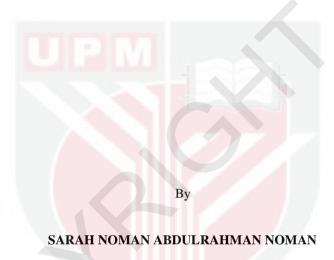**UNIVERSITI PUTRA MALAYSIA**

EDUCATIONAL INTERVENTION IN BREAST CANCER SCREENING UPTAKE, KNOWLEDGE AND BELIEFS AMONG YEMENI FEMALE SCHOOL TEACHERS IN THE KLANG VALLEY, MALAYSIA

SARAH NOMAN ABDULRAHMAN NOMAN

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By

SARAH NOMAN ABDULRAHMAN NOMAN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

July 2020

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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Chairman : Assoc. Prof. Hejar Abdul Rahman, MD, M.Community Health
Faculty : Medicine and Health Sciences

Breast cancer (BC) is the most frequently diagnosed cancer among women worldwide. The role of teachers in educating and communicating with students plays an essential role in health education and in the promotion of healthy behaviour such as BCS. This study aims to develop, implement, and evaluate the effectiveness of an educational intervention on BCS using the Health Belief Model (HBM). The highlighted outcomes of the sample include their BCS uptake, knowledge, and beliefs. A cluster-randomised controlled trial was conducted among 180 female Yemeni teachers in twelve schools in the Klang Valley, Malaysia with the schools as the unit of randomisation (clusters). A random assignment of the target schools was made using the block randomisation technique to either include them within the intervention or the control group. The intervention group were offered a 90-minute one-day BCS educational intervention session, while the same offer was made to the control group at the end of the study. The data were collected at baseline, 1-month post intervention followed by 3 and 6-months follow-up assessments using reliable and valid Arabic questionnaires. Data analysis was performed using the SPSS software 22.0. Generalized Estimating Equations (GEE) with a confidence interval of 95% and P-value less than 0.05 were conducted to assess the differences between group and within group effects, and the interaction effect over time.

There were no statistically significant differences between the two groups regarding the respondents' characteristics and the outcome variables at baseline. Generally, the groups demonstrated an overall significant higher changes in breast self-examination (BSE), and in clinical breast examination (CBE) post intervention for the intervention group than the control group with adjusted odds ratio (AOR) of 17.51 (CI: 8.22-37.29) and 2.75 (CI: 1.42-5.32) respectively. The AOR of BSE performance within the intervention group was increased over the six months from 11.01 (CI: 5.05-24.04) to 18.55 (CI: 8.83-38.99). Similarly, the AOR of CBE uptake within the intervention group was increased from 1.60 (CI: 1.02-2.52) to 2.27 (CI: 1.44-3.58). For secondary outcomes, the between

and within groups analysis showed an overall significant increase in the mean knowledge scores for the intervention group than the control group at (P<0.001). The results for between groups indicated overall significant differences in the mean beliefs scores for benefits of BSE (P<0.001), barriers of BSE (P<0.001), confidence on the ability to do BSE (P=0.014), health motivation (P<0.001), benefits of MMG (P=0.025), and benefits of CBE (P<0.001). Furthermore, within group analysis over the six months found the mean health beliefs scores in the intervention group increased significantly than the control group for benefits of BSE (23.20 to 26.22, P<0.001), confidence in the ability to perform BSE (30.34 to 35.30, P<0.001), benefits of CBE (15.73 to 16.76, P=0.031), and benefits of MMG (21.94 to 23.99, P=0.017). Besides, there has been a significant decrease in the barriers towards BSE (12.81 to 11.00, P=0.002). These results show the effectiveness of educational intervention based on the HBM in improving BSE and CBE uptake, knowledge, and in reducing barriers.

Keywords: Breast cancer screening, knowledge, beliefs, educational intervention, Yemeni teachers.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi Keperluan untuk ijazah Doktor Falsafah

INTERVENSI PENDIDIKAN DALAM AMALAN, PENGETAHUAN DAN KEPERCAYAAN MENGENAI SARINGAN KANSER PAYUDARA DI KALANGAN GURU SEKOLAH WANITA BERBANGSA YEMEN DI LEMBAH KLANG, MALAYSIA

