

**HEALTH BELIEFS, ACCEPTANCE, AND ITS ASSOCIATED FACTORS TOWARD
BREAST CANCER SCREENING AMONG FEMALE STAFF IN A TEACHING
TERTIARY HOSPITAL, IN MALAYSIA**

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LIST OF ABBREVIATIONS

BCS	Breast Cancer Screening
BSE	Breast Self-Examination
CBE	Clinical Breast Examination
HBM	Health Belief Model
HPV	Human Papilloma Virus
JEPeM	Jawatankuasa Etika Penyelidikan Manusia
USM	Universiti Sains Malaysia

ABSTRAK

Pengenalan:

Di Malaysia, kanser payudara adalah kanser yang paling biasa dan penyebab kematian berkaitan dengan kanser yang paling utama di kalangan wanita. Oleh itu, pengesanan dan diagnosis awal melalui amalan saringan kanser payudara adalah penting untuk meningkatkan kadar kelangsungan hidup. Kepercayaan kesihatan dan penerimaan adalah faktor utama dalam menentukan amalan dan tingkah laku terhadap pemeriksaan saringan kanser payudara. Oleh itu, kajian ini bertujuan untuk menentukan kadar kepercayaan kesihatan yang baik dan kadar penerimaan terhadap pemeriksaan kanser payudara dan mengenal pasti faktor-faktor yang berkaitan dengan kadar kepercayaan yang baik di kalangan kakitangan wanita di Universiti Sains Malaysia (USM).

Metodologi:

Satu kajian keratan rentas telah dijalankan ke atas 406 kakitangan wanita di Kampus Kesihatan, Universiti Sains Malaysia dari bulan Jun hingga Disember 2021. Persampelan rawak secara sistematik telah digunakan sebagai pengumpulan sampel. Data dikumpul menggunakan soalan Soal Selidik Kepercayaan Kesihatan versi Bahasa Melayu dan soal selidik penerimaan yang ditadbir sendiri. Statistik secara deskriptif, termasuk regresi logistik ringkas dan regresi logistik pelbagai digunakan untuk menganalisa data.

Keputusan:

Perkadaran kepercayaan kesihatan yang baik dan penerimaan masing-masing adalah 93.3% dan 75.6%. Pekerjaan yang berkaitan dengan perubahan [OR (95% CI): 2.2 (0.99, 5.02)], menerima sokongan motivasi daripada pasangan dan rakan [OR (95% CI): 7.3 (1.69-31.69)], dan pengetahuan yang baik [OR (95% CI): 2.6 (1.13,6.04)] dikaitkan dengan

kepercayaan kesihatan yang baik. Hubungan antara kepercayaan kesihatan yang baik terhadap pemeriksaan kanser payudara dan penerimaan untuk mengambil mamografi pada masa akan datang adalah signifikan secara statistik [OR (95% CI): 4.2 (1.44,12.52)].

Kesimpulan:

Kajian ini mendapati majoriti kakitangan wanita di Universiti Sains Malaysia mempunyai tahap kepercayaan kesihatan yang baik dan penerimaan saringan kanser payudara yang tinggi. Pengetahuan tentang kanser payudara dan modaliti pemeriksaan kanser payudara, jenis pekerjaan, dan sokongan motivasi menentukan status kepercayaan kesihatan dan penerimaan terhadap pemeriksaan kanser payudara.

ABSTRACT

HEALTH BELIEF, ACCEPTANCE AND ITS ASSOCIATED FACTORS TOWARD BREAST CANCER SCREENING AMONG FEMALE STAFF IN A TEACHING TERTIARY HOSPITAL, MALAYSIA.

Introduction:

In Malaysia, breast cancer is the commonest cancer and cancer-related death among females. As such, early diagnosis and early detection by screening practices are important to improve survival rates. Health belief and acceptance are among the crucial factors in determining breast cancer screening practices and behavior. This study aimed to determine the proportion of good health beliefs and acceptance towards breast cancer screening and identify its associated factors among the female staff in Universiti Sains Malaysia.

Methodology:

A cross-sectional study was conducted on 406 female staff in Health Campus, Universiti Sains Malaysia from June to December 2021. Systematic random sampling was applied as sample collection. Data were collected using a self-administered Malay version of Health Belief Questionnaire and acceptance questionnaire. Descriptive statistics, including simple and multiple logistic regressions, were used for data analysis.

Results:

The proportion of good health beliefs and acceptance was 93.3% and 75.6% respectively. Medical-related occupation [OR (95% CI): 2.2 (0.99, 5.02)], received motivational support from spouse and friends [OR (95% CI): 7.3 (1.69-31.69)], and good knowledge [OR (95% CI): 2.6 (1.13,6.04)] were significantly associated with good health beliefs. The association

between good health beliefs toward breast cancer screening and their acceptance to take mammography in the future was found to be statistically significant [OR (95% CI): 4.2 (1.44,12.52)].

Conclusion:

It is found that the majority of female staff in Universiti Sains Malaysia had a high level of good health beliefs and acceptance of breast cancer screening. The knowledge of breast cancer and breast cancer screening modalities, type of occupation, and motivational support determine the health belief status and acceptance toward breast cancer screening.

