

**THE VALIDATION OF KNOWLEDGE, ATTITUDE
AND PRACTICE QUESTIONNAIRE ON BREAST
CANCER AMONG WOMEN ATTENDING FAMILY
MEDICINE CLINIC, HUSM**

by

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LIST OF ABBREVIATIONS

BC	Breast Cancer
BSE	Breast Self Examination
CBE	Clinical Breast Examination
HBM	Health Belief Model
KAP	Knowledge, Attitude and Practice
KAPQ	Knowledge, Attitude and Practice Questionnaire
FMC	Family Medicine Clinic
KRK	Klinik Rawatan Keluarga
HUSM	Hospital Universiti Sains Malaysia
HRT	Hormone Replacement Therapy
OCp	Oral Contraceptive Pills
FNAC	Fine Needle Aspiration Cytology
TNM	Tumour, Node and Metastasis
SD	Standard Deviation
CITC	Corrected Item Total Correlation
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization
USA	United States of America

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**Appendix A : The Malay language version of knowledge, attitude and practice
questionnaire on breast cancer**

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ABSTRACT

ABSTRACT

Introduction: Breast cancer is the leading cause of cancer deaths among Malaysian women. Breast cancer is treatable if detected early, and breast screening has proven to be the best way for early detection of breast cancer. However, poor awareness and understanding of the disease contributes to the deaths of many women in Malaysia. Therefore, there is a need to develop a valid and reliable instrument to measure the knowledge, attitude and practice (KAP) on breast cancer and screening behaviours among Malaysian women.

Objective: The purpose of this study was to validate the Malay language version of knowledge, attitude and practice questionnaire (KAPQ) on breast cancer among women attending Family Medicine Clinic (FMC), Hospital Universiti Sains Malaysia (HUSM).

Methodology: This was a cross sectional study. The respondents were 227 women attending FMC, HUSM. They were selected using systematic random sampling. The questionnaire has been developed based on literatures and several expert opinions. The questionnaire was then self administered by the respondent. Analysis included descriptive statistics of all the study variables, determination of the construct validity using factor analysis and internal consistency reliability using Cronbach's alpha.

Results: All of the 227 respondents were analyzed. The mean (SD) age of the respondents was 29.6 (9.9) years. Majority of the respondents (91.6%) were Malay and nearly half of them (47.1%) were educated to upper secondary school. Factor analysis yielded five factors for knowledge domain with eigenvalue greater than one,

five factors for attitude domain and only two factors for practice domain. All of the factors were loaded from 0.477 to 0.872. Meanwhile, Cronbach's alpha reliability coefficients for all domains were ranged from 0.636 to 0.818.

Conclusion: The Malay language version of KAPQ on breast cancer was found to be a valid and reliable instrument to be used among Malaysian women. It can be used easily to measure the KAP on breast cancer and screening behavior, and for health promotion planning interventions. For greater applicability, it is recommended that this instrument be tested among ethnically diverse populations.

Keywords: Knowledge, attitude and practice, breast cancer, breast screening, validity, reliability.

ABSTRAK

Pengenalan: Kanser payudara adalah penyebab utama kematian kanser bagi wanita di Malaysia. Kanser payudara boleh dirawat jika dikesan awal, dan saringan payudara telah terbukti sebagai kaedah terbaik untuk pengesanan awal kanser payudara. Walau bagaimanapun, kurangnya kesedaran dan kefahaman tentang penyakit ini telah menyebabkan kematian ramai wanita di Malaysia. Oleh itu, penghasilan instrumen yang sah dan boleh dipercayai untuk mengukur tahap pengetahuan, sikap dan amalan terhadap kanser payudara dan saringannya di kalangan wanita Malaysia adalah amat diperlukan.

Objektif: Tujuan kajian ini adalah untuk validasi KAPQ versi Bahasa Melayu mengenai kanser payudara di kalangan pelanggan wanita di Klinik Rawatan Keluarga (KRG), Hospital Universiti Sains Malaysia (HUSM).

