THE RELATIONSHIP OF HEALTH BELIEFS ON THE STAGE OF MAMMOGRAPHY BEHAVIOR ADOPTION AMONGST WOMEN IN KUANTAN, PAHANG

BY

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ABSTRACT

Introduction: Breast cancer (BC) awareness is relatively poor among Malaysian women indicated by the presence of BC at a late stage and the low rate of mammography screening. Only a few theoretically based studies have been conducted on Malaysian women's participation in mammography. However, no study found in Malaysia concurrently used the health belief model (HBM) and stages of change model (SoC) to explain breast cancer screening behavior such as mammography. Further very few studies had been carried out especially on woman living in the east coast of West Malaysia. Therefore, this study aims to use HBM and SoC to determine the relationship between health beliefs on the behavioral adoption of mammography amongst women in Kuantan, Pahang. **Methodology:** Five hundred and twenty women were randomly selected to complete the survey. Data was analyzed using multinomial logistic regression (MLR) to ascertain the multivariate relationship between health beliefs and stages of mammography behavioral adoption. **Results:** The chi-square test reflected that a significant difference existed between socio-demographic factors (age, marital status and family income) and the stages of mammography behavioral adoption. The MLR test also indicated that a significant difference existed between health beliefs (perceived susceptibility, severity, barriers, motivator factors and self-efficacy) and the stages of mammography behavioral adoption. **Conclusion:** Women aged 41 to 55 years and married were found to be possibly conscious of their risk of developing breast cancer. This attribute together with spousal support manifested in them showing positive attitude towards regular mammography screening. Women who have high health belief were most likely to engage in mammography screening as they perceived breast cancer as a threat to their well-being. The data obtained from this study would aid in enhancing educational and interventional programs in promoting awareness and the importance of early breast cancer detection such as adoption of mammography screening.

Keywords: Breast cancer, mammography, health behavior, health belief model, stage of change model

خلاصة البحث

مستوى الوعي بسرطان الثدي ضعيفٌ نسبيا بين النساء الماليزيات ويدل على ذلك اكتشافه في مراحل متأخرة وأيضا انخفاض معدل التصوير الشعاعي للثدي. تم إجراء عدد قليل فقط من الدراسات النظرية حول مشاركة النساء الماليزيات في التصوير الشعاعي للثدي، ومع ذلك لم يتم العثور على أي دراسة في ماليزيا استخدمت بشكل متزامن نموذج المعتقد الصحي ونموذج مراحل التغيير لشرح السلوك المتعلق بفحص سرطان الثدي مثل تبني التصوير الشعاعي للثدي، وهناك أيضا القليل جدا من الدراسات المركزة على النساء في الساحل الشرقي لماليزيا الغربية. ولذلك هدفت هذه الدراسة إلى استخدام نموذج المعتقد الصحي ونموذج مراحل التغيير لتحديد العلاقة بين المعتقدات الصحية على التبني السلوكي للتصوير الشعاعي للثدي بين النساء في مدينة كوانتان بولاية باهانج. تم اختيار خمسمائة وعشرين امرأة بشكل عشوائي لاكمال الدراسة. تم تحليل البيانات باستخدام الانحدار اللوجستي متعدد الحدود للتأكد من العلاقة متعددة المتغيرات بين المعتقدات الصحية ومراحل التبني السلوكي للتصوير الشعاعي. أظهر اختبار مربع كاي وجود فرق كبير بين العوامل الاجتماعية-الديموغرافية (العمر، والحالة الاجتماعية، ودخل الأسرة) وبين مراحل التبني السلوكي للتصوير الشعاعي للثدي. أشار اختبار الانحدار اللوجستي متعدد الحدود أيضًا إلى وجود اختلاف كبير بين المعتقدات الصحية (القابلية المتصورة، والشدة، والعوائق، والعوامل المحفزة، والكفاءة الذاتية) وبين مراحل التبني السلوكي للتصوير الشعاعي للثدي. أظهرت النتائج أن النساء المتزوجات اللواتي تتراوح أعمارهن بين 41 و 55 عاما قد يكونن واعين بشأن خطر الإصابة بسرطان الثدي. تجلت هذه السمة مع الدعم الزوجي في إظهار موقف إيجابي تجاه الفحص الشعاعي للثدي المنتظم، وكانت النساء ذوات المعتقد الصحي المرتفع أكثر احتمالا للقيام بفحص التصوير الشعاعي لاعتبارهن سرطان الثدي تهديدًا لرفاهية الحياة. ستساعد البيانات التي تم الحصول عليها من هذه الدراسة في تحسين البرامج التعليمية والتدخلية لتعزيز الوعي والتركيز على أهمية الكشف المبكر عن سرطان الثدي مثل تبني التصوير الشعاعي للثدي.

APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a thesis for the degree of Master of Health Sciences (Medical Imaging).

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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Hanis Aisyah Binti Ramli

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LIST OF ABBREVIATIONS

ASR	Age-standardized rate
BSE	Breast self-examination
CBE	Clinical breast examination
CHBMS	Champion's health beliefs model scale
DCIS	Ductal carcinoma in situ
HBM	Health beliefs model
IBC	Inflammatory breast cancer
IDC	Invasive ductal carcinoma
SoC	Stages of Change
MRI	Magnetic Resonance Imaging
EFA	Exploratory factor analysis

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Breast cancer is the commonest type of cancer associated with women and is the leading cause of cancer deaths amongst women globally. The incidence of breast cancer on a global scale was reported to have increased from 641,000 in 1980 to 1,643,000 in 2010 with an annual increase of 3.1% (Forouzanfar et al., 2011). Furthermore, global cancer statistics (GLOBOCAN) (2018) reported that the age-standardized rate (ASR) for breast cancer in women was 46.3 per 100,000 by 2018 (Bray et al., 2018). On the other hand, the ASR incidence of breast cancer in Malaysia at 38.7 per 100,000 was reported as slightly below the ASR global mean at 43.3 per 100,000 (The Economist Intelligence Unit Limited, 2016). Nevertheless, Malaysia's mortality rate at 18.9 per 100,000 was reported to be 47% higher than the world mortality rate at 12.9 per 100,000. Breast cancer incidence and mortality rates vary amongst different populations (Taymoori, Berry & Farhadifar, 2012). As known, Malaysia is a multiethnic country that comprises of Malays, Chinese, Indians and others. The National Cancer Registry (NCR) (2007-2011) reported that the ASR incidence of breast cancer amongst Chinese women was 41.5 per 100,000 which was higher compared to Indians (37.1 per 100,000) and Malays (27.2 per 100,000). Additionally, previous studies found several factors that contributed to the higher chance of getting breast cancer amongst Chinese women such as low breastfeeding rate, shortest breastfeeding duration, lowest parity and late age full-term pregnancy compared to the Indians and Malays (Yip, Pathy & Teo, 2014; Tan et al., 2018).

Furthermore, the incidence of breast cancer amongst Malaysian women was commonly found to be detected at later stages compared to women from western countries and Singapore (Yip et al., 2014). Previous studies also reported that approximately 40% of Malaysian women have been detected with stage 3 or stage 4 breast cancers (Yip et al., 2014). Though the Malays were reported to have the lowest ASR compared to Chinese and Indians, studies found that breast cancer amongst Malay women were at a more advanced stage when detected compared to the other Malaysian ethnic groups (Bhoo-Pathy et al., 2012). The cellular tumor of Malay breast cancer patients was found to be more aggressive in nature and larger in size when compared to Chinese patients (Bhoo-Pathy et al., 2012). Additionally, Malay women face a higher risk of breast cancer mortality even after taking into consideration demographic factors, treatment and tumor characteristics (Bhoo-Pathy et al., 2012). This is probably due to the low perceived health beliefs compared to the Chinese and Indians (Bhoo-Pathy et al., 2012). Furthermore, Malaysian women were also reported to present breast cancer at a younger age in contrast to women from western countries (Yip et al., 2014). A collaborative study between two tertiary academic hospitals in Malaysia and Singapore reported that about 50% of women were found with breast cancer before the age of 50 (Pathy et al., 2011) whilst only 20% of women in most western countries such as UK and Netherlands were diagnosed before the age of 50 (Yip et al., 2014). A similar cancer detection age pattern was reported in India, Taiwan and Singapore (Pathy et al., 2011) when compared to American (Jemal et al., 2010) and Dutch (Bastiaannet et al., 2010) women. Studies found two factors that account for the younger mean age of breast cancer presentation in Malaysian women. Firstly, Malaysia has a younger demographic with a median age of 26.1 years while a western country such as the UK has an older demographic with a median age of 38.9

years (Yip et al., 2014). Secondly, a previous study found that the cohort effect of the current older population in Malaysia that practiced lower lifestyle risks such as having more children, higher breastfeeding rate and lower urbanization which resulted in lower-risk of post-menopausal breast cancer incidences (Yip et al., 2014).