CHAPTER 1: INTRODUCTION

Breast cancer is the foremost diagnosed cancer among women worldwide. In 2018, the incidence of breast cancer was 24.2% worldwide (Cancer, 2018). In Malaysia, it increased from 17.7% (2007-2011) to 19.0% (2012-2016) regardless of ethnic group and age (Cancer, 2018). Breast cancer is also the commonest cause of cancer mortality among women in developing countries and the second leading cause in developed countries. In 2018, approximately 627,000 women in Malaysia died from breast cancer that year which accounted for 15% of all causes of cancer-related mortality (MOH, 2019b).

Given the nature of breast cancer, early detection is the most important measure to improve the survival rate (MOH, 2019a). Mammograms, clinical breast examination (CBE) and breast self-examination (BSE) are effective methods for early breast cancer detection (MOH, 2019a; Nelson et al., 2016). Regular mammogram screening among women with an average risk of breast cancer is the only method that is effective in finding breast cancer at an early stage and has shown a reduction in breast cancer-related mortality (Alba et al., 2018; Dewi et al., 2019). Although there is an argument regarding the efficacy of BSE in the early detection of breast cancer, it is cheap and does not require complex techniques (Madubogwu et al., 2017; Mittra et al., 2021), and it was advocated as self-responsibility toward breast health, especially among females older than 20 years old (Alba et al., 2018; Ramli et al., 2019). Thus, with the right technique in performing BSE and CBE, they will contribute to early recognition, early diagnosis and favorable treatment options (Choi and Duffy, 2017; Monticciolo et al., 2018). Unfortunately, latest status of screening is not optimistic. The statistics from studies conducted among different groups of Malaysian women indicated that the participation rate in screening practices ranged from 26.5% for

BSE, 36.4% for CBE and 10.5% for mammography (Ramli et al., 2019). Therefore, it is crucial to explore the reasons that affect women's participation in breast cancer screening (BCS) based on health belief theories.

The main reasons for practicing BCS as part of healthy behavior were good health beliefs and acceptance of the screening modalities (Kristina et al., 2020; Ramli et al., 2019). There are five most common health behaviors/models in the studies of cancer-preventive attitudes including the Health Belief Model (HBM), Theory of Planned Behavior, Theory of Reasoned Action, Transtheoretical Model and Health Promotion Model (Choi and Duffy, 2017). Among many theories of health behavior, the HBM is relatively mature and has proven to be efficient in studying preventive behaviors in cancer (Kirag and Klzllkaya, 2019). HBM was intended to determine the factors that affect women's breast cancer beliefs and decision-making process in their screening behavior (Kirag and Klzllkaya, 2019). According to this model, health behavior, which is the integration of individual perceptions and values directing people to a certain action, is directly related to the development of disease (Alizadeh-Sabeg et al., 2021; Kirag and Klzllkaya, 2019). The components of this model are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (Champion, 1987). In the context of breast cancer, perceived susceptibility may be explained as the extent to which an individual feels vulnerable or at risk of breast cancer in the long term or immediate future. Individuals will seek preventive care if they believe they are personally at risk. It is one of the most powerful perceptions in promoting people to adopt BCS (Gonzales et al., 2018; Kirag and Klzllkaya, 2019). Perceived severity is one's belief about the complications and seriousness of breast cancer, the sequence of events after diagnosis, and feelings resulting from the consequences of breast cancer (Gonzales et al., 2018; Kirag and

Klzlkkaya, 2019). Possible medical consequences may include pain, disability, and death. Possible social and emotional consequences such as effects on work, family life and social relations (Dewi et al., 2019). Meanwhile, perceived benefits are one's belief in the efficacy of BCS for early detection of breast cancer and to reduce mortality rate (Dewi et al., 2019; Gonzales et al., 2018; Kirag and Klzlkkaya, 2019).

People tend to adopt BCS when they believe BCS will decrease their chances of developing breast cancer (Gonzales et al., 2018; Kirag and Klzlkkaya, 2019). Thus, perceived benefits play an important role in the adoption of BCS. Perceived barriers refer to the potential obstacles to take recommended BCS. It can be emotional, social, and physical. Potential barriers may include financial expenses, pain, danger of procedure, inconvenience and time-constraint (Alatrash, 2020; Ayyash et al., 2019; Kirag and Klzlkkaya, 2019). Besides that, cues to action are the strategies taken to activate one's readiness to take health action. Cues to action include recommendations by a physician and education (Abed et al., 2016; Ramli et al., 2019). The final component of HBM, the self-efficacy construct states that confidence in lifestyle change is essential before the successful change is possible and able to overcome perceived barriers to perform BCS (Gonzales et al., 2018; Kirag and Klzlkkaya, 2019). The comprehensive application of HBM helps to explain people's behavior to a greater degree, determine the social psychological factors that influence BCS, and provide a scientific evidence basis for effective future intervention programs (Choi and Duffy, 2017; Ghazi et al., 2020; Kirag and Klzlkkaya, 2019).

