to Indonesian and Vietnamese women.

Vietnamese women demonstrated the least knowledge of breast cancer symptoms hence low participation in BSE. The same pattern holds true for CBE and mammography (see table 8). Howevere, knowledge of treatment of breast cancer and women's participation was not statistically significant, hence was not reported here.

Table 8: Mean knowledge score on breast cancer symptoms scale and participation in BSE, CBE and mammography by ethnic group

		Mean	SD	Lower	Upper	df	F	P
BSE						7	4.309	<0.000
Filipino	No	2.308	0.672	0.980	3.636			
	Yes	4.735	0.416	3.914	5.556			
Indonesian	No	3.040	0.485	2.082	3.998			
	Yes	3.212	0.422	2.379	4.046			
Thai	No	2.800	0.626	1.564	4.036			
	Yes	4.214	0.648	2.935	5.494			
Vietnamese	No	1.545	0.731	0.102	2.989			
	Yes	1.800	0.542	0.729	2.871			
CBE						7	5.466	<0.000
Filipino	No	2.083	0.682	0.737	3.430			
	Yes	4.735	0.405	3.935	5.535			
Indonesian	No	3.560	0.472	2.627	4.493			
	Yes	2.905	0.417	2.082	3.731			
Thai	No	2.143	0.631	0.826	3.389			
	Yes	4.571	0.631	3.325	5.818			
Vietnamese	No	2.000	0.712	0.594	3.406			
	Yes	1.550	0.528	0.507	2.593			
Mammogram						7	3.345	<0.002
Filipino	No	3.429	0.660	2.125	4.732			
	Yes	4.333	0.430	3.484	5.182			
Indonesian	No	3.320	0.494	2.345	4.295			
	Yes	3.000	0.430	2.151	3.849			
Thai	No	2.789	0.566	1.671	3.908			
	Yes	4.800	0.781	3.258	6.342			
Vietnamese	No	1.833	0.713	0.426	3.241			
	Yes	1.632	0.566	0.513	2.750			

5. Experience of breast screening practices

Participant's experiences of breast screening practices were investigated by asking them whether each method of screening was, respectively, unproblematic, uncomfortable, irritating, painful or embarrassing. A one-way ANOVA was performed on the responses for BSE, CBE and mammography (MM). Each response was rated from one (strongly agree) to five (strongly disagree). As shown in Table 10 all four ethnic groups on average did not find BSE painful although this was not significant (p = <0.061). Thai women had the lowest score for 'uncomfortable' indicating they were more likely to agree BSE was uncomfortable than women from the other three ethnic groups (p = <0.023). Of all four ethnic groups Vietnamese women had the highest score for all three options indicating they did not find any problems performing BSE. Barriers were assessed using Likert scales ranging from 1 (unlikely) to 5 (likely). Table 9 also shows that on average CBE was not found to be painful, irritating or embarrassing in all four ethnic groups as all means are over three (more likely to agree). The majority of Filipino ($\bar{x}$ = 1.6) and Indonesian ($\bar{x}$ = 2.2) women found mammograms to be painful whilst Thai ($\bar{x}$ = 3.3) and Vietnamese ($\bar{x}$ = 3.0) women were more likely to be neutral (p = <0.000). The majority of Filipino ($\bar{x}$ = 4.4), Indonesian ($\bar{x}$ = 3.5) and Vietnamese ($\bar{x}$ = 3.3) women disagreed with the statement that mammograms were no problem while Thai women agreed ($\bar{x}$ = 2.4) indicating differences between the groups were significant (p = <0.001).

Each ethnic group on average disagreed with the statement that mammograms were irritating (p = <0.023) or embarrassing (p = <0.060). These findings suggest that Indonesian women find mammography embarrassing and irritating compared to women of other ethnic groups, possible due to their religious practices.

