KNOWLEDGE, ATTITUDE AND PRACTICE OF MAMMOGRAM SCREENING AMONG WOMEN IN KELANTAN

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ABSTRAK

TAJUK: Kajian mengenai pengetahuan, sikap dan amalan saringan mammogram dalam kalangan wanita di Kelantan

PENGENALAN: Kanser payudara merupakan kanser yang utama dalam kalangan wanita di negara maju dan membangun. Ia merupakan kanser pembunuh paling utama dalam kalangan wanita di Malaysia. Saringan mammogram adalah satu-satunya saringan yang paling berkesan dalam mengesan kanser payudara dalam kalangan wanita sihat. Penerimaan terhadap saringan mammogram dipengaruhi oleh pengetahuan dan sikap seseorang wanita. Oleh itu, tahap pengetahuan, sikap dan amalan terhadap saringan mammogram adalah penting dalam pengesanan awal kanser payudara.

OBJEKTIF: Objektif kajian adalah untuk mengenal pasti tahap pengetahuan, sikap dan amalan serta faktor-faktor yang berkaitan dalam kalangan wanita di Kelantan.

METODOLOGI: Ini adalah kajian keratan rentas yang dijalankan bermula Januari 2016 sehingga Februari 2016 di sepuluh klinik kesihatan terpilih yang mempunyai pakar perubatan keluarga. Kajian ini menggunakan borang kaji selidik yang memerlukan peserta menjawab sendiri soalan tersebut. Ia melibatkan 429 peserta wanita berumur 40 tahun hingga 74 tahun. Soal selidik

tersebut mengandungi empat bahagian iaitu data sosiodemografi, pengetahuan, sikap dan amalan terhadap saringan mammogram.

KEPUTUSAN: Keputusan kajian ini menunjukkan 85.8% responden mempunyai kurang pengetahuan terhadap saringan mammogram, 33.6% responden mempunyai sikap yang kurang baik dan 47.6% mempunyai amalan yang kurang memuaskan. Kajian menunjukkan umur, status perkahwinan dan sikap yang kurang baik mempengaruhi amalan saringan mammogram dalam kalangan wanita.

KESIMPULAN: Kajian ini menunjukkan tahap pengetahuan yang rendah terhadap saringan mammogram walaupun mempunyai sikap yang baik dan amalan yang sederhana. Umur, status perkahwinan dan sikap adalah faktor-faktor yang berkaitan dengan amalan saringan mammogram. Oleh itu, pendidikan kesihatan yang komprehensif dan pengesanan awal halangan-halangan terhadap saringan mammogram penting dalam memastikan penambahan bilangan wanita yang menjalani ujiian saringan ini.

ABSTRACT

TITLE: A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF MAMMOGRAM SCREENING AMONG WOMEN IN KELANTAN

INTRODUCTION: Breast cancer is the top cancer in women both in developed and the developing world. In Malaysia, it is the most common diagnosed cancer in women. Results of evaluation on the role of various imaging modalities used in the screening of breast cancer revealed that mammography is the only imaging technique that has a significant impact on screening of asymptomatic individuals for breast cancer. The acceptability of mammogram screening is influenced by people's knowledge and attitude. Therefore, this study was conducted to evaluate the knowledge, attitude and practice of women in Kelantan toward mammogram screening.

OBJECTIVES: The objectives of this study are to determine the level of knowledge, attitude, practice and their associated factors on mammogram screening among women in Kelantan.

METHODOLOGY: It was a cross sectional study conducted from January 2016 to February 2016 at ten selected health clinics with family medicine specialists in Kelantan. This study involved 429 women aged 40 to 74 years old. The self-administered questionnaire consisted of 3 parts, which were knowledge, attitude and practice on mammogram screening.

RESULTS: The results showed 85.8% of respondents have poor knowledge, 33.6% have poor attitude and 47.6% are poor practice. Age, marital status and poor attitude are significant associated factors for poor practice.

CONCLUSION: These results indicate knowledge regarding mammogram screening is low even though they have good attitude and fair practice toward mammogram screening. Therefore, health education and recognition of barriers toward mammogram screening will improve its uptake among women.