Numerous studies pointed out that women with good knowledge and awareness of breast cancer had good health beliefs as the majority of them obtain a high mean score on perceived susceptibility and benefits of BCS with the lowest mark on perceived barriers

(Choridah et al., 2019; Eshete et al., 2020; Ghazi et al., 2020). Other than that, few studies mentioned that females in medical-related professions revealed that the health beliefs towards mammography uptake were 3.6 times higher than those who work in non-medical-related professions (Yilmaz and Durmus, 2016; Yurtsal et al., 2020). In addition, family history of breast cancer, regular physician recommendation and those who are married or previously married were strongly associated with good health beliefs as they obtain a high mean score on perceived susceptibility and benefits of BCS with the lowest mark on perceived barriers (Alizadeh-Sabeg et al., 2021; Ramli et al., 2019; Salmani et al., 2021). Therefore, it is vital to determine the influencing factor of good belief toward BCS to develop positive attitudes and to increase screening uptake which leads to early diagnosis of breast cancer and decrease the mortality rate.

Another important factor affecting participation and intention in breast cancer screening is their acceptance to perform the test (Bhandari et al., 2021; Wang et al., 2019). Acceptance refers to the intention or readiness to engage in a specific behavior or the thought to perform the behavior (Wang et al., 2019). In the context of BCS, numerous studies conclude that when females have more comprehensive knowledge of breast cancer and BCS and access to relevant information, they will feel confident to participate in BCS and their acceptance to act will be higher (Bhandari et al., 2021; Choridah et al., 2019). It was best explained that when people obtain accurate knowledge and information about breast cancer via various methods of education, they believe that BCS is significant for their health and lives (Chin and Mansori, 2018).

Apart from that, a few studies found a correlation between attitudes and acceptance (Bhandari et al., 2021; Cicekli Tasdemir and Secginli, 2022). They mentioned that, when females believe that they can benefit from routine BCS, they would be more likely to accept

and adopt recommended BCS because they have positive attitude and perceptions towards breast cancer and BCS (Cicekli Tasdemir and Secginli, 2022; Foluso and Noela, 2017). Similar to the attitudes, females tend to accept and to take BCS, given that important persons or friends around them often encourage them to do so (Hwang et al., 2017; Yurt et al., 2019).

Supporting studies on the relationship between health belief and acceptance of BCS were scarce. Adoption of findings from different perspectives of studies on secondary prevention such as Pap smear screening, HPV vaccination, and colorectal screening found that higher susceptibility to the disease and benefit from the screening methods related to higher acceptance (Attah et al., 2019; Kristina et al., 2020; Luu et al., 2020). These findings can be explained as they believe the seriousness of cervical cancer and colorectal cancer can kill them if no early action is taken (Luu et al., 2020; Madubogwu et al., 2020). Moreover, the female participants in the studies who accept the recommended screening test was highly associated with good knowledge of the disease, high education level, young age and strong family history of the cancer (Bhandari et al., 2021; Foluso and Noela, 2017).

To date, there are limited studies conducted in Malaysia to determine the relationship between health beliefs and acceptance as well as contributing factors of good health beliefs towards breast cancer screening among women. Female staffs in the health campus constitute health staff and non-health staff. Apart from being close to the services provided, where breast cancer screening modalities are widely available, some of them are involved directly with patients living with breast cancer by giving supportive treatment. Thus, they become a primary source of information regarding breast cancer and breast cancer screening among relatives, friends, and patients.

Hence, the primary purpose of this study was to explore the factors that influence good beliefs based on HBM. Second, this study examined the relationship between good health beliefs and acceptance towards mammography uptake in the future among female staff in Universiti Sains Malaysia, Health Campus.

LIST OF REFERENCES

- D. (2020). Department of Statistics Malaysia Press Release Household Income & Basic Amenities Survey Report 2019, (**July**), 5–8.
- Abed, H. M., Ibrahim, Y. M., Lamadah, S. M., & Hassan, M. E. (2016). Application of the Health Belief University Model for Breast cancer screening and implementation educational Program for Female Students of Selected Medical and Non-Medical Faculties at Umm al Qura University. *Life Science Journal*, **13**(5), 21–33.
- Ada Leticia, V.U., Maria Valeria, J.B., Juan Carlos, E., Luis, S. J., Patricia Teresa, R.G., Sergio, G.R., & Maria Margarita, C.H. (2018). Social and Demographics Factors Associated with the Breast Self-Examination (BSE) in Women in Primary Care. *Journal of Family Medicine and Disease Prevention*, **4**(3).
- Aflakseir, A., & Abbasi, P. (2012). Health beliefs as predictors of breast cancer screening behavior in a group of female employees in shiraz. *Iranian Journal of Cancer Prevention*, **5**(3), 124–129.
- Alatrash, M. (2020). Prevalence, Perceived Benefits, and Perceived Barriers Regarding Breast Cancer Screening Among Three Arab American Women Subgroups. *Journal of Transcultural Nursing*, **31**(3), 242–249.
- Alba, L. H., Díaz, S., Gamboa, O., Poveda, C., Henao, A., Perry, F & Murillo, R. (2018). Accuracy of mammography and clinical breast examination in the implementation of breast cancer screening programs in Colombia. *Preventive Medicine*, **115**(2), 19–25.
- Alizadeh-Sabeg, P., Mehrabi, E., Nourizadeh, R., Hakimi, S., & Mousavi, S. (2021). The effect of motivational interviewing on the change of breast cancer screening behaviors among rural Iranian women. *Patient Education and Counseling*, **104**(2), 369–374. doi:10.1016/j.pec.2020.08.011
- AlJunidel, R., Alaqel, M., AlQahtani, S. H., AlOgaiel, A., ALJammaz, F., & Alshammari, S. (2020). Using the Health Belief Model to Predict the Uptake of Mammographic Screening Among Saudi Women. *Cureus*, **12**(10), 1–8.
- Attah, D., Ochejele, S., Attah, M., & Ochoga, M. (2019). Comparism of Knowledge, Attitude and Acceptance of Cervical Cancer Screening Between Female Health and Non-Health Personnel in Jos University Teaching Hospital. *Journal of BioMedical Research and Clinical Practice*, **2**(2), 113–120.
- Ayyash, M., Ayyash, M., Bahrolloomi, S., Hamade, H., Makki, M., Hassouneh, S., & Blackwood, R. A. (2019). Knowledge Assessment and Screening Barriers for Breast Cancer in an Arab American Community in Dearborn, Michigan. *Journal of Community Health*, **44**(5), 988–997.