Metodologi: Ini adalah kajian keratan rentas. Responden adalah 227 pelanggan wanita di KRG, HUSM. Mereka telah dipilih secara persampelan rawak sistematik. KAPQ versi Bahasa Melayu ini telah dibina berdasarkan kepada literasi dan pendapat beberapa orang pakar. KAPQ ini seterusnya telah dijawab sendiri oleh responden. Analisis kajian adalah termasuk statistik deskriptif untuk semua data kajian, menentukan validiti konstruk menggunakan analisis faktor dan reliabiliti konsistensi dalaman menggunakan alpha Cronbach.

Keputusan: Kesemua jawapan 227 orang responden telah dianalisa. Purata (sisihan piawai) umur untuk responden adalah 29.6 (9.9) tahun. Majoriti responden (91.6%) terdiri daripada kaum Melayu dan hampir separuh daripada mereka (47.1%) telah

mendapat pendidikan sehingga sekolah menengah (SPM). Analisis faktor telah menghasilkan lima faktor untuk domain pengetahuan dengan nilai eigen lebih dari satu, juga lima faktor untuk domain sikap dan hanya dua faktor untuk domain amalan. Kesemua faktor telah diisi dari 0.477 hingga 0.872. Sementara itu, koefisien reliabiliti alpha Cronbach untuk semua domain adalah dari 0.636 hingga 0.818.

Kesimpulan: KAPQ versi Bahasa Melayu tentang kanser payudara ini adalah instrumen yang sah dan boleh dipercayai untuk digunakan oleh para wanita di Malaysia. Ia boleh digunakan untuk mengukur tahap pengetahuan, sikap dan amalan tentang kanser payudara dan saringannya, dan seterusnya untuk intervensi melalui promosi kesihatan. Untuk digunakan sepenuhnya, instrumen ini disyorkan untuk diuji di kalangan populasi pelbagai kaum.

Katakunci: Pengetahuan, sikap dan amalan, kanser payudara, saringan payudara, validiti, reliabiliti.

INTRODUCTION

CHAPTER ONE

INTRODUCTION AND LITERATURE REVIEW

1.1 Overview of breast cancer

Breast tissue is a tubuloalveolar gland that consists of ductal and lobular units. The development and growth of breast tissue is under the influence of oestrogen, progesterone, adrenal hormones, pituitary hormones, and trophic effects of insulin and thyroid hormone.

Breast cancer results from an uncontrolled growth of abnormal breast cells. The breast cancer cells will destroy normal nearby tissues by local invasion, and may break away from the primary site and enter the bloodstream and lymphatic system, thus spreading to other organs such as bone, lung, liver and brain.

The risk factors of breast cancer had been extensively investigated and suggested that lifestyle and reproductive factors were strongly related to breast cancer. A positive family history of breast cancer is among the most significant predictors of breast cancer risk (Floretti *et al.*, 1998, Tavani *et al.*, 1999, McPherson *et al.*, 2000). There is evidence of genetic predisposition by autosomal dominant genes BRCA-1 and BRCA-2 that are related to the breast cancer occurrence (Tavani *et al.*, 1999).

Besides being responsible for the growth of normal breast tissues, oestrogens also play important role in stimulating the growth of breast cancer cells. Oestrogens have direct effect on tumour cells by stimulating the release of mitogenic growth factors and facilitate the invasion and metastases of the tumour (Spratt *et al.*, 1995, Clemons and Goss, 2001). Further evidence is from the effect of tamoxifen, an anti-oestrogen chemotherapeutic agent, in the reduction of breast cancer risk.

Increased or prolonged exposure to oestrogen is associated with a higher risk of developing breast cancer. Reproductive factors that increase the number of menstrual cycle such as early menarche, nulliparity, late onset of menopause and late age of having the first child, contribute toward higher risk of breast cancer (Stephans, 1997, Tavani *et al.*, 1999, McPherson *et al.*, 2000). On the other hand, factors that reduce the number of ovulatory cycles are associated with lower risk of breast cancer such as moderate exercise, longer lactation and higher parity. Exogenous oestrogen such as those obtained through hormone replacement therapy (HRT) and oral contraceptive pills (OCP) also has roles in the development of breast cancer (Collaborative Group on Hormonal Factors in Breast Cancer, 1996).