1.2 STATEMENT OF THE RESEARCH PROBLEM

Early detection was found to be a survival determinant from breast cancer which is dependent on disease awareness and the uptake of mammographic screening. Mammography is one of the methods that can diagnose breast cancer at an early stage and is considered as the gold standard for breast cancer screening (Canadian Task Force on Preventive Health Care, 2011; Ministry of Health Malaysia, 2010). However, many studies found that women's participation rate in the breast cancer screening program is still low (Fouladi et al., 2013; Keten et al., 2014; Moodi et al., 2012; Noroozi & Tahmasebi, 2011). This is possibly due to the lack of information on breast cancer screening, lack of knowledge and time, discomfort (Todd & Stuifbergen, 2011), pain, embarrassment, issues pertaining to modesty (Alexandraki & Mooradian, 2010), radiation dose, fear of cancer discovery, fatalism (Cam & Gumus, 2009), misinformation and lack of recommendation from physicians (Mamdouh et al., 2014).

In Malaysia, mammographic screening remains underutilized and is dependent on the women's initiative to self-refer. Further, many studies in Malaysia mainly focused on the subject of breast cancer awareness, knowledge of breast cancer and breast self-examination (Al-Naggar & Bobryshev, 2012; Hassan et al., 2015; Mahmud & Aljunid, 2018; Tan et al., 2018; Yip et al., 2014). However, only few studies in Malaysia explored the relationship between health beliefs and the behavioral adoption of mammography amongst Malaysian women. Additionally, most of the studies were

conducted in the west coast of West Malaysia such as in Kuala Lumpur, Selangor and Penang where the population are represented by the multi-ethnicity composition of Malays, Chinese, Indians and others. As an example, in Kuala Lumpur, the population consists of 45.9% Malays, 43.2% Chinese, 10.3% Indians and 0.6% other races (Brinkhoff, 2017). However, compared to the east coast of West Malaysia, the population is dominated by Malays followed by Chinese, Indians and other. For instance, in Pahang, the population comprises of 78.9% Malays followed by 16.2% Chinese, 4.4% Indians and 0.5% other races (Brinkhoff, 2017). Further, Pahang is the largest state in the east coast of West Malaysia. As such, this study was conducted in Kuantan, Pahang to elicit whether a relationship existed between health beliefs and the stage of mammography adoption amongst the community there.

Health beliefs are closely related to health screening behavior. Hence, it is very important that theoretically-based factors of health beliefs are employed while exploring mammogram screening behavior. The health belief model (HBM) is a psychosocial model that accounts for health behaviors by identifying factors associated with individuals' beliefs which influence their behaviors (Champion & Scott, 1997). Hence, this model has been widely used as a conceptual framework to explain and predict health-related behaviors. The HBM is deduced from a theory that an individual behavioral change is primarily based upon four factors which are perceived susceptibility (one’s beliefs of her chances of getting breast cancer), perceived severity (one’s beliefs of the seriousness of the condition), perceived benefits (one’s beliefs in the efficacy of the advised action to reduce risk or seriousness of impact), and perceived barriers (one’s opinion of the tangible and psychological costs of the advised action) to have a mammography.

The stages of change model (SoC) can be used to examine the stages of change that a person moves through when adopting behavior. This model was used in many past studies in determining the relationship between stage of behavioral adoption and health belief in promoting breast cancer screening. The model proposes that a person moves through a sequence of six stages which are pre-contemplation (never had a mammogram and not planning to get one within the next one to two years), relapse (had one or more mammograms but is now off schedule and does not plan to have a mammogram in the next one to two years), contemplation (never had a mammogram but plan to get one within the next one to two years), relapse risk (have had a previous mammogram within the past 24 months, but no plan to get one within the next year or two), action (had one mammogram on schedule and plan to have another one within the next year or two), and maintenance (had at least two mammograms and intends to get another on schedule) (Rakowski et al., 1993).

Searches through the literatures indicated that only a few studies used theoretically-based studies in studying Malaysian women in the east coast of West Malaysia partake in mammographic screening. Even though the integration of both models offers good theoretical strength in exploring breast cancer screening behavior, no study has been found in Malaysia that used these models concurrently to explain the relationship of health beliefs and stages of mammography adoption. As such, this study aims to use HBM and SoC to determine the relationship between health beliefs and the stages of mammography behavioral adoption among women in Kuantan, Pahang. A better understanding of women's mammography health beliefs and perceptions will assist in creating a tailored intervention to encourage women to move towards the advanced stage of mammography such as the maintenance stage. This may also provide a baseline assessment for future intervention programs to promote

early detection and early management of breast cancer. This study may also help in creating awareness amongst women the importance of breast cancer screening, hence, increasing the rate of mammogram screening uptake amongst women in Kuantan, Pahang.