- Bhandari, D., Shibanuma, A., Kiriya, J., Hirachan, S., Ong, K. I. C., & Jimba, M. (2021). Factors associated with breast cancer screening intention in Kathmandu Valley, Nepal. *PLoS ONE*, **16**(1), e0245856.
- Cancer, I. A. for R. on. (2018). World Health Organization. Global Health Observatory. Geneva: World Health Organization; 2018. [who.int/gho/database/en/](https://gco.iarc.fr/today/home) Retrieved from <https://gco.iarc.fr/today/home>
- Champion, V. L. (1987). The relationship of breast self- examination to health belief model variables. *Research in Nursing & Health*, **10**(6),375-382.
- Chin, J. H., & Mansori, S. (2018). Factors That Influence Females' Intention towards Breast Cancer Early Diagnosis. *Cancer and Clinical Oncology*, **7**(2), 43-47.
- Choi, S. H., & Duffy, S. A. (2017). Analysis of Health Behavior Theories for Clustering of Health Behaviors. *Journal of Addictions Nursing*, **28**(4), 203–209.
- Choridah, L., Icanervilia, A. V., de Wit, M. J. M., van Asselt, A. D. I., Kurniawan, W. T., Fahmi, Y. I., & Rengganis, A. A. (2019). Knowledge and Acceptance Towards Mammography as Breast Cancer Screening Tool Among Yogyakarta Women and Health Care Providers (Mammography Screening in Indonesia). *Journal of Cancer Education*, **36**(3),532-537.
- Cicekli Tasdemir, T., & Secginli, S. (2022). Factors Associated with Mammography Screening Among Women Living in Rural Areas. *Florence Nightingale Journal of Nursing*, **30**(2),146-153.
- Dewi, T. K., Massar, K., Ruiter, R. A. C., & Leonardi, T. (2019). Determinants of breast self-examination practice among women in Surabaya, Indonesia: An application of the health belief model. *BMC Public Health*, **19**(1), 1–8.
- Eshete, M., Abdulwuhab Atta, M., & Yeshita, H. Y. (2020). Cervical Cancer Screening Acceptance among Women in Dabat District, Northwest Ethiopia, 2017: An Institution-Based Cross-Sectional Study. *Obstetrics and Gynecology International*, **2020**.2805936
- Foluso, O., & Noela, M. (2017). Factors Predicting the Utilization of Breast Cancer Screening Services among Women Working in a Private University in Ogun State, Nigeria. *Asian Journal of Medicine and Health*, **8**(1), 1–9.
- Ghazi, H. F., Abdalqader, M. A., Baobaid, M. F., Hasan, T. N., A/P Maratha Pillai, P., Hassan, M. R., & Alabed, A. A. A. (2020). Awareness and belief regarding breast cancer among women living in Selangor, Malaysia. *Malaysian Journal of Public Health Medicine*, **20**(1), 30–39.
- Gonzales, A., Alzaatreh, M., Mari, M., Saleh, A. A., & Alloubani, A. (2018). Beliefs and behavior of Saudi women in the University of Tabuk toward Breast Self Examination practice. *Asian Pacific Journal of Cancer Prevention*, **19**(1), 121–126.