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Kanser Payudara (BC) adalah kanser yang paling kerap dikesan di kalangan wanita seluruh dunia. Peranan guru dalam mendidik dan berkomunikasi dengan pelajar berkemungkinan memainkan peranan penting dalam pendidikan kesihatan dan dalam mempromosi tingkah laku sihat seperti BCS. Kajian ini bertujuan membangun, melaksana dan menilai keberkesanan intervensi pendidikan BCS menggunakan Health Belief Model (HBM). Hasil utama sampel yang diketengahkan termasuk amalan, pengetahuan serta kepercayaan berkaitan BCS. Kajian terkawal kelompok secara rawak dibuat melibatkan 180 guru wanita Yaman di dua belas sekolah di Lembah Klang, Malaysia dengan sekolah sebagai unit perawakan (kelompok). Pembahagian sekolah sasaran dibuat secara rawak menggunakan teknik perawakan blok bagi memasukkannya sama ada ke dalam kumpulan intervensi atau kawalan. Peserta kumpulan intervensi diberikan sesi intervensi pendidikan BCS selama 90 minit untuk sehari, manakala sesi yang sama diberikan kepada peserta kumpulan kawalan di akhir kajian. Data dikumpulkan pada peringkat awal, sebulan selepas intervensi dan diikuti penilaian susulan pada 3 dan 6 bulan menggunakan borang soal selidik bahasa Arab yang telah ditentusahkan dan boleh dipercayai. Data dianalisa menggunakan perisian SPSS 22.0, menggunakan *Generalized Estimating Equations* (GEE) dengan selang keyakinan 95% dan nilai P kurang daripada 0.05 bagi menilai perbezaan kesan antara intra- dan inter-kumpulan serta kesan interaksi mengikut masa.

Tiada perbezaan statistik yang signifikan ditemui mengenai ciri-ciri responden dan pemboleh ubah hasil antara kedua-dua kumpulan pada peringkat awal. Secara amnya, kesemua kumpulan menunjukkan peningkatan perubahan keseluruhan yang signifikan bagi Pemeriksaan Kendiri Payudara (BSE) serta Pemeriksaan Klinikal Payudara (CBE) selepas intervensi bagi kumpulan intervensi berbanding kumpulan kawalan dengan Nisbah Kemungkinan Dilaraskan (AOR) masing-masing pada 17.51 (CI: 8.22-37.29)

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dan 2.75 (CI: 1.42-5.32). AOR bagi prestasi BSE inter-kumpulan intervensi meningkat dalam tempoh enam bulan dari 11.01 (CI: 5.05-24.04) kepada 18.55 (CI: 8.83-38.99). Begitu juga, AOR bagi amalan CBE inter-kumpulan intervensi meningkat daripada 1.60 (CI: 1.02-2.52) kepada 2.27 (CI: 1.44-3.58). Bagi hasil sekunder, analisa inter- dan intra-kumpulan menunjukkan peningkatan keseluruhan yang signifikan bagi skor min pengetahuan kumpulan intervensi berbanding kumpulan kawalan pada (P<0.001). Keputusan intra-kumpulan menunjukkan perbezaan keseluruhan yang signifikan bagi skor min kepercayaan bagi manfaat BSE (P<0.001), halangan terhadap BSE (P<0,001), keyakinan terhadap kemampuan melakukan BSE (P=0.014), motivasi kesihatan (P<0.001), manfaat MMG (P=0.025) serta manfaat CBE (P<0.001). Tambahan pula, analisa inter-kumpulan selama enam bulan mendapati skor min kepercayaan kesihatan bagi kumpulan intervensi meningkat dengan ketara berbanding kumpulan kawalan bagi manfaat BSE (23.20 kepada 26.22, P<0.001), keyakinan terhadap kemampuan melakukan BSE (30.34 kepada 35.30, P<0.001), manfaat CBE (15.73 kepada 16.76, P=0.031) dan manfaat MMG (21.94 kepada 23.99, P=0.017). Walau bagaimanapun, terdapat penurunan ketara bagi halangan terhadap BSE (12.81 kepada 11.00, P=0.002). Keputusan-keputusan ini membuktikan keberkesanan intervensi pendidikan berdasarkan HBM dalam meningkatkan amalan dan pengetahuan berkaitan BSE dan CBE, serta dalam mengurangkan halangannya.

Kata kunci: Saringan kanser payudara, pengetahuan, kepercayaan, intervensi pendidikan, guru Yaman.

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In the name of Allah, the Most Gracious and the Most Merciful. All praises be to Allah Almighty, who has given me strength, patience and ability to work through hard times to prepare this work. First and foremost, I offer my sincerest gratitude to my supervisor Assoc. Prof Madya Dr. Hejar Abdul Rahman for her invaluable and incessant guidance throughout my thesis with her patience and knowledge. I would like to thank my co-supervisors Assoc. Prof. Dr. Hayati Binti Kadir @ Shahar and Assoc. Prof Dr. Suriani Binti Ismail for their insightful comments and encouragement.