It is suggested that smoking may contribute towards increase risk of breast cancer. Tobacco smoke is thought to interfere with oestrogen metabolism and a carcinogen itself. Timing of exposure and duration of smoking are related to the breast cancer risk. Smoking increased the risk of developing breast cancer for women who had smoked for more than 30 years (Bennicke *et al.*, 1996). Besides that, dietary factors also have been linked to breast cancer development. It is noted that breast cancer is

less common in countries where the typical diet is low in total fat especially polysaturated fat (Yuan *et al.*, 1996).

The diagnosis of breast cancer can only be made by histological examination of breast tissue. The breast tissue may be obtained by fine needle aspiration cytology (FNAC), core needle biopsy, incisional or excisional biopsy or stereotactic image guidance of needle biopsy for unpalpable masses. Tumour, Nodal and Metastasis (TNM) classification used for staging of breast cancer is based on clinical examination of the tumour (T), regional lymph nodes involvement (N) and distant metastases (M). It is introduced to predict prognosis, determine the choice of treatment and compare the results of different treatment approaches.

1.2 Prevalence of breast cancer

Breast cancer is the leading cancer in women today (American Cancer Society, 2005, WHO, 2005). Globally the total number of new cases of breast cancer diagnosed annually exceeds one million, and this figure is expected to reach 1.5 million by 2010. It is recognized as an important public health problem and contributes toward significant morbidity and mortality among Malaysian women.

There were geographical and ethnic variations in breast cancer incidence rates. The highest rates were in North America and Europe, and lowest in Asia and Africa. The age-adjusted incidence of breast cancer was highest among white, Hawaiian and black women, while the lowest rates were reported among Korean, American Indian and Vietnamese women (National Cancer Institute, 1999). Surveillance Epidemiology End Result (SEER) Cancer Statistics Review 1973-1997 reported that the incidence rate of breast cancer in USA in 1997 was 115.4 and the mortality rate was 23.3 per 100,000 women.

In Malaysia, it is the most frequently diagnosed cancer in women, irrespective of ethnic and age groups, accounting for 30.4% of newly diagnosed cases in 2005 (National Cancer Registry, 2006). A Malaysian women cumulative risk of getting breast cancer during her lifetime is 1 in 19 with the highest risk being in Chinese women (1 in 14).

It is estimated that 1200 new cases occur every year and an increasing trend of cases among younger women has been observed (Narimah, 1997, Ministry of Health

Malaysia, 1999). In the year 2002, 3825 new cases of breast cancer were reported and total deaths from the disease were 1707. The incidence was estimated to be 34.86 per 100,000 women, a figure much lower than that reported for Singaporean women, with a reported incidence of 54.44 per 100,000 women.

The incidence rate of breast cancer in Malaysia was very much lower compared to those in the west. The incidence rate of breast cancer in Peninsular Malaysia in 1982 was 28 per 100,000 women compared to 69 per 100,000 women in the USA in the same year (Chan, 1982). Penang Cancer Registry (1999), reported that the incidence rate of breast cancer in 1996 was 23.8 per 100,000 women. The second National Health and Morbidity Survey showed that the breast cancer prevalence in Malaysia was 86.2 per 100,000 women in 1996 (Ministry of Health Malaysia, 1997).

However, the age-adjusted breast cancer mortality rate for white females in the USA dropped 6.8% between 1990 and 1995 (Chu *et al.*, 1996). The decline might be due to better cancer prevention and control efforts that included healthy lifestyle changes, health educational efforts and regular breast cancer screening. Similarly, there was a reduction of up to 21% in mortality rate of breast cancer from 1990 to 1998 in the United Kingdom (Blanks *et al.*, 2000). Furthermore, SEER program also noted that there were increasing incidence rates of stage I and II breast cancer, while stage III and IV breast cancer incidence rates were decreasing (National Cancer Institute, 1999).