- Hwang, J. J., Donnelly, T. T., Ewashen, C., McKiel, E., Raffin, S., & Kinch, J. (2017). Sociocultural Influences on Arab Women's Participation in Breast Cancer Screening in Qatar. *Qualitative Health Research*, **27**(5), 714–726.
- Kirag, N., & Klzllkaya, M. (2019). Application of the Champion Health Belief Model to determine beliefs and behaviors of Turkish women academicians regarding breast cancer screening: A cross sectional descriptive study. *BMC Women's Health*, **19**(1), 1–10.
- Kristina, S. A., Lienaningrum, A. S., & Wulandari, G. P. (2020). Beliefs and acceptance of human papillomavirus (HPV) vaccine among parents in urban community in yogyakarta. *International Journal of Pharmaceutical Research*, **12**(3), 662–667.
- Luu, X. Q., Lee, K., Lee, Y. Y., Suh, M., Kim, Y., & Choi, K. S. (2020). Acceptance on colorectal cancer screening upper age limit in South Korea. *World Journal of Gastroenterology*, **26**(27), 3963–3974.
- Madubogwu, C. I., Egwuonwu, A. O., Madubogwu, N. U., & Njelita, I. A. (2017). Breast cancer screening practices amongst female tertiary health worker in Nnewi. *Journal of Cancer Research and Therapeutics*, **13**(2), 268–275.
- Madubogwu, C. I., Egwuonwu, A. O., Madubogwu, N. U., Njelita, I. A., Marmarà, D., Marmarà, V., & Vanderburgh, D. (2020). Beliefs and acceptance of human papillomavirus (HPV) vaccine among parents in urban community in yogyakarta. *Asian Pacific Journal of Cancer Prevention*, **12**(1), 1–9.
- Mittra, I., Mishra, G. A., DIkshit, R. P., Gupta, S., Kulkarni, V. Y., Shaikh, H. K. A., & Badwe, R. A. (2021). Effect of screening by clinical breast examination on breast cancer incidence and mortality after 20 years: Prospective, cluster randomised controlled trial in Mumbai. *The BMJ*, **372**, 1–9. doi:10.1136/bmj.n256
- MOH. (2019a). Clinical Practice Guidelines Management of Breast Cancer (Third Edition). *CPG Management of Breast Cancer (Third Edition)*.
- MOH. (2019b). *Malaysia National Cancer Registry Report (MNCRR) 2012-2016*. Ministry of Health Malaysia. Retrieved from <http://nci.moh.gov.my/index.php/ms/list-penerbitan/35-laporan/398-summary-of-malaysian-national-cancer-registry-report-2007-2011>
- Mohamed, N. C., Moey, S. F., & Lim, B. C. (2019). Validity and reliability of health belief model questionnaire for promoting breast self-examination and screening mammogram for early cancer detection. *Asian Pacific Journal of Cancer Prevention*, **20**(9), 2865–2873.
- Monticciolo, D. L., Newell, M. S., Moy, L., Niell, B., Monsees, B., & Sickles, E. A. (2018). Breast Cancer Screening in Women at Higher-Than-Average Risk: Recommendations From the ACR. *Journal of the American College of Radiology*, **15**(3), 408–414. doi:10.1016/j.jacr.2017.11.034

National Institute of Health. (2019). *National Health and Morbidity Survey 2019 Technical Report - Volume 1. Ministry of Health Malaysia* (Vol. II).

Nelson, H. D., Fu, R., Cantor, A., Pappas, M., Daeges, M., & Humphrey, L. (2016). Effectiveness of breast cancer screening: Systematic review and meta-analysis to update the 2009 U.S. Preventive services task force recommendation. *Annals of Internal Medicine*, **164**(4), 244–255.

Ramli, H. A., Moey, S. F., & Mutalib, A. M. A. (2019). The relationship of health beliefs on the stage of mammography behavior adoption amongst women in Kuantan, Pahang. *Asian Pacific Journal of Cancer Prevention*, **20**(6), 1913–1920.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social Learning Theory and the Health Belief Model. *Health Education & Behavior*, **15**(2), 175–183. doi:10.1177/109019818801500203

Rosmawati, N. H. N. (2010). Knowledge, attitude and practice of breast self-examination among women in a suburban area in Terengganu, Malaysia. *Asian Pacific Journal of Cancer Prevention*, **11**(6), 1503–1508.

Salmani, F., Moodi, M., Yousefi, A., & Norozi, E. (2021). Healthy Beliefs regarding Breast Cancer Screening in Iranian Women Health Volunteers: A Path Analysis. *Korean Journal of Family Medicine*, **42**(2), 132–139.

Senthil Kumar, M., Shanmugapriya, P. C., & Kaur, P. (2015). Acceptance of cervical and breast cancer screening and cancer awareness among women in Villupuram, Tamil Nadu, India: A cross sectional survey. *Clinical Epidemiology and Global Health*, **3**(11), 63–68.

Tarı Selçuk, K., Avcı, D., Yılmaz Dündar, G., & Mercan, Y. (2020). Breast Cancer Screening Behaviors in Women Aged 40 Years and Over in a Semi-Urban Region in Turkey: Relationships with Health Beliefs. *Healthcare*, **8**(2), 171–175.

Wang, X., Chen, D., Xie, T., & Zhang, W. (2019). Predicting women's intentions to screen for breast cancer based on the health belief model and the theory of planned behavior. *Journal of Obstetrics and Gynaecology Research*, **45**(12), 2440–2451.

Yilmaz, M., & Durmus, T. (2016). Health Beliefs and Breast Cancer Screening Behavior among a Group of Female Health Professionals in Turkey. *Journal of Breast Health*, **12**(1), 18–24.