I dedicate this humble work to the soul of my father. I hope it will make him proud of me. I am forever grateful to my mom, my greatest treasure and gift in my life, thank you for instilling in me the desire to achieve my goals and commitment to finish what I start. I would like to extend my thanks to my sister and brothers, who have always encouraged me to strive towards success. Your prayers and wishes have given me the strength to continue in troubled times. My deep gratitude also goes to my husband for always being there who offered me unconditional love and support throughout the course of this thesis.

Good friends are like stars you do not always see but you feel their prayers, encouragement and motivation. I would like to thank my friends for their moral support during my study. I would like to extend my appreciation to those who gave a helpful hand in ensuring the success of this research. This research would not have come to fruition without all your help and supports. Thank you.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

≤	Less than or equals to
≥	Greater than or equals to
ACS	American Cancer Society
ACOG	American College of Obstetricians and Gynecologists
AOR	Adjusted odds ratio
ASR	Age-standardized rates
BC	Breast cancer
BCS	Breast cancer screening
BSE	Breast self-examination
CBE	Clinical breast exam
CI	Confidence interval
cRCT	Cluster randomized controlled trial
EM	Ecological model
GEE	Generalized estimating equation
HBM	Health Beliefs Model
HPM	Health Promotion Model
IARC	International Agency for Research on Cancer
MoH	Ministry of Health
MMG	Mammography
NPV	Negative predictive value
OR	Odds ratio
PPV	Positive predictive value
PPT	PowerPoint presentations

SCT	The Social Cognitive Theory
TPB	Theory of Planned Behavior
TTM	The Transtheoretical Model
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

This chapter presents the background information on the breast cancer disease, problem statement, significance of the study, research questions, objectives, and hypothesis of the study.

1.1 Background

Breast cancer (BC) is believed to be the most frequently diagnosed cancer and the leading cause of cancer mortality among women in the world (Torre, Islami, Siegel, Ward, & Jemal, 2017). Breast cancer incidence rate varies markedly between countries, where the variation is between 19.3 for every 100,000 women in Eastern Africa to 89.7 for every 100,000 women in Western Europe. The variation is also higher in developed countries (excluding Japan) with more than 80 cases for every 100,000 women and is lower in the developing countries with less than 40 for every 100,000 women (Zaidi & Dib, 2019). However, the occurrence rate of BC in some developed countries which include Canada, Australia, the United States, the United Kingdom, and France has decreased in the early 2000s. However, the rate has increased in countries where it has been historically low, taking place in transitioning countries such as Asia, Africa, and South America (Bray et al., 2018). A combination of demographic factors related to social and economic development could be the probable underlying reason for the change in trend (Bray et al., 2018)

Breast cancer is the most common type of cancer among Yemeni females, accounting for about a quarter of all cancer cases (Al-Nabhi, Ahmed, & Abdul Hamid, 2017). However, there is no available data or published studies on the statistics of BC among Yemeni people in Malaysia. It is also the primary type of cancer in all female age groups from the age of 25 years old. Gradual increase has been reported in the incidence rate of cancer cases in Yemen (from 263 to 1004) throughout the fifteen-year period (from 1997 to 2009) (Bawazir, 2018).

Worldwide management of BC has evolved, with advanced changes in treatment towards breast conservation. Hence, BC early detection examination helps to save lives and to improve the chances of early detection and successful treatment of BC (American Cancer Society [ACS], 2015). The reporting of BC during the local stage (stage I and some stage II) has an overall 5-year relative survival rate of 99% while the reporting of BC during the regional stage (stage II or III) has a 5-year relative survival rate of 85%. However, the distant stage (some stage III and all stage IV) reporting of BC has an overall 5-year relative survival rate of 27% (Siegel, Miller, & Jemal, 2018).

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Several approaches have been evaluated as breast cancer screening (BCS) methods, including breast self-examination (BSE), clinical breast examination (CBE), and mammography (MMG) (World Health Organization [WHO], 2015). Breast self-examination and CBE have been considered as important practices to be applied at the population level. However, scientific evidence regarding the effectiveness of BSE or CBE in reducing mortality from BC is currently lacking (Da Costa Vieira,

Biller, Uemura, Ruiz, & Curado, 2017). Nevertheless, women are encouraged to be aware of any changes in their breasts where both the BSE and CBE are part of this awareness which might lead women to early diagnosis of BC (as cited in Freund, Cohen, & Azaiza, 2017). The sensitivity of BSE is low, and it is not related to the reduction in BC mortality. Mammography on the other hand, has high sensitivity, and is the only test proven to be linked to a reduction in BC mortality. In this context, studies have demonstrated that the application of BSE and CBE are not encouraged in isolation, but to always be linked with the use of MMG, particularly in women over the age of 40. However, MMG is not primarily performed in most developing countries due to limitations in the healthcare system (Da Costa Vieira et al., 2017). Although BC is on the rise among Yemeni women, BCS services in Yemen are inadequate in this population (Al-Sakkaf & Basaleem, 2016). Based on Bawazir, Bashateh, Jradi, & Breik (2019), BSE and CBE are practiced by 30.3% and 21.9% of Yemeni women respectively while MMG is performed by only 1.6% of the women.