1.3 PURPOSE OF THE STUDY

To determine the relationship between health beliefs and the stages of mammography behavioral adoption amongst women in Kuantan, Pahang using the health belief model (HBM) and stages of change model (SoC).

1.4 RESEARCH OBJECTIVES

The study aims to achieve the following objectives:

1.4.1 General Objective

The general objective of this research is to determine the relationship between health beliefs and the stages of mammography behavioral adoption amongst women in Kuantan, Pahang.

1.4.2 Specific Objectives

1. To ascertain the association between socio-demographic factors (age, marital status, level of education and family income) and stages of behavioral adoption of mammography.
2. To determine the relationship between health beliefs (perceived susceptibility and severity of breast cancer, perceived benefits and barriers of mammography, motivator factors, self-efficacy and cues to action) and the stages of mammography behavioral adoption.

1.5 RESEARCH QUESTIONS

The following are the research questions pertaining to this study:

1. Is there a relationship between socio-demographic factors (age, marital status, level of education and family income) and the stages of mammography behavioral adoption?
2. Is there a relationship between related beliefs (perceived susceptibility, severity, benefits, barriers, motivator factors, self-efficacy and cues to action) and stages of behavioral adoption of mammography?

1.6 HYPOTHESIS

Ho_1: Socio-demographic factors have no significant relationship with the stage of mammography behavioral adoption.

Ho_{1A}: Age has no significant relationship with the stage of mammography behavioral adoption.

Ho_{1B}: Marital status has no significant relationship with the stage of mammography behavioral adoption.

Ho_{1C}: Level of education has no significant relationship with the stage of mammography behavioral adoption.

Ho_{1D}: Family income has no significant relationship with the stage of mammography behavioral adoption.

Ho_2: Related beliefs have no significant relationship with the stage of mammography behavioral adoption.

Ho_{2A}: Perceived susceptibility has no significant relationship with the stage of mammography behavioral adoption.

Ho_{2B}: Perceived severity has no significant relationship with the stage of mammography behavioral adoption.

Ho_{2C}: Perceived benefits have no significant relationship with the stage of mammography behavioral adoption.

Ho_{2D}: Perceived barriers have no significant relationship with the stage of mammography behavioral adoption.

Ho_{2E}: Motivator factors have no significant relationship with the stage of mammography behavioral adoption.

Ho_{2F}: Self-efficacy has no significant relationship with the stage of mammography behavioral adoption.

Ho_{2G}: Cues to action have no significant relationship with the stage of mammography behavioral adoption.