In contrast, the trends in incidence and mortality rates of breast cancer in Malaysia were increasing. The under reported mortality rate of breast cancer increased from

0.61 in 1983 to 1.8 per 100,000 women in 1994 (Ministry of Health Malaysia, 1995). The age-adjusted mortality rate of Peninsular Malaysia showed an increase from 3.7 in 1982 to 5.8 per 100,000 women in 1995 (Yip and Ng, 1996). Meanwhile, data from population-based Singapore Cancer Registry between 1968 and 1992 revealed an average increase in the incidence rate of 3.6% over the 25 year period.

1.3 Current issues on breast cancer in Malaysia

It has been reported that in Malaysian women, breast cancer presents in advanced stages with large tumor sizes. According to Hisham and Yip (2003), the mean tumor size at presentation was 5.4cm (range : 1-20cm), and the advanced stage of breast cancer is observed to be highest among the Malay ethnic group. Socio-cultural factors and poverty may be underlying factors for the delay in presentation among Malaysian breast cancer patients. With early detection, the 5-year survival rate is 92%. However, with local invasion, the survival rate decreases to 71%, and if it is diagnosed at Stage IV, only 18% of women survive (Lauver *et al.*, 1999).

Breast cancer not only threatens the life of a woman but also affects her gender identity and body image. Therefore, early detection of breast cancer can secure women against premature mortality, physical defects as well as psychological distress. Its incidence having increased significantly over recent decades, confirming the important role of early detection and the advances made in its treatment.

Early detection of breast cancer can be achieved by performing breast-self examination (BSE), clinical breast examination (CBE), and mammography. Mammography is recognized as the best method for large-scale early detection available today (Parkin *et al.*, 2005). However it is expensive and requires well-trained staffs and not used at all as a screening tool in Malaysia. Therefore, BSE has been promoted for many years as screening methods to diagnose breast cancer at an early stage, in order to decrease the risk of dying from breast cancer (Kosters and Gotzsche, 2007).

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 respectively. Meanwhile, mammography was carried out in only 3.8% of women 50 years and older. This study also showed a significant difference in screening rates between urban and rural areas which were 50.6% and 42.3% respectively (Narimah, 1997). In addition, several studies have reported that lower breast cancer screening rates are associated with inappropriate and poor levels of knowledge and perceptions of preventive health measures (Bener *et al.*, 2002, Petro-Nustus and Mikhail, 2002, Franzcr *et al.*, 2005).

Health screening behavior is closely related to the individual's knowledge, attitude and beliefs. Although better knowledge does not necessarily translate into actual practice of BSE, women who have better knowledge are more likely to practice it. Moreover for younger women, BSE training and practice is a gateway to health promotion behavior that provides women with knowledge and attitudes that set the stage for CBE and mammography screening later in life (Zincir, 2000). Several studies have shown that the knowledge and perception of women directly influence their attendance and acceptance of breast cancer screening and treatment (Sadler *et al.*, 2000).

Most of the KAP questionnaires has been tested and validated mostly in the Western cultures. The English language versions of the questionnaire have been evaluated and found to be a valid and reliable tool for use among their women. For example, the Health Belief Model (HBM) appeared most frequently in the literature explaining

breast cancer screening (Becker, 1974, Rosenstock *et al.*, 1988). According to HBM, women who believe that they are susceptible to breast cancer and that the breast cancer is a serious condition are more likely to perform breast cancer screening. Moreover, the more motivated women are to promote their health and the more confident they are in their ability to perform BSE, the more likely they are to practice BSE (Champion, 1993).

Hence, understanding Malaysian women's beliefs related to breast cancer and screening behaviours will help physicians and other healthcare professionals implement health promotion programmes with the potential to increase screening practices.