CHAPTER 1

INTRODUCTION

Breast cancer is the top cancer in women both in the developed and the developing world (WHO, 2007). The incidence of breast cancer is increasing in the developing world due to increase life expectancy, increase urbanization and adoption of western lifestyles. Global burden of cancer study (GLOBOCAN) 2008 published by the International Agency for Research on Cancer reported breast cancer was the second commonly diagnosed cancer worldwide involved 1.38 million of population or 10.9% from total diagnosed cancers. Out of this, 56% was new cancer cases and 63% of the cancer deaths occurring in the less developed regions of the world (Ferlay *et al.*, 2010).

In Malaysia, the National Cancer Registry (NCR) 2006 reported 3,525 female breast cancer cases or 29.9% of all new cancers. It is the most commonly diagnosed cancer in women in all ethnic groups and in all age group from the age 15 years onward (MOH, 2010). The incidence increase steadily starting from age of 30 years and peak age in 50-59 age groups (MOH, 2010).

Early detection of breast cancer can reduce morbidity and mortality (Tabar *et al.*, 1985; Miller *et al.*, 1992; Armstrong *et al.*, 2007). It can be done by breast self-examination (BSE), clinical breast examination (CBE), ultrasonography and mammogram. Among these modalities, mammogram is the most superior as it can detect the lesion early before it appears (Hendrick *et al.*, 1997; Lauby-Secretan *et al.*, 2015; Oeffinger *et al.*, 2015).

In Malaysia, mammogram screening is provided at tertiary centre and available in all state. The referral for screening can be request from primary health care centre or through National Population and Family Development Board clinics. These have a fast access to mammogram screening. Up to May 2013, 50 entry points to mammogram centres by the National Population and Family Development Board was established. Provision of free or subsidised RM50 subsidy is open to Malaysian women and permanent residents of high risk aged 40-70 years old. Therefore, there is no reason for women for not doing breast cancer screening as for their wellness.

CHAPTER 2

LITERATURE REVIEW

2.1 BREAST CANCER

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer death among females worldwide, with an estimated 1.7 million cases and 521,900 deaths in 2012 (Torre *et al.*, 2015). Breast cancer alone accounts for 25% of all cancer cases and 15% of all cancer deaths among females. Rates are generally high in Northern America, Australia/New Zealand, and Northern and Western Europe; intermediate in Central and Eastern Europe, Latin America, and the Caribbean; and low in most of Africa and Asia. Breast cancer is the most common cancer diagnosed among women in the United States, accounting for nearly 1 in 3 cancers (DeSantis *et al.*, 2014).

Based on National Cancer Registry 2006, breast cancer is the most commonly diagnosed cancer in women in Malaysia. It reported 3,525 female breast cancer with overall Age Standardised Incidence Rate (ASR) was 39.3 per 100,000 population (Zainal Ariffin and Nor Saleha, 2011). About one in 19 women in this country are at risk, compared to one in eight in Europe and the United States (DeSantis *et al.*, 2014).

There were many risk factors for breast cancer. It includes gender (Anderson *et al.*, 2009), age (Chlebowski *et al.*, 2007), history of neoplastic disease of the breast (Li *et al.*, 2006), family history of breast cancer (Pharoah *et al.*, 1997) , radiation exposure (John *et al.*, 2007), reproductive factors (Kahlenborn *et al.*,

2006), breast density (McCormack and dos Santos Silva, 2006) and lifestyle (Monninkhof *et al.*, 2007; Milne *et al.*, 2010). Local study in Kelantan also showed nulliparity, overweight, family history of breast cancer and previous use of oral contraceptives among the factors contributing toward increased risk of breast cancer (Norsa adah *et al.*, 2005).

In Malaysia clinical practice guidelines, these risk factors were further stratified into low, moderate and high risk group. It was adapted from several literature review (Pharoah *et al.*, 1997; Singletary, 2003). The risk factors for low risk of breast cancer include alcohol consumption, obesity and reproductive factors which include increasing age at first full term pregnancy > 30 year, hormone replacement therapy and oral contraceptive pill usage. Moderate risk factors for breast cancer were include increasing age from 40 years old, benign breast disease with proliferation without atypia, dense breast and for reproductive factors include early menarche (< 12 year old), late menopause (> 55 year old) and nulliparity. First degree family history with breast cancer, personal history of invasive breast cancer, Lobular Carcinoma In Situ (LCIS) and Ductal Carcinoma In Situ (DCIS), benign breast disease with atypical hyperplasia, carrier of Breast Cancer Gene 1 (BRCA1) and Breast Cancer Gene 2 (BRCA2) and ionising radiation from treatment of breast cancer, Hodgkin's disease and others are the risk factors for high risk group.