Table 9: Experience of breast screening by ethnic group

		BSE		CBE		MM	
	Ethnicity	Mean ($\bar{x}$)	SD	Mean	SD	Mean	SD
Painful	Filipino	3.85	1.29	3.17	1.56	1.64	1.14
	Indonesian	3.59	1.42	3.03	1.24	2.24	1.28
	Thai	3.93	1.14	3.73	1.44	3.30	1.57
	Vietnamese	4.55	0.94	4.25	1.02	3.00	1.49
		df = 3		df = 3		df = 3	
		F = 2.536		F = 4.097		F = 6.515	
		p = <0.061		p = <0.009		p = <0.000	
No problem	Filipino	2.44	1.21	1.41	0.24	4.36	1.17
	Indonesian	2.50	1.29	2.88	1.39	3.50	1.33
	Thai	1.86	0.86	2.20	1.47	2.40	1.50
	Vietnamese	2.30	1.45	2.80	1.67	3.33	1.68
		df = 3		df = 3		df = 3	
		F = 0.962		F = 1.084		F = 6.226	
		p = <0.414		p = <0.359		p = <0.001	
Uncomfortable	Filipino	3.59	1.33	3.06	1.49	2.48	1.42
	Indonesian	3.59	1.16	3.06	1.17	2.62	1.21
	Thai	2.93	1.49	3.60	1.45	2.90	1.52
	Vietnamese	4.30	1.17	3.65	1.39	2.83	1.42
		df = 3		df = 3		df = 3	
		F = 3.312		F = 1.335		F = 0.391	
		p = <0.023		p = <<0.267		p = <0.760	
Irritating	Filipino	3.82	1.19	3.51	1.38	2.93	1.37
	Indonesian	3.68	1.12	3.21	1.05	3.72	1.41
	Thai	3.71	1.27	4.07	1.16	2.79	1.07
	Vietnamese	4.70	1.19	4.40	0.88	3.80	1.23
		df = 3		df = 3		df = 3	
		F = 4.124		F = 5.277		F = 3.321	
		p = <0.008		p = <0.002		p = <0.023	
Embarrassing	Filipino			3.11	1.45	3.18	1.36
	Indonesian			4.10	1.17	3.94	1.16
	Thai	Not applicable		3.18	1.04	2.91	1.19
	Vietnamese			3.13	1.68	3.00	1.76
				df = 3		df = 3	
				F = 4.930		F = 2.557	
				p = <0.042		p = <0.060	

DISCUSSION

The findings of the study suggest ethnic differences are apparent in knowledge of breast cancer and participation in breast cancer screening. This study was the first of it kind to investigate and compare differences in knowledge of breast cancer and breast screening practices including BSE, CBE and mammography and the experience of these breast screenings amongst subgroups of SEA women in Australia. This study shows that knowledge, participation and perception of breast cancer seriousness vary between these four ethnic groups, as do the perceived barriers to BSE and mammography.

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It is well documented that the likelihood of surviving breast cancer is associated with the stage at first diagnosis (Australian Institute of Health and Welfare 2012). This study revealed that Filipino, Indonesian and Thai women had only average knowledge of breast cancer symptoms and treatment options while Vietnamese women had very poor knowledge. This might be due to the fact that Vietnamese women have lower socioeconomic status (poor level of education, higher rates of unemployment and lower incomes). Similarly the majority of Filipino, Indonesian and Thai women knew to seek medical attention immediately (91%, 88%, 83%) compared to only 53% of Vietnamese women with an additional 37% being unsure when to seek help.

The study included variables to test knowledge of breast-screening practices in order to obtain more objective data on knowledge. BSE knowledge was similar across all four ethnic groups with the majority knowing of BSE but lacking comprehensive knowledge such as frequency and timing. BSE should be performed 2-4 days post-menstruation to ensure breast tenderness is minimal however this was only know to 35% of Filipino and Indonesian women, 21% of Thai women and only 11% of Vietnamese women. A high proportion of participants were likely to be post-menopausal, however to accurately assess knowledge two questions were asked in regard to timing of BSE firstly when should BSE be performed and then when the participant performed BSE. This enabled the study to determine if all women including post-menopausal women knew the standard timing of BSE. The majority of women in all four ethnicities had heard of mammography, however less than half of Indonesian and Thai women knew it should be performed biannually and this finding was not significant.

One quarter (25%) of participants relied on relatives/friends as a source of information regarding mammography with Thai and Vietnamese women relying more on this source. This finding is consistent with that of Wu & Bancroft (2006) who found that relatives/friends were important sources of information and had a positive impact on initiating breast screening. The length of time the ethnic group had spent in Australia (duration) appears to be associated with knowledge of breast cancer as Filipino women were more likely to have lived in Australia for more than 10 years and had the best knowledge of breast cancer (i.e. the highest average score on both the breast cancer symptoms and breast cancer treatment knowledge scales). Vietnamese women who were more likely to be new immigrants (<10 years) scored the lowest on both scales.