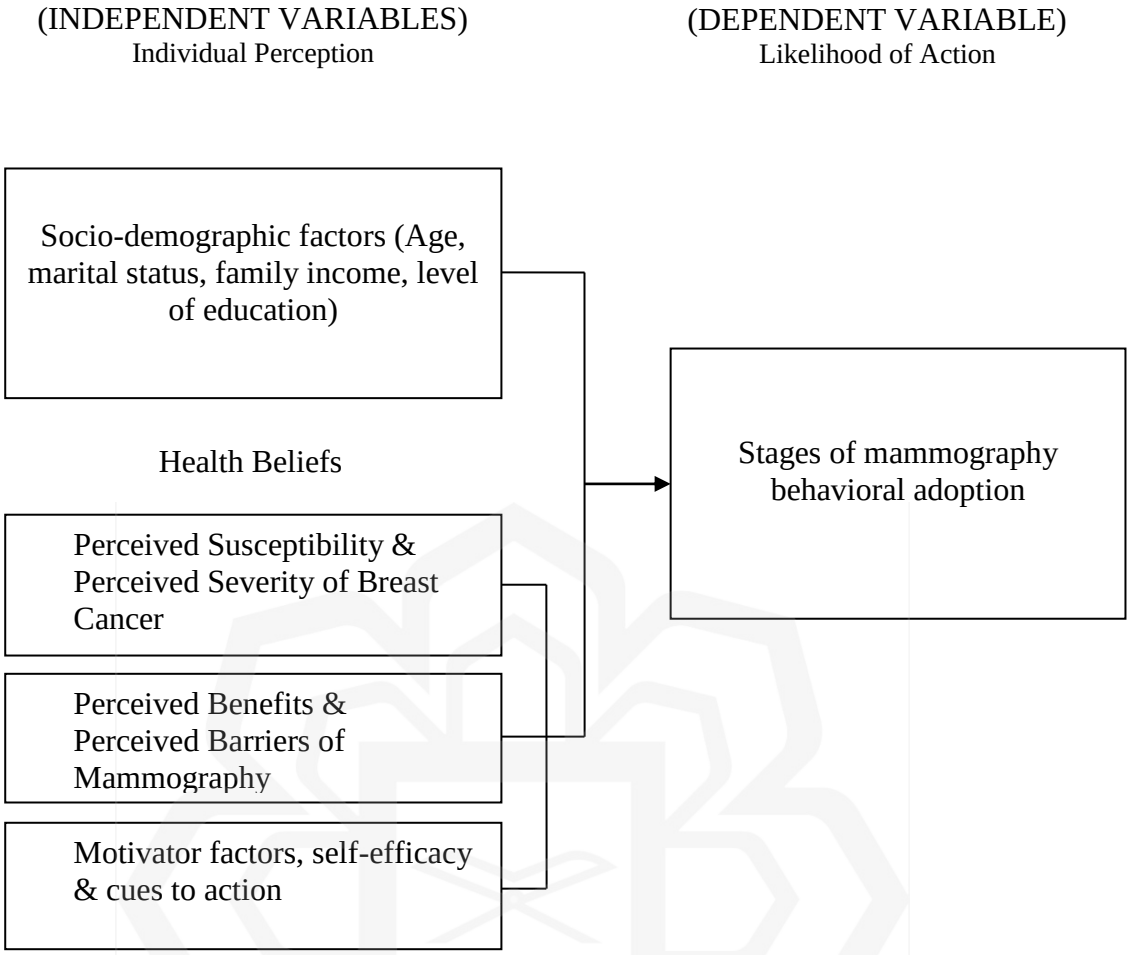

Figure 1.1 Hypothetical Conceptual Framework of the Study

1.7 SIGNIFICANCE OF THESTUDY

The findings of this study may aid in creating interventions tailored to encourage women to move forward to the maintenance stage. Besides, with better understanding, steps can be taken to increase the level of awareness of breast cancer amongst women, making mammography screening a routine to be feasible and effective, thereby, increasing early detection of breast cancer resulted in lowering risk of breast cancer mortality.

Furthermore, understanding one's beliefs and perception that can lead to mammography behavioral adoption to reduce breast cancer risk are important in aiding screening programs, development of policy and clinical care. Additionally, this information can be used to create community educational programs on risk factors, signs and symptoms of breast cancer as well as methods for early detection of breast cancer. As such, the findings of this study may aid in promoting early detection and management of breast cancer by providing a baseline assessment for future interventional programs.

1.8 LIMITATIONS OF THE STUDY

The study may be limited due to the following:

1. The answers given by the respondents may not be reflective of the actual scenario of their health beliefs and stage of adoption of mammography as the responses given may be biased, especially when the survey is completed in the presence of researchers. This is because the questions in the questionnaire focus on positive breast screening practices.
2. As this was a quantitative survey, the respondents' feeling and actions cannot be known in providing the depth and detail regarding their feeling, behavior and attitude.
3. As this survey focused on women in Kuantan, Pahang, the study may not be reflective of the entire health beliefs, practice of mammography screening and experiences due to the invariability of respondents who were mainly Malays.
4. As this research was only conducted amongst women in Kuantan, Pahang to elicit their health beliefs and stage of mammography adoption, the data obtained cannot be generalized to women in Malaysia.

1.9 DEFINITIONS OF TERMS

Mammography

This refers to a specialized imaging modality that uses low energy x-rays specifically for breast tissue imaging (World Health Organization, 2015).

Perceived Susceptibility

It refers to one's opinion of the chances of getting a disease such as breast cancer (Glanz et al., 2008).

Perceived Severity

It refers to one's opinion of the seriousness of the disease condition and its consequences (Glanz et al., 2008).

Perceived Benefits

It refers to one's beliefs in the efficacy of the advised action to reduce the risk or seriousness of the impact (Glanz et al., 2008).

Perceived Barriers

It refers to one's opinion of the tangible and psychological costs of the advised action (Glanz et al., 2008).

Motivator Factors

It refers to the drivers of human behavior and includes the desire to comply with treatment and the belief that people should do what (Glanz et al., 2008).

Self-Efficacy

It refers to confidence in one's ability to take action and succeed at making the change (Glanz et al., 2008).

Cues to Action

It refers to the exposure to the external and internal factors that prompt one's action (Glanz et al., 2008).