The major challenge for breast cancer in Malaysia is the late presentation of disease. It later contributes to poor outcome and high mortality rate. It was reported that approximately 50% to 60% of newly diagnosed breast cancers in

Kuala Lumpur, Malaysia were stage 3 or 4 with mean tumour size at presentation was 5.4 cm (Hisham and Yip, 2004).

A study in Malaysia from 1993 to 2004, showed 60-70% of women presented with early stage (Stage 1- 2) while 30-40% presented with late breast cancer (Stage 3-4) especially in Malays. This consequently made their survival is worse than with Chinese and Indian women (Yip *et al.*, 2006). Study by Bhoo Pathy et al. (2011) on combining breast cancer registry between Malaysia and Singapore revealed 51% of patients diagnosed of breast cancer before the age of 50 years. Majority (72%) of the women were Chinese followed by Malays (16%), Indians (8%), and other races (4%). Median tumor size at presentation was 26 mm and about a quarter of patients presented with Tumor Node Metastasis (TNM) stage III or IV disease. Five-year overall survival was 82.5% in patients with TNM stage 0 to stage II cancer, and 30.2% in those with later stages.

Observational cohort study involving a total of 675 patients treated between 2008 and 2012 showed 65% had early breast cancer, 20% had locally advanced breast cancer (LABC) and 4% had metastatic breast cancer (MBC). The overall relative survival at 5 years was 88%. Relative survival for stage I was 100% and for stage II, III and IV disease was 95%, 69% and 36% respectively (Abdullah *et al.*, 2015). Early detection and screening is important in order to improve breast cancer outcome and survival and remains the cornerstone of breast cancer control.

2.2 BREAST CANCER SCREENING

There are two early detection methods. Firstly is early diagnosis or awareness of early signs and symptoms in symptomatic populations in order to facilitate diagnosis and early treatment. Secondly is screening, which systematic application of a screening test in a presumably asymptomatic population. It aims to identify individuals with an abnormality suggestive of cancer. A screening programme is a far more complex undertaking that an early diagnosis programme (WHO, 2007).

Screening in Malaysia is very much opportunistic in nature, and targets women attending women's wellness clinics and maternal and child-health clinics run by the Ministry of Health. Pap smears are offered to women at these clinics to screen for cervical cancer and clinical breast examination (CBE) is carried out to detect any breast abnormality. Breast self-examination (BSE) is also taught to women attending these clinics by public health nurses. This empowered the women toward self-awareness of their health.

Breast cancer screening comprises of breast self-examination, clinical breast examination and mammography. Study by Thistlethwaite et al.(2007) on the evidence for screening by CBE found that it had a low sensitivity (54%) but high specificity (94%). Women aged 50 - 59 years old had the highest sensitivity of CBE, while it is lowest in women aged 40 - 49 years old and there is no evidence on the effect of screening through breast self-examination (BSE).

In a community study conducted by the Ministry of Health Malaysia among 59,903 women in all states of Malaysia, BSE and CBE were reported to be performed by 34% and 31% of women above 20 years of age, while mammography was carried out in only in 3.8% of women 50 years and older (MOH, 2010). Another study in rural community in Malaysia, reported 53.3% had ever done clinical breast examination (Farid *et al.*, 2014). Significant associations with CBE were noted for income and distance from the hospital.

However, the practice of BSE has been seen to empower women, taking responsibility for their own health. Therefore, BSE is recommending for raising awareness among women at risk rather than as a screening method. A cluster randomized controlled trial in the Trivandrum district (Kerala, India) found that out of 50,366 women who underwent CBE, 30 breast cancers were detected among 2880 women with suspicious findings in CBE screening that warranted further investigations. Sensitivity, specificity, false-positive rate and positive predictive value of CBE were 51.7% (95% CI: 38.2%,65.0%), 94.3% (95% CI: 94.1%,94.5%), 5.7% (95% CI: 5.5%,5.9%) and 1.0% (95% CI: 0.7%,1.5%) respectively (Sankaranarayanan *et al.*, 2011).