Participation in breast screening

Overall the majority of women in all four ethnic groups had heard of BSE and participation in BSE was also high in Filipino, Thai and Vietnamese women in which the majority has performed BSE. Whilst over 80% of Indonesian women had heard of BSE only one third had ever performed it. Knowledge regarding frequency and timing was poor in all four ethnic groups with 48% of Vietnamese women and less than one third of Filipino, Indonesian and Thai women knowing the correct frequency of BSE. Similarly around one third of Filipino, Thai and Vietnamese women and 20% of Indonesian women knew the correct timing of BSE. The lack of knowledge regarding BSE may be explained by the fact that one third of participants had never had a healthcare professional explain the technique or practice of BSE to them. Knowledge of BSE technique has been shown to increase participation in BSE in African-American

women (Kalichman, Williams, and Nachimson 2000) emphasizing the importance of healthcare professionals involvement in increasing BSE participation. The majority of women in each ethnic group intended to perform BSE in the future, however a higher proportion of Filipino and Vietnamese women expressed an intention to perform BSE in the future. Immigration data shows that these two ethnic groups have been in Australia the longest, however the Vietnamese sample did not reflect this, as the majority of the women in the study had lived in Australia for less than 10 years (ABS, 2012). The community values of the Filipino-Australian and Vietnamese-Australian women towards breast cancer may adapting to a more western perception of breast cancer making these women more inclined to participate in BSE as shown in a previous study of Thai-Australian women in Brisbane (Jirojwong and MacLennan 2003), reflecting the acculturation of the entire ethnic community rather than the individual themselves.

Similar to the findings for BSE the majority of women in all four ethnic groups had heard of mammography but participation in mammography screening rates were poor for Indonesian, Thai and Vietnamese women. Less than half of Indonesian and Thai women knew mammography should be performed biannually reflecting a lack of knowledge and awareness in these communities. In contrast 73% of Filipino women had participated in mammography. Filipino participants were more likely to have lived in Australia longer than the other three ethnicities and over half were fluent/very fluent in English, which may explain the increased rate of participation within this ethnic group. Acculturation has been associated with increased mammography participation (Clark and NatipagonŞShah 2008, Kumsuk, Flick, and Schneider 2012, Yi and Reyes-Gibby 2002). Mammography as a screening tool is often a foreign concept for SEA women because their native healthcare system is primarily focused on curative medicine therefore acculturation increases the likelihood of participation due to increased access to information and awareness that is more common in Western countries (Sabado 2014). Longer duration in the host country has also been associated with increased knowledge on available services making it more likely these services will be utilised (Sabado 2014). Indonesian, Thai and Vietnamese participants in this study were more likely to have lived in Australia for less than 10 years, which may explain the lower participation rates.

Knowledge of breast cancer symptoms was significantly related to participation in BSE and mammography, with those with higher scores on the breast cancer symptom knowledge scale being more likely to practice BSE and participate in mammography.

Experience of breast screening

Filipino women reported experiencing fewer problems breast screening compared to other ethnic groups. Vietnamese women reported experiencing pain, feeling uncomfortable and irritated with most breast screening methods, while Indonesian women reported both CBE and mammography to be ‘embarrassing’. These findings are consistent with that of Wu and Bancroft (2006) who found that cultural traditions caused women to feel uncomfortable and embarrassed to reveal their breasts for physical examination.

A number of research studies have identified not having a doctor’s recommendation as a barrier to mammography including Clark & Natipagon-Shah (2008), Wu & Bancroft (2006), Donnelly (2006) & Yi & Gibby-Reyes (2002). This study also supports the finding that recommendations from physicians increased participation in mammography. The perception that having a mammogram is ‘Time consuming’ and would ‘interfere with daily activities’ were identified as barriers to mammography in all four ethnic groups, indicating a lack of knowledge within this community about the risk of breast cancer and the importance of mammography. Lack of knowledge of the risks of breast cancer has been documented in other studies (Donnelly 2006, Iskandarsyah, de Klerk, et al. 2014, Clark and NatipagonŞShah 2008), all of which found lower mammography participation rates in SEA women.