Yurt, S., Saglam Aksut, R., & Kadioglu, H. (2019). The effect of peer education on health beliefs about breast cancer screening. *International Nursing Review*, **66**(4), 498–505.

Yurtsal, Z. B., Bekar, M., Güler, H., Çetin, P., & Cesur, B. (2020). Breast self-examination, mammography and Pap test among Turkish women: Role of healthcare professionals in Sivas. *European Journal of Midwifery*, **4**(8), 1–5.

CHAPTER 2: OBJECTIVES

2.1 GENERAL OBJECTIVES

To determine the proportion of good health beliefs, acceptance, and its associated factors toward breast cancer screening among female staff in a teaching tertiary hospital in Malaysia.

2.2 SPECIFIC OBJECTIVES

1. To determine the proportion of good health beliefs towards breast cancer screening among female staff in a teaching tertiary hospital in Malaysia.
2. To determine the proportion of acceptance towards breast cancer screening among female staff in a teaching tertiary hospital in Malaysia.
3. To determine the associated factors of good health beliefs towards breast cancer screening among female staff in a teaching tertiary hospital in Malaysia.
4. To determine the association between good health beliefs and acceptance of breast cancer screening among female staff in a teaching tertiary hospital in Malaysia.

CHAPTER 3: THE MANUSCRIPT

3.1 HEALTH BELIEFS, ACCEPTANCE, AND ITS ASSOCIATED FACTORS TOWARD BREAST CANCER SCREENING AMONG FEMALE STAFF IN A TEACHING TERTIARY HOSPITAL, IN MALAYSIA.

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3.2 ABSTRACT

Background

Breast cancer is the most common cancer and the leading cause of cancer mortality among women. As such, screening, early detection and early diagnosis of breast cancer are important for survival rate. Participation in breast cancer screening depends on the health beliefs and acceptance of screening activities. This study aimed to determine the proportion of good health beliefs and acceptance toward breast cancer screening and its associated factors among the female staff in Universiti Sains Malaysia (USM).

Methods

A total of 406 USM female staff participated in this cross-sectional study. Systematic random sampling was applied. Data were collected using a self-administered Malay version of the Health Belief Model Questionnaire and acceptance questionnaire. Data was entered and analyzed using SPSS version 26. Descriptive statistics and logistic regression analysis were used for data analysis.

Result

The proportion of good health beliefs and acceptance was 93.3% and 75.6% respectively. Medical-related occupation [OR (95% CI): 2.2 (0.99, 5.02], received motivational support from spouse and friends [OR (95% CI): 7.3 (1.69-31.69)], and good knowledge [OR (95% CI): 2.6 (1.13,6.04)] were significantly associated with good health beliefs. The association between good health beliefs toward breast cancer screening and their acceptance to take

mammography in the future was found to be statistically significant [OR (95% CI): 4.2 (1.44,12.52)].

Conclusion

Good health beliefs and acceptance of breast cancer screening among female staff were high. Good health belief, which was determined by the knowledge of breast cancer and breast cancer screening modalities, type of occupation, and motivational support would lead to good acceptance of breast cancer screening.

Keywords: Acceptance process; breast neoplasms; breast self-examinations; early detection of cancer; mammography

Short running title: Health Belief and Acceptance of Breast Cancer in Malaysia

3.3 INTRODUCTION

Worldwide, breast cancer is the foremost diagnosed cancer among women worldwide and in 2018, the incidence of breast cancer was 24.2%.¹ In Malaysia, it increased from 17.7% (2007-2011) to 19.0% (2012-2016) regardless of ethnic group and age.¹ Breast cancer is also the commonest cause of cancer mortality among women in developing countries and the second leading cause in developed countries.² In 2018, approximately 627,000 women in Malaysia died from breast cancer that year which accounted for 15% of all causes of cancer-related mortality.²

Given the nature of breast cancer, early detection is the most important measure to improve the survival rate.³ Mammography, clinical breast examination (CBE) and breast self-examination (BSE) are effective methods for early breast cancer detection.⁴ Regular mammography screening among women with an average risk of breast cancer is the only method that is effective in finding breast cancer at an early stage and has shown a reduction in breast cancer-related mortality.^{4,5} Although there is an argument regarding the efficacy of BSE in the early detection of breast cancer, it is cheap and does not require complex techniques, and it was advocated as self-responsibility towards breast health, especially among females older than 20 years old.⁶⁻⁸ Unfortunately, the current status of screening is not optimistic. The statistics from studies conducted among different groups of Malaysian women indicated that the participation rate in screening practices ranged from 26.5% for BSE, 36.4% for CBE and 10.5% for mammography.⁹ Therefore, it is crucial to systematically explore the reasons that affect women's participation in BCS based on health belief theories.