1.4 Knowledge, attitude and practice (KAP)

Health screening behavior is closely related to the individual's knowledge, attitude and practice. Although better knowledge on breast cancer does not necessarily translate into actual practice of BSE, women who have better knowledge are more likely to practice it. The third National Health and Morbidity Survey (NHMS) found that those who practiced screening methods of breast cancer were those who had higher educational level that in turn influenced their knowledge and awareness on breast cancer (Ministry of Health Malaysia, 2007). It is very important to understand the extent of people's knowledge, attitude and practice in relation to breast cancer in order to develop an effective intervention and prevention programs on breast cancer. Lack of regular cancer screening practice, which is related to poor knowledge and negative attitude, has been blamed to the late presentation of breast cancer at advanced stages (Ministry of Health Malaysia, 1999).

Poor knowledge regarding breast cancer and its screening methods may be due to the unavailability of information in the absence of regular educational campaign. Some women may be unaware of the need for BSE. Women who have specific breast complaints may not know where to go.

Cultural values with respect to modesty and sexuality partly account for the lack of attention to breast health. Some women are not comfortable when talking about breast or sexuality. Many may feel that breast examination is an intimate examination. Some may feel upset or surprise if their physician requested to examine

their breast. Many women prefer female physician when examining their breast and may actually postpone or delay consultation out of embarrassment (Narimah, 1997).

The women's knowledge, attitude and practice regarding breast cancer are closely related to previous life experiences with illness and medical systems, religious beliefs, socio-economic factors and the impact of mass media and healthy lifestyle campaigns mounted by the Ministry of Health.

1.5 Knowledge, attitude and practice questionnaire (KAPQ)

Some of the knowledge, attitude and practice (KAP) questionnaires are easy to administer and may take only 10 to 20 minutes to complete (Bott *et al.*, 1998) and have acceptable degree of internal consistency (Jacobson *et al.*, 1994). This is important as there are literally thousands of surveys and questionnaires already in existence designed to measure particular knowledge, attitude and practice. Attention should be given to measurement properties of the instrument that include tests of validity and reliability (Garraat *et al.*, 2002).

Before beginning the process of creating awareness in any given community, it is first necessary to assess the environment in which awareness creation will take place (Kaliyaperumal, 2004). KAP study measures the knowledge, attitude and practice of a community. It serves as an educational diagnosis of the community. The proper assessment of KAP will also ensure the appropriateness of education programmes, lifestyles evaluation or policy changing.

Knowledge regarding risk to health is an important determinant of practice and is the focus of many health education strategies. According to Swift *et al.* (2006), the goal of health education is to change practice, but it has been argued that the most appropriate outcome measure for the evaluation of health education is to improved knowledge level. Therefore, the KAP surveys are very useful and effective in providing baseline KAP measurement for evaluating an intervention program.

1.6 Questionnaire validation

Once the KAP questionnaire for the study was prepared, it must be validated. The validation should be aimed at assessing their ease of comprehension, relevance to their intended topics, effective in providing useful information and the degree to which the questions are interpreted and understood by different individual (Kaliyaperumal, 2004). Hence, standardized and validated questionnaire, which objectively measure the KAP on breast cancer would be helpful.

1.6.1 Validity

Validity is one of the most important considerations in test evaluation. Validity refers to the appropriateness, meaningfulness and usefulness of the specific inferences made from the test scores (Testa and Simonson, 1996, McDermott and Sarvela, 1998). It is a matter of degree rather than an all or none property, and validation is also an unending process (Nunnally, 1970).

A valid instrument is the one that measures what it is supposed to measure and has the ability to express its ability to measure the concept it purports to measure (Streiner and Norman, 1989). In other words, validation is offering the evidence that the persons answering the questionnaire items understood what the items were asking in a way that is reasonably the same as the questionnaire developer (Griffiee, 2001). Nunnally (1967) added, that it is not a measuring instrument, but it measure what the researcher wants to measure.

There are many ways of gathering evidence concerning the validity of an instrument and its interpretations. The most frequently used forms of validity in health education evaluation practice are face validity, content validity, criterion-related validity and construct validity (Robert and Paul, 1993, Ware *et al.*, 1993, McDermott and Sarvela, 1998, Fayers and Machin, 2000).