Iskandarsyah et al (2014) found that Indonesian women who felt they had received an adequate amount of information, felt they had more personal control over their illness. The perceived barriers found for BSE and mammography were highest for Indonesian women, which may reflect a lack of information reaching this community. A qualitative study conducted by Clark & Natipagon-Shah (2008) on Thai women identified that accurate knowledge of breast screening and the risks of breast cancer had a positive influence on participation. Thai women in the current study lacked adequate knowledge regarding breast cancer and breast screening practices, which may explain the low participation rates.

Limitations of the study

There were are number of limitations in this study including those due to time constraints and those due to the cultural and language barriers that may have existed.

services overall.

Limitations of the study design

Due to the time constraints of the study and the geographical dispersion of the participants, non-probability convenience sampling was used which limits the ability to generalise the findings to the entire SEA population in Sydney. The findings of the study are based on only four SEA ethnic groups and therefore cannot be generalised for other ethnic groups in SEA.

The quantitative methods used in this study may not have captured the entire range of knowledge of breast cancer, practices and experiences of breast screening. A qualitative study with in-depth interviews and/or focus group discussions would provide further information on each community concerning their experience with breast screening participation. Whilst a comprehensive review of the literature was conducted before composing the survey there may be undocumented influences such as women's understating of cancer in general or why SEA women often fear mammograms because of the possibility of a positive results, despite the high survival rate in Australia. Qualitative methods are needed to obtain a comprehensive and in-depth understanding of the subjective influences to attitudes toward breast screening amongst SEA women. Further research is needed with a larger sample size for each ethnic group to better understand the attitudes towards breast-screening practices and barriers encountered.

Religion was not significantly associated with knowledge or participation in all three breast-screening modalities, possibly because the current study did not investigate enough religious factors, such as religious social support and religion-specific health beliefs to yield significant results

Cultural and linguistic barriers

Due to the range of ethnicities included the questionnaire was kept in English. This decision excluded those with little to no English-speaking ability who are more likely to be isolated and lack knowledge of breast screening practices. This may have also created bias as those who required a translator (often a family member) to assist may have given more socially desirable responses. It is also possible that those with limited English-speaking ability may have misinterpreted some of the questions leading to responses being recorded that are not representative of their attitude.

Some of the responses may have been biased particularly for those who completed their survey in a group setting with peers and researchers present. As breast-screening practices were discussed as a positive behaviour it is possible the participants gave more socially desirable answers. Participants were recruited from social groups and churches so their peers and/or family members may have still influenced those who completed the survey without a researcher present. The recruitment from social gatherings may have also represented participants who are more engaged in their community and more likely to be aware of breast cancer, breast screening practices and healthcare

Conclusion

This study demonstrated that SEA women in Sydney generally have poor knowledge regarding breast cancer and breast screening practices. This most likely is the cause of the poor participation rates in BSE, CBE and mammography. The knowledge of the Vietnamese community was extremely poor reflecting either a lack of culturally sensitive information or culturally appropriate source in this community. Participation rates were lowest in the Indonesian community demonstrating the urgency to engage this community in breast screening by providing culturally appropriate information. The same is true for Thai women, however participation rates were not quite as poor. The results of this study suggest that health education programs need to be developed to incorporate specific cultural beliefs to improve BSE participation and CBE and mammography adherence. The low participation rates found in these ethnic groups emphasise the importance of educating recent migrants on the three modalities of breast screening in Australia and why they are necessary.

Implications of the study

The findings from this study can assist in developing health initiatives and education programs for breast cancer in SEA communities in Sydney. The findings can also show the importance of GP recommendations to obtain a mammogram, highlighting the importance of healthcare practitioners taking an active role in initiating regular breast screening in SEA women. The lack of knowledge regarding BSE shows the importance of healthcare practitioners taking an active role in explaining technique and frequency of BSE to SEA women to ensure they are confident to participate in this screening method. These recommendations can ensure that healthcare practitioners can offer a culturally sensitive service to SEA women. The lack of knowledge also demonstrates that current methods of education are not currently sufficient for the SEA population. The development of culturally appropriate education programs is essential for increasing participation in breast screening practices in SEA communities.

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