Results from screening programmes in population based community in the United States on 463,372 on CBE screening revealed an overall estimate for sensitivity of 54% (95% CI: 48,60) and specificity of 94% (95% CI: 90,97). Review on screening mammography revealed an overall sensitivity of 75.0% and specificity of 92.3% (Elmore *et al.*, 2005). This indicates mammography remains the main screening tool for breast cancer.

Mammogram is a form of X ray of the breast that can identify tissue abnormalities, including cancerous growth, which can detect breast cancer as much as two years before a lump can be felt (American Cancer Society, 2009). Mammogram can be divided into screening mammogram and diagnostic mammogram. Mammogram screening used to check for breast cancer in women who have no signs or symptoms of the disease. It can detect breast tumours that cannot be felt through micro calcifications finding which sometimes indicate the presence of breast cancer. In diagnostic mammogram, it is used to investigate for breast cancer after a lump or other sign or symptom of the disease has been found.

Mammography screening is the only screening method that has proven to be effective. It can reduce breast cancer mortality by 20 to 30% in women over 50 years old in high-income countries when the screening coverage is over 70% (IARC, 2008). Mammography screening is very complex and required intensive resource and no research of its effectiveness has been conducted in low resource settings. Meta-analyses of randomized controlled trials demonstrate a 7% to 23% reduction in breast cancer mortality rates with screening mammography in women 40 to 49 years of age. Although few women 50 years of age or older have risks from mammography that outweigh the benefits, the evidence suggests that more women 40 to 49 years of age have such risks (Armstrong *et al.*, 2007). A recent SR by United States Preventive Services Task Force (USPSTF) 2009 recommended biennial screening mammography for women aged 50 to 74 years (Nelson *et al.*, 2009). The decision to start regular, biennial screening mammography before the age of 50 years should be

an individual one and take patient context into account, including the patient's values regarding specific benefits and harms. The evidence was insufficient to assess the additional benefits and harms of screening mammography in women 75 years or older (Siu and on behalf of the, 2016). The USPSTF also concludes on insufficient evidence to assess the balance of benefits and harms of adjunctive screening for breast cancer using breast ultrasonography, magnetic resonance imaging (MRI), digital breast tomosynthesis (DBT), or other methods in women identified to have dense breasts on an otherwise negative mammogram screening (Nelson *et al.*, 2009). Indication for mammogram screening in Malaysia as recommended by Malaysia Clinical Practice Guidelines for Breast Cancer 2010 includes mammography that may be performed biennially in women from 50 to 74 years of age. The value of screening mammogram for this age group is widely accepted. However, breast cancer screening using mammography in low and intermediate risk women aged 40 to 49 years old should not be offered routinely and should not be denied mammography screening if they desire to do so (MOH, 2010).

2.3 KNOWLEDGE ON MAMMOGRAM SCREENING

Knowledge on mammogram screening can be acquired from education and experience. Education can be gained through mass media promotion, internet, health campaign, pamphlet, brochure and education from health care personnel or consultation with medical staff. Study had proved that women with higher knowledge had better perception and practice of mammogram (Parsa *et al.*, 2008; Al-Naggar and Bobryshev, 2012). Al-Dubai et al. (2011) find out the

majority of women had heard about breast cancer (81.2%) and indicated that books, magazines and brochures as their source of information (55.2%).

Local study by Rosmawati (2010b) reported there was poor knowledge pertaining to mammography screening for breast cancer among women in sub urban area. Most of them do not sure the answer (45.3% to 61.6%) rather than wrongly answer (4.7% to 43.0%) and only 8% truly answer that mammogram should be done once in a life. There are 10.5% of women claimed that mammogram not a painful procedure and had no serious side effect and nearly half of respondents (48.8%) correctly mentioned that mammogram can detect breast cancer in early stage. They were seriously unaware and lack of knowledge on mammogram.