The main reasons for practicing BCS as part of healthy behavior were good health beliefs and acceptance of the screening modalities.⁹⁻¹⁰ There are five most common health behaviors/models in the studies of cancer-preventive attitude including the Health Belief Model, Theory of Planned Behavior, Theory of Reasoned Action, Transtheoretical Model and Health Promotion Model.¹¹ Among many theories of health behavior, the Health Belief Model (HBM) is relatively mature and proven to be efficient in studying preventive behaviors in cancer.¹² HBM was intended to determine the factors that affect women's breast cancer beliefs and decision-making process in their screening behavior.¹² The components of this model are perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy.¹¹ The comprehensive application of HBM helps to explain people's behavior to a greater degree, determine the social psychological factors that influence BCS, and provide a scientific evidence basis for effective future intervention programs.¹¹⁻¹³

Numerous studies found that women with good knowledge, medical-related profession, educational backgrounds, family history of breast cancer, physician recommendation, young age and those who are married were significantly associated with good health beliefs as the majority of them obtained a high mean score on perceived susceptibility and benefits of BCS with the lowest mark on perceived barriers.^{10,14-15} Therefore, it is vital to determine the influencing factors of good belief towards BCS in order to develop positive health beliefs and attitudes among females and to increase the number of screening uptake which leads to early diagnosis of breast cancer and reduction in the mortality rate.

Meanwhile, acceptance refers to the intention or readiness to engage in a specific behavior or the thought to perform the behavior.¹⁶ In the context of BCS, accurate knowledge about breast cancer, positive attitude towards screening methods, accessibility and medical expenses are found to be significantly associated with acceptance toward BCS uptake.¹⁷⁻¹⁹

To date, there are limited studies conducted locally to determine the relationship between health beliefs and acceptance as well as contributing factors of good health beliefs toward breast cancer screening among women. Apart from being close to the services provided, where breast cancer screening modalities are widely available, some of them are involved directly with patients living with breast cancer. They become a primary source of information regarding breast cancer and breast cancer screening among relatives, friends and patients. Thus, we planned to explore the factors that influence good health beliefs and examined the relationship between good health beliefs and acceptance of mammography uptake among female staff in Universiti Sains Malaysia.

3.4 METHODOLOGY

This cross-sectional study was conducted among 406 female staff in Universiti Sains Malaysia, Health Campus, from June to December 2021. Inclusion criteria were all female staff ages 20 to 60 years old, currently working in the institution, whereas female staff on either sabbatical or maternity leave, diagnosed with breast cancer or had a mental disability were excluded. The sample size was calculated using a single proportion formula with the proportion of good health beliefs was 38.6%.¹⁸ The calculated sample size was 365 and after considering of 10% non-response rate, the total sample size was 406 respondents. A list of 4586 female staff from all the departments and units was obtained from Registry Department Universiti Sains Malaysia, and from 4586, 406 respondents were selected using systematic random sampling.

The self-administered questionnaire comprised 4 sections: (i) socio-demographic characteristics which included age, religion, place of stay, race, marital status, educational level, household income, occupation, family history of breast cancer, ever-performed BSE, mammography uptake, motivational support from spouse, relatives or friends, physician recommendation and trained BSE by the physician., (ii) acceptance on BCS which consisted of one question with two options either agree or not agree¹⁴., (iii) knowledge on breast cancer and breast cancer screening questionnaire which was adopted from a local study.¹⁹ It is a validated questionnaire and contains 5 domains with 36 items. The domains are symptoms of breast cancer; risk factors of breast cancer; method of BCS; knowledge of mammography and BSE. Two marks were given for a correct answer, 0 mark for the wrong and 1 mark for an unsure answer. Good knowledge is considered if the summed

scores were more than 50 % ¹⁹.; (iv) health beliefs on breast cancer and breast cancer screening questionnaire was adopted from validated Malay version of the HBM Questionnaire.²⁰ It has 3 domains with 54 items and is scored based on the 5-point Likert scale. Four marks were allocated for strong agreement and 0 mark for strong disagreement in all positively related beliefs. On the other hand, the scoring was reversed in two domains: perceived barriers of BSE (6 items) and mammography (4 items). Good health beliefs is considered if the total score was more than 50%.²⁰

The respondents were called using extension office number and the study objectives, and inclusion and exclusion criteria were explained. Those who agreed and fulfilled the criteria were given an appointment for the data collection according to their preferred time and place. If the identified respondents did not agree to participate and did not fulfill the inclusion and exclusion criteria, the next name on the list was chosen as a replacement. On the data collection day, written consent was obtained, written information about the conduct of the study was explained and the questionnaires were distributed. The time taken to fill up the questionnaire was 10 minutes. The questionnaire was checked for completeness.

Data entry and analysis were performed using SPSS software version 26. The categorical variables were expressed using frequency and percentage while numerical variables were expressed using mean and standard deviation. Simple logistic regression was used to screen the associated factors for good health belief. Factors with a p-value of less than 0.25 were

further analyzed by multiple logistic regression with other cofounders in the model were adjusted. Multiple logistic regressions were used to analyze the association between good health beliefs and acceptance of breast cancer screening. The measurement of the association between the independent variable and the outcome was calculated by odds ratio (OR) and 95% Confidence Interval (CI).

The principle of the study has been approved by the Research and Ethics Committee (Human), School of Medical Sciences, Universiti Sains Malaysia on 24th June 2021 (Ref: UPM/JEPeM/21030264).