1.6.1.1 Face validity

At first, one issue that must be decided before the items are written or selected is whether or not they should have face validity, that is do the items appear on the surface to be measuring what they actually are (Streiner and Norman, 2003). According to McDermott and Sarvela (1998), face validity is the lowest levels of validity that an instrument can possess. An instrument is said to possess face validity if on the face of things, the instrument appears to measure the construct under consideration, appropriate for the audience for which it is intended and obvious to the investigator (Nunnally and Bernstein, 1994, McDermott and Sarvela, 1998, Abramson and Abramson, 1999, Fayers and Machin, 2000).

It may be obvious for instance that the dates of birth recorded on birth certificates provide a valid measure of age. It is sometimes called ‘the armchair validity’ and is established when a person examines the test and concludes that it measures the relevant contents (Streiner and Norman, 1989), and appears to be appropriate for the audience for which it is intended (Paddock *et al.*, 2000, Warschburger *et al.*, 2003).

1.6.1.2 Content validity

Content validity is a closely related concept, consisting of a judgment whether the instrument samples all the relevant or important content or domains (Streiner and Norman, 2003). That means content validity do not require statistical analysis to test whether an instrument is valid or not. Content validity is related to the adequacy of content of an instrument, in terms of the number and scope of the individual questions that it contains (Fayers and Machin, 2000). To ensure the instrument have good content validity, there are many things to be considered such as appropriateness of the items included, number of items, topics to be covered, wording and whom want to be measured (Fayers and Machin, 2000).

The content validity determines how much the instrument contains the appropriate translation of the conceptual definition into operational terms (Abramson and Abramson, 1999). The assessment of content validity involves reviewing questionnaire by the professionals in the field to ensure its relevance and clarity of the items by using patient's focus group (Warschburger *et al.*, 2003). The intention of content validity is to ensure the presence of face validity and the contents of the instruments cover adequately all the items and components related to the disease or health component being studied (item coverage and relevance).

The content validity is also concerned with the extent of the items sensibility and reflection of the domains assessed through its items coverage and relevance (Fayers and Machin, 2000). With this in mind, each item on the test should relate to one of the course objective (content relevance). Items which are not related to the content of

the course introduce error in the measurement (Streiner and Norman, 1989, Abramson and Abramson, 1999).

The degree to which the sample of items, tasks or questions on a test are representative of some defined universe or domain of content is usually established by a panel of experts (Ware *et al.*, 1993). Any measures intended to be used in knowledge, attitude and practice studies need to have acceptable content validity among others in areas related to both literature review and discussions with individuals involved in patient management (Hanestad and Albrektsen, 1991), patients or organization providing services and care to the patients (Bradley *et al.*, 1999).

1.6.1.3 Construct validity

Construct validity, another form of validity is evaluated through examination of correlation between the scales or dimensions or domains of two or more instruments. Scales measuring similar concepts should have substantial correlations with each other, while scales that measure dissimilar constructs should have lower correlations (Gandek and Ware, 1998).

Construct validity is one of the most important characteristics of the measurement instruments and plainly means how well an instrument measures the construct that it is designed to measure. Translating into practical application, construct validity is primarily concerned with checking dimensionality (how well the item measures what it supposes to measure), homogeneity (whether the item measures similar

characteristic) and overlap between latent variables (any more than a single item measuring the same characteristic) (Fayers and Machin, 2000).

During examination of construct validity, both the test and the underlying theory must be evaluated. There are three steps to accumulate evidence of validity related to theoretical construct that is to specify the domains of variables or the blueprint for the construct, to establish the internal structure of the observed variables and to verify theoretical relationships between scale scores and external criteria (Ware *et al.*, 1993).

The internal validation is the relative ability of the scales to measure independent dimensions of health (Ware *et al.*, 1993), and one of the commonly used statistical approaches for assessing internal validation of construct validity is factor analysis (Robert and Paul, 1993, Fayers and Machin, 2000). Factor analysis is used to measure the intercorrelations of a set of items to each other, and factor scores are developed as a result of these correlational analysis. Factor analysis attempts to identify underlying variables, or factors, that explain the pattern of correlations within a set of observed variables. Factor analysis is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables (SPSS 2009).