Another local study was conducted among 200 women in Shah Alam, Selangor revealed majority of them knew about mammography (68%). This study gives a better result as it was done at urban area with mostly educated population (Al-Naggar and Bobryshev, 2012). Limited literacy skills and lack of knowledge about screening mammography may contribute considerably to the underutilization of screening mammograms in low-income women (Davis *et al.*, 1996). Study on female university students reported to had inadequate knowledge of breast cancer. The mean total knowledge score of the students was 60.7% with Indian students had significantly less knowledge of breast cancer compared to their Chinese and Malay counterparts (Hadi *et al.*, 2010). In Brazil only 7.4% of the interviewees had adequate knowledge on mammography among women users of local health services (Marinho *et al.*, 2008). Study on knowledge on mammography at Mulago Hospital, Uganda on

women attending radiology department revealed most of the women (71%) had no idea about mammography (Elsie *et al.*, 2010). More than 50% did not know about risk factors for breast cancer. Lack of information is the main barrier to mammography. Women in that study had inadequate knowledge related to mammography as a procedure for breast cancer screening. Therefore, knowledge and adequate information regarding mammogram screening are necessary in increased uptake of mammogram screening.

2.4 ATTITUDE ON MAMMOGRAM SCREENING

Although breast cancer is a major public health worry among Asian women, adherence to screening for the disease remains an obstacle to its prevention. Many barriers and factors influence mammogram screening uptake include attitude of the women herself (Alexandraki and Mooradian, 2010; Abu-Helalah *et al.*, 2015). The attitude toward mammogram screening among women is different based on their level of knowledge. False believe and poor knowledge in mammogram screening are the factors that contribute to poor attitude (Rosmawati, 2010b). Even though breast cancer awareness is high, acknowledgment of mammogram screening as modalities of screening is still lacking. Study in Singapore showed breast cancer awareness among women is high but understanding of mammographic screening is limited and misconceptions abound (Lim *et al.*, 2015). Attitudes towards mammogram screening among women in Uganda are generally negative due to low level of literacy and status of employment (Elsie *et al.*, 2010). Negative social perception, poverty, cultural and religion practices, and influence of

complementary and alternative medicine are also among the factors influencing the attitude (Khan *et al.*, 2015).

Study among teachers in Malaysia showed a low rate of mammogram screening in women with high level of literacy as the uptake is only 13.6% as the other factors involved related with health beliefs and breast cancer screening behaviours (Parsa *et al.*, 2008). Other barriers to mammography include embarrassment, cost, exposure to radiation and pain (Zapka *et al.*, 1989). Study among women in public health services users in Brazil revealed 97.1% of women had an adequate attitude toward mammogram screening. The main barrier (81.8%) to mammogram screening was lack of referral by physicians working at the health centre (Marinho *et al.*, 2008).

2.5 PRACTICES ON MAMMOGRAM SCREENING

Local study in sub urban area in Terengganu noted only small percentage of women ever performed mammogram. The percentage of respondents ever performed mammogram was 10.5% (95% CI: 4.0%,17.0%) due to poor knowledge pertaining to mammogram screening and lack of awareness regarding breast cancer screening (Rosmawati, 2010b). Another local study reported only 15% had had a mammogram once in their life and only 2% had the procedure every two or three years. The practice of mammogram screening is low due to lack of time, lack of knowledge, not knowing where to go for the test and a fear of the test result (Al-Naggar and Bobryshev, 2012).

However, study on health personnel in tertiary hospital revealed an increased uptake of mammogram screening at 80.3% (95% CI: 76.8%,83.5%) among 534 respondents. The findings of this study highlighted that 20% of personnel did not undertake mammography screening although there is no cost incurred and the procedure is fully accessible to them (Abdullah *et al.*, 2011).

In the United Arab Emirates, less than 10.3% of women had mammography and only 25% of Turkish women have mammogram, which was as a result of inadequate knowledge of screening and insufficient offering of screening by health care workers (Ahmadian and Samah, 2013). However, another study in Brazil revealed a higher proportion of practice on mammogram screening at 35.7% (Marinho *et al.*, 2008).