3.5 RESULT

All 406 female staff participated in the study giving a response rate of 100%.

Sociodemographic characteristics

The mean age (SD) was 37.8 (8.50). The majority of the respondents was working in medical- related position (66.7%), performing BSE regularly (73.4%), had motivational support from spouse, relatives or friends regarding breast cancer screening (61.3%) and acquired recommendation by the physician to undergo breast cancer screening regularly according to schedule (64.8%). The other sociodemographic characteristics of the respondents are shown in Table 1.

The proportion of good health beliefs toward breast cancer and breast cancer screening

The proportion of good health beliefs toward breast cancer and breast cancer screening was 93.3% as illustrated in Figure 1.

The proportion of acceptance toward breast cancer screening

The proportion of acceptance of mammography uptake was 75.6% as demonstrated in Figure 2.

Associated factors for good health beliefs toward breast cancer and breast cancer screening

Factors associated with good health beliefs by simple and multiple logistic regression are shown in table 2 and 3. In simple logistic regression, seven variables had P-value less than 0.25. (Table 2). These variables were included in multiple logistic regression. However, a family history of breast cancer was also included in MLR analysis as it was statistically and clinically significant.^{13-14,17-19} Multiple logistic regression was performed to determine significant associated factors for good health beliefs. Multiple logistic regression analysis (Table 3) showed that medical-related staff had 2.2 times higher odds of having good health beliefs on breast cancer and breast cancer screening compared to non-medical related staff (95% CI: 0.991, 5.019). The respondents who received motivational support from spouses, relatives or friends had 7.3 times higher odds of having good health beliefs toward breast cancer screening than those who did not receive motivational support (95% CI: 1.69, 31.69). Meanwhile, the respondents with good knowledge about breast cancer and breast

cancer screening had 2.61 times higher odds of having good health beliefs toward breast cancer screening (95% CI: 1.13, 6.03).

The association between acceptance and good health beliefs

The association between good health beliefs toward breast cancer screening and their acceptance to take mammography in the future was found to be statistically significant [OR (95% CI):4.25 (1.44,12.52)]. Female staff with good health beliefs had 4.25 higher odds of acceptance to take mammography compared to female staff with poor health beliefs. (Table 4)

3.6 DISCUSSION

Female health beliefs on breast cancer and the BCS method affect its utilization rate and acceptance.¹⁶⁻¹⁷ Surprisingly, our study found that the proportion of good health beliefs among female staff was as high as 93.3%. This finding was in line with a previous study conducted among Turkish women in academia which was more than 90%.¹² Based on these findings, it could be inferred that participating female staff at academia were vulnerable to and cared about breast cancer, had high level of breast cancer awareness, and strongly believed in the value of mammography. However, the contrary findings observed in established studies in Selangor and Klang Valley among general female populations revealed that only 48.6% and 20.6% had good beliefs pertaining to breast cancer and BCS respectively.^{13,16} The large gap between our study and previous local studies could be explained by two reasons. Firstly, the difference in the demographic profile of respondents in which most of our study respondents were medically related as compared to general female populations in their studies. Secondly, the majority (more than 90%) of the female population in Selangor reported a lack of self-efficacy, time constraints to take mammography at the public hospital, fear of finding lumps and the opinion that breast cancer was an incurable disease even if it was diagnosed early.^{13,16}

The finding from our study showed that good knowledge of breast cancer and BCS was significantly associated with good health beliefs. Previous studies showed conflicting results in terms of the association between the level of knowledge with health beliefs toward BCS. Selcuk et al demonstrated in the study conducted among female Turkish that good knowledge and high awareness of breast cancer were significantly associated with good health beliefs and mammography uptake.²¹) Consistent findings were also reported

by Ghazi et al that there was a significant association between good knowledge of breast cancer and CBE with good health beliefs on breast cancer and CBE among the general female population in Selangor, Malaysia.¹³⁾ These significant findings can be explained by numerous studies that females with adequate knowledge and awareness about breast cancer are more likely to adopt BCS as they have high perceived benefits, perceived susceptibility, self-efficacy, and significantly low barriers to practice BCS.^{12-13,17-18} On the contrary, Yilmaz et al and Roh S et al fail to demonstrate any association between the level of knowledge and health beliefs of mammography uptake in their studies.^{18,22} The inconsistency in the study findings may be due to differences in educational background and cultural differences as their main barriers. These significant findings showed that knowledge of the benefits and perceived importance of mammography were important determinants of mammography screening uptake.^{12-13,17-19} These reported benefits can be used as a guideline or module in spreading awareness to encourage participation in BCS in the future.

In terms of the roles of spouses, relatives and friends giving support and encouragement to adopt BCS, our finding was similar to a study among Jordanian academicians. It was found that 76.8% of Iranian female population receive and accept their spouse's recommendation to perform BSE and it was statistically significant with good health beliefs.²³ In line with the result of our study, Alatrash et al revealed that there was a significant association between Arab American females who were accompanied by their spouse to the clinic regularly to perform CBE with good health beliefs towards CBE and mammography uptake.²⁴ Several authors supported the notion that the husband's approval, friends' advice and family members' encouragement can influence BCS practice