1.6.2 Reliability

Before one can obtain evidence that an instrument is measuring what is intended, it is first necessary to gather evidence that the scale is measuring something in

reproducible fashion (Streiner and Norman, 2003). Reliability means consistency, dependability, stability and carefulness (Streiner and Norman, 1989, Robert and Paul, 1993).

Reliability is an important concept for health education evaluators because an evaluator must be sure that the data collection instruments are relatively free from measurement error. Reliability reflects the proportion of the observed variance in scores that is due to true variability in the measured concepts, and not to measurement errors. The individual's observed score (the score that the instrument produces) is made up of true score and an error score (the amount of error that is present due to the unreliability of the measurement instrument) (McDermott and Sarvela, 1998).

Some random error is involved in all scientific measurements and may make the measurement unreliable (Nunnally, 1970). There are many sources of error contributes in measurements. One source of measurement error is the day-to-day fluctuations in the individual which lower or raise score (Nunnally, 1964). For example, changes in mood and physical well-being can contribute the score inconsistent in two occasions by the same person. It depends on condition of the subjects.

Another error is error due to the sampling of content and this is the major source of error in most psychological measurement (Nunnally, 1964). The more questions there are, the less unreliability will come from the sampling questions (Nunnally,

1970). If the test contains only 20 questions, luck will probably have a greater influence on test scores than if 100 questions used instead.

The third error in producing unreliable measurements is in scoring test. In multiple choice tests, the errors in scoring are purely mechanical, but if the test is scored by hand, it is possible to accidentally score some correct is incorrect and vice versa (Nunnally, 1964). Lastly, errors due to guessing occur in measurement where the subject is asked to identify the correct answer from two or more choices (Nunnally, 1970). For example, in true-false measurement for measuring knowledge of breast cancer, the subject who knew nothing at all about breast cancer is able to guess the answer from the three options given. There will be a one-third probability to get correct answer.

1.6.2.1 Internal consistency

Internal consistency examines the average correlation among items within a test. It measures the degree to which the items 'hang together' or the degree to which items relate to each other (Nunnally and Bernstein, 1994). Internal consistency estimates the correlation between an existing test and a hypothetical equivalent form, one that may never actually be constructed. If scales containing multiple items, all the items should be consistently measure the same thing (Fayers and Machin, 2000). Its advantage over other forms of reliability like test retest is that only single administration of one form of the instrument to one group of subjects is needed (McDermott and Sarvela, 1998, Fayers and Machin, 2000, Jackson and Furnham, 2000).

The internal consistency that is most commonly used is the Cronbach's alpha (Streiner and Norman, 1989, Gandek and Ware, 1998). Cronbach's alpha is chosen as it is a widely used method based on the correlation between the items and its use in medical research is expected to be more frequent (Bland and Altman, 1997). The assumption of reliability is that the items being tested are unidimensional or the items relate well with the others. If an evaluator is developing an instrument that covers several different areas, it will be necessary to estimate the reliability of each content area separately (each individual subscale) rather than the total instrument for the 'truest' measure of internal consistency (Ware *et al.*, 1993, McDermott and Sarvela, 1998).

There are no specific cut off values for what levels of reliability are acceptable. For basic research or evaluation study, a minimum value of 0.60 is desirable, for applied studies 0.80 or greater is preferred, and for work that involves clinical decision, reliability should exceed 0.90 (Nunnally and Bernstein, 1994, Bland and Altman, 1997). Others have less stringent requirement, that the Cronbach's alpha which equals or higher than 0.70 may have already exceeded the minimum standards (Warschburger *et al.*, 2003).

1.6.2.2 Test retest reliability

Another form of reliability that appears in health education research is test retest reliability. This form of reliability estimates based on correlation of two equivalent forms of the scale which measures stability over time, is administering the same test to the same subject at different time (Nunnally, 1970).