Study on practices of mammogram screening in 100 women who attending tertiary hospital in Uganda showed level of literacy and occupation were significant associated factor with main barrier to mammography was mainly lack of information. Women in this study had inadequate knowledge and poor practice related to mammography as a procedure for breast cancer screening (Elsie *et al.*, 2010).

Study in Jordan showed negative perceptions and limited knowledge on breast cancer screening causing 87.6% had never undergone mammography screening. There was low participation rate in early detection of breast cancer practices (Abu-Helalah *et al.*, 2015). Similar study also seen by Hossain et al.(2016), where Southeast Asian women living in Sydney have displayed low

participation in breast screening due to a lack of general breast cancer knowledge and knowledge regarding available screening practices.

2.6 MAMMOGRAM SCREENING AND ASSOCIATED FACTORS

Many factors contribute to poor mammogram screening. Knowledge about mammography testing were significantly associated with the practice of mammography among the general population in Malaysia (Al-Naggar and Bobryshev, 2012).

Mammography screening among rural females in Pahang and Perak showed women's level of education appears to contribute to their level of knowledge and health behaviour. The higher level of education resulting in increase their awareness on breast cancer screening ($p<0.05$) (Norlaili *et al.*, 2013). Women are also more likely to adhere to screening guidelines if they involved in decision making, younger, had smaller families, higher education and income, reported breast problems; and lived in an area with a higher percentage of mammography facilities with reminder systems (Phillips *et al.*, 1998).

There were many barriers toward mammogram screening. It includes lack of referral by physicians working at the health centre, adequacy of attitude, education and being married. Employed and family income up to four minimum wages also plays the role for health seeking behaviour (Marinho *et al.*, 2008). Barriers may limit the utilization of mammography. It was reported by previous studies which include embarrassment, low income, lack of health insurance,

lack of physician recommendation, lack of trust in hospitals and doctors, language barriers and lack of transportation (Alexandraki and Mooradian, 2010). Demographic factors, certain beliefs and knowledge, having a regular physician, social interaction and media exposure also among the factors which contribute to mammogram screening adherence (Zapka *et al.*, 1989).

Therefore, recognizing predictors of screening among women and addressing culturally specific barriers may improve utilization of screening mammography among these women toward mammogram screening.

2.7 JUSTIFICATION

This research was conducted to assess the knowledge, attitude and practice on mammogram screening in women in Kelantan. Mammogram screening program can be offer in primary care health setting and the procedure will be done at tertiary centre. Study showed mammography remains the main screening tool for detecting breast cancer. Mammogram screening can detect early presence of breast cancer in which early treatment can improve cure rate and later on will improve the quality of life. Women with the risk factors will benefit much from this screening. It is important to know the common barriers for women from getting mammogram screening. Mammography screening in this country remains under-utilized, and is very much based on women taking the initiative to self- refer themselves for screening even though Ministry of Health was taking the initiative in promoting and providing incentive for women whom want to do mammogram through their National Population and Family Development Board clinics.

So, it is important to assess the knowledge, attitude and practice of mammogram screening in view for early prevention of breast cancer, thus reduce morbidity and mortality among women in Malaysia generally and Kelantan specifically. The information in this study is possible to be useful in future to increase awareness among women regarding mammogram screening.

2.8 CONCEPTUAL FRAMEWORK

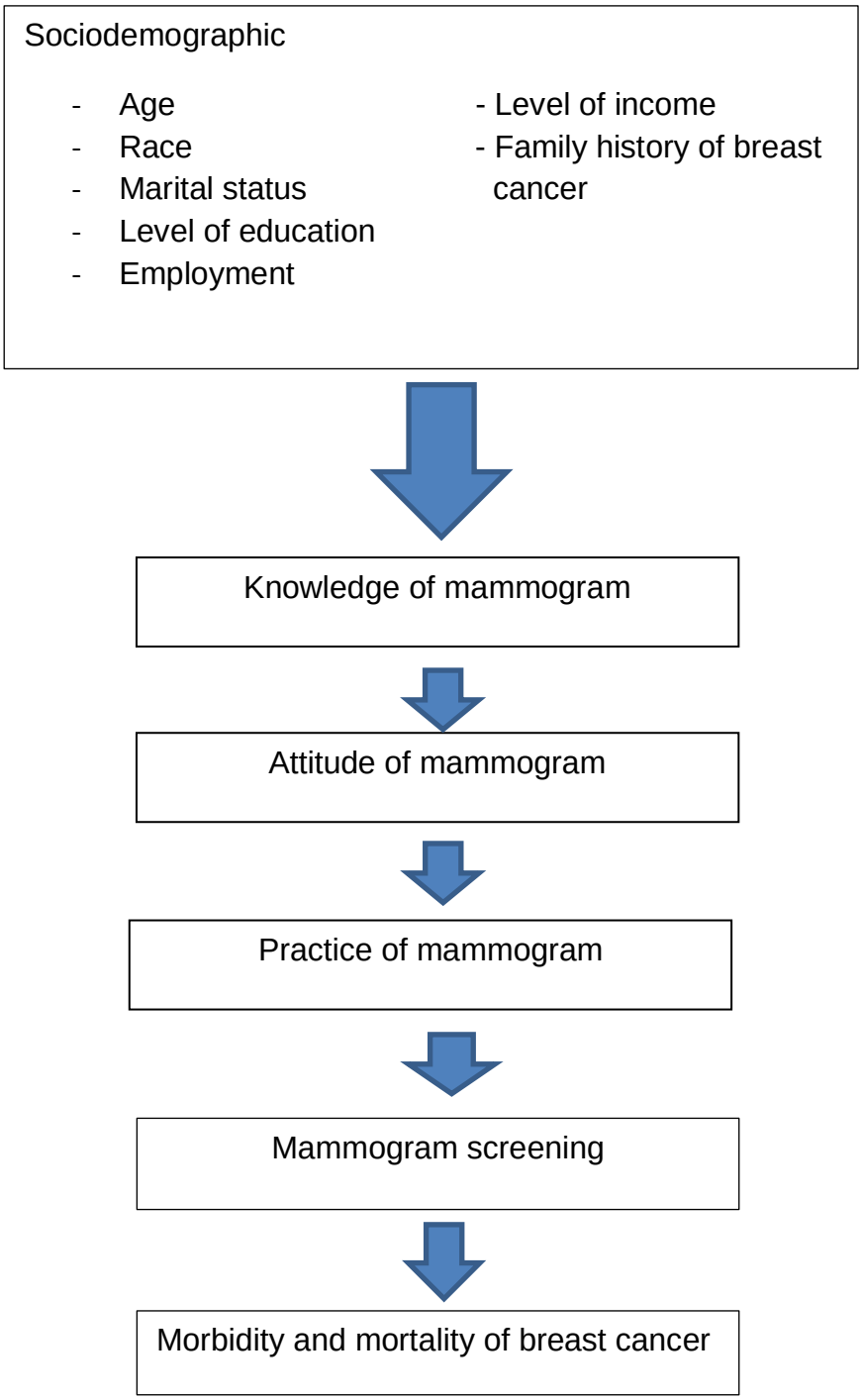

Figure 2.8: Conceptual framework for study on knowledge, attitude and practice on mammogram screening

CHAPTER 3

OBJECTIVES AND RESEARCH HYPOTHESIS

3.1 General objective

To determine the proportion of knowledge, attitude and practice of mammogram screening among women in Kelantan

3.2 Specific objectives

1) To determine the proportion of poor knowledge on mammogram screening among women in Kelantan

2) To determine the proportion of poor attitude on mammogram screening among women in Kelantan

3) To determine the proportion of poor practice on mammogram screening among women in Kelantan

4) To identify the associated factors for poor practice on mammogram screening among women in Kelantan

3.3 Research hypothesis

1) Sociodemographic, knowledge and attitude on mammogram screening are significant associated factors for poor practice on mammogram screening among women in Kelantan

3.4 Operational definition

1. Mammogram screening is defined as a screening using a form of x ray of the breast that can identify tissue abnormalities, including cancerous growth

2. Poor knowledge is defined as the percentage of total marks on knowledge section less than 70%

3. Poor attitude is defined as the percentage of total marks on attitude section less than 70%

4. Poor practice is defined as the percentage of total marks on practice section less than 70%

CHAPTER 4

METHODOLOGY

4.1 Study design

A cross sectional study

4.2 Study population and sample

4.2.1 Reference population

The reference population is all women in Kelantan

4.2.2 Source population

The source population is all female patients attending primary health clinics with Family Medicine Specialist (FMS) in Kelantan

4.2.3 Sampling frame

The sampling frame of this study is all women whom attended selected primary health clinics with Family Medicine Specialist who fulfil inclusion and exclusion criteria during the data collection period. Duration of study was two months which was from January 2016 until February 2016.