It is very important to select patients whose condition is stable, and to choose carefully at between assessment time-group that is neither too short nor too long (Fayers and Machin, 2000). If the two test administrations occurred on the same day, or only several days apart, there would be an insufficient or basis for measuring the errors due to fluctuating moods or physical condition. Also, if the time span between administration is very short, individual will remember the first test and will tend to repeat their work habits, guessing behavior and characteristic mistakes on the second test (Nunnally, 1970).

According to Nunnally (1964), there are two important disadvantages in using the retest method. The first is because the content on both occasions is the same, the obtained reliability coefficient will reflect none of the error due to sampling of content. The second disadvantage is that the individual's memory of the answers he gave on the first test administration influences the answers he gives in the second test administration.

1.7 Justification of the study

Breast cancer is an important public health problem and has a significant morbidity and mortality among Malaysian women. It was the most common female cancer (McPherson *et al.*, 2000) which is the second commonest cause of cancer deaths in women worldwide (Okobia *et al.*, 2006) as well as in Malaysia (Ministry of Health Malaysia, 2007). Breast cancer is treatable, but poor awareness and understanding of the disease contribute to the deaths of many women in Malaysia. About one-third of breast cancer cases develop in pre-menopausal women, in whom the cancer is often much more aggressive. In addition, patients of all ages seek treatment only when the disease has reached an advanced stage that is more difficult to treat (Caffarella and Rosemary, 2004).

Awareness is a critical factor in ensuring that this disease is detected early, treated and controlled successfully. Early diagnosis and getting appropriate medical attention can save lives and avoid the ravages on this disease. Unfortunately in Malaysia, of the new cases that were identified each year, nearly 40% were already in the very advanced stages of the disease (Ministry of Health Malaysia, 1997). In contrast, in the United States where more than 200,000 new cases are diagnosed each year, only 6% are the advanced stages (National Cancer Institute, 1999). Therefore it is need to focus greater efforts on increasing public awareness of breast cancer, particularly on the early detection of the disease. Breast screening has proven to be the best way to detect breast cancer at its earlier stages, allowing for the greatest chance of complete cure.

Late presentation has been observed as the hallmark of breast cancer and an earlier onset has been reported in this country. It is commonly accepted that delayed presentation is associated with lower survival rate and has limited options of available treatment. Delayed presentation of breast cancer may be due to lack of education, negative attitudes and beliefs and inaccessibility to screening program. People in the east coast of Malaysia still have strong beliefs in traditional medicine and some will seek treatment from traditional healers first before present at the hospital or clinic (Norsa'adah, 2001).

Based on these facts, it is important to identify level of knowledge, attitude and practice (KAP) of breast cancer and screening behaviour in our community for early detection. However, a valid and reliable instrument for determining the KAP of Malaysian women on breast cancer has not been reported. Even though breast cancer is so common nowadays, but there is still no validated Malay language version of KAPQ to measure Malaysian women's beliefs about breast cancer and screening behaviours. Hence, validation and reliability of KAPQ are essential to have valid and reliable tool to assess and provide valid information. The purpose of this study was to test the validity and reliability of the Malay language version of KAPQ on breast cancer among women attending Family Medicine Clinic, HUSM.

1.8 Conceptual framework

In this study, conceptual framework of knowledge, attitude and practice (KAP) on breast cancer and screening behaviors was based on health belief model. Health belief model was designed to explain health behavior by better understanding beliefs about health. This model was originally articulated to explain why individuals participate in public health program (Becker, 1974).

In order to adopt behaviors which minimize risk of breast cancer, initially individuals need to believe that they are at risk of breast cancer and the consequences of breast cancer are serious. Then, they believe that risk minimization practices (such as breast examination) will greatly reduce the risk of breast cancer. They also believe that the benefits of action to reduce risk will outweigh potential cost and barriers, such as embarrassment and negative reaction of partner or community. Last but not least, they believe in their ability to take effective action, such as regularly practice breast self examination (BSE), clinical breast examination (CBE) and/or mammography (Figure 1.1).