4.2.4 Inclusion and exclusion criteria

Inclusion criteria for patients:

- Age between 40 – 70 years old

Exclusion criteria for patients:

- Diagnosed breast cancer
- Women who are illiterate

4.2.5 Sample size

The sample sizes were calculated for each objective. The biggest sample size was taken as the study sample size. All information for sample size calculation was obtained from pilot study. Objective 1, 2 and 3 was calculated using single proportion formula.

$$n = \left\{ \frac{Z}{\Delta} \right\}^2 * P(1-P)$$

n = minimum required sample size

Z = value of standard normal deviation = 1.96

Δ = precision = the estimated smallest difference of proportion between this study and the true population prevalence (based on expert opinion)

P = prevalence of interest among the study group

4.2.5.1 Sample size calculation for objective 1

$$n = \left\{ \frac{1.96}{0.05} \right\}^2 * 0.86(1 - 0.86)$$

n = sample

Z = 1.96

Δ = detectable difference is 0.05

P = proportion of poor knowledge from pilot study = 0.86

For objective 1, the minimum sample calculation to determine the proportion of poor knowledge on mammogram screening among women in Kelantan was 185. After considering 20% non-response rate, the sample size calculated was 222.

4.2.5.2 Sample size calculation for objective 2

$$n = \left\{ \frac{1.96}{0.05} \right\}^2 * 0.12(1- 0.12)$$

n = sample

Z = 1.96

Δ = detectable difference is 0.05

P = proportion of poor attitude from pilot study = 0.12

For objective 2, the minimum sample size calculation to determine the proportion of poor attitude on mammogram screening among women in Kelantan was 162. After considering 20% non-response rate, the sample size calculated was 195.

4.2.5.3 Sample size calculation for objective 3

$$n = \left\{ \frac{1.96}{0.05} \right\}^2 * 0.46(1-0.46)$$

n = sample

Z = 1.96

Δ = detectable difference is 0.05

P = proportion of poor practice from pilot study = 0.46

For objective 3, the minimum sample size calculation to determine the proportion of poor practice on mammogram screening among women in Kelantan was 382. After considering 20% non-response rate, the sample size calculated was 458.

4.2.5.4 Sample size calculation for objective 4

For objective 4, the sample size calculation to determine the associated factors for poor practice on mammogram screening among women in Kelantan was done by using Power and Sample Size Calculation Software.

Sample size calculation for comparing two proportions for categorical variables such as race, marital status, religion, educational level, income level, occupation, poor knowledge and poor attitude; were used. Age also was categorized into categorical, thus similar formula was used. The biggest sample size was from poor knowledge level. The calculated sample size was shown in the Table 4.1.

α = 0.05

Power = 0.8

m = the ratio of control to cases = 1

Po = proportion of poor knowledge in good practice

P1 = proportion of poor knowledge in poor practice

Table 4.1: Calculated sample size associated factor for poor practice

Variable	α	Power	Po	P1	m	Sample size after considering 20% non response rate
Poor knowledge	0.05	80%	0.87	0.95	1	480

Taking the alpha of 0.05 and power of 80%, the minimum required sample size was 400. However, after considering 20% non-response rate, the sample size was 480. So, the biggest sample size was from objective 4 (n = 480) which was taken as the study sample size.

4.2.6 Sampling method

Multistage random sampling (Figure 4.1) was chosen because economic for data collection in this study setting. A list of government health clinics with FMS in Kelantan was obtained from Kelantan State Health Department, which consists of 20 health clinics. In the first stage, a total of 10 health clinics with FMS were selected by simple random sampling using Microsoft software (Lin Nang, 2004). In the second stage, 48 patients from each clinic were selected by systematic random sampling in the ratio 1:2 based on attendance list at outpatient clinic.