Considerable number of researches have proposed for effective intervention programs in determining the factors which affect a woman's practice of BCS. Theoretically, different models and theories have been used in understanding the early detection of BC. The Health Belief Model (HBM) is utilized in numerous educational intervention studies such as the theoretical framework, and it has been found to be effective in improving the factors affecting BCS behavior (Heydari & Noroozi, 2015; Taymoori, Molina, & Roshani, 2015; Tuzcu, Bahar, & Gözüm, 2016). The theoretical framework of the HBM highlights that threats from health issues can affect the health behavior of women. For instance, women who perceive themselves as being susceptible to the risk of BC are more likely to practice BSE. Besides that, good health motivation in women who believe in the higher benefits of the BSE, and those who experience lesser obstacles in performing breast exams have a higher likelihood in practicing the BSE. Moreover, as suggested by the model, the knowledge about BCS practice is also associated with an increase in the women's practice of BCS behavior (Champion & Menon, 1997). The HBM model is utilized in different settings and has been found to be a valid and reliable measure for assessing beliefs about BC (Akhtari-Zavare et al., 2016; Al-Sakkaf & Basaleem, 2016; Champion, 1993).

Presently, different educational programs are available in improving awareness among women and in encouraging early detection of BC. National and international guidelines and other agencies in different parts of the world have been actively promoting BCS behavior among women. Such programs include educational workshops, distribution of printed materials, as well as the posting of educational materials through the social media. These interventions have engaged women from all levels and walks of life, such

as housewives, employees women, university students, schoolgirls, and health care workers.

It has been shown that the practice of BCS in different occupations is lower than expected due to various factors and barriers which prevent women from practising these measures (Heivari, 2018). Moreover, the workplace is a good setting for training and shaping behavior. The current study was designed with the aim of developing and evaluating BCS educational program grounded on the HBM to provide the basis for long-term behavioral change on BCS practice among female teachers. In this regard, this research was conducted in the effort of improving knowledge and health beliefs regarding BC among Yemeni female school teachers in Arabic schools in the Klang Valley, Malaysia, with ultimate goal of improving BCS uptakes and the hope they can propagate to their young students.

1.2 Problem Statement

Breast cancer is the most frequently diagnosed cancer and the leading cause of cancer deaths among women in Yemen (Bawazir, 2018). According to the IARC (2018), the total number of new cancer cases in Yemen is 13182, while the total number of cancer deaths is 9085. It is shown in Table 1.1 below that BC accounts for the highest percentage of new cancer cases and mortality in Yemen. In addition to that, Bawazir (2018) stated that the five most common cancers among Yemeni women are breast (30.0%), leukaemia (7.6%), non-Hodgkin lymphoma (6.6%), colorectal (4.9%), and ovarian (4.5%) cancer. Cervical cancer, on the other hand, accounts for only (1.3 %) of all new cases among Yemeni women (IARC, 2018). Due to its high incidence and mortality rates among Yemeni women, the findings of Bawazir (2018) has exposed the urgent need for early screening of BC to be conducted among the women in this population. Based on the above argument, BC has therefore been chosen as the research area.

Table 1.1 : Top five most frequent cancers in Yemen

Cancer	New cases	Deaths
Breast	2444 (18.5%)	1096 (12.1%)
Stomach	896 (6.8%)	885 (9.7%)
Oesophagus	785 (6.0%)	752 (8.3%)
Leukemia	763 (5.8%)	782 (8.6%)
Colon	689 (5.2%)	523 (5.8%)

(Adapted from: IARC, 2018)

It is argued that the mortality rate for BC is higher in many low and middle-income countries compared to those in high-income countries, which is supported by Torre et al. (2017) who stated that the diagnosis of BC in many low and middle-income countries is often done at a late stage. A five-year survival rate is 85% or higher in the USA, Canada, Israel, Australia, Brazil, as well as in many Western and Northern European

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countries which could be attributed to the early diagnosis of BC in these countries. On the contrary, it is 60% or lower in many low and middle-income countries such as South Africa, Algeria, Mongolia, and India (Allemani et al., 2015). Yemen, as one of the low-income countries, is a case in point. Most BC cases might be identified at a later stage or after the occurrence of metastasis (Harhra & Basaleem, 2012).

A large volume of published studies has been found to explain the role of knowledge and beliefs in the practice of BCS. Lack of knowledge and wrong health beliefs pertaining to BC and BCS have been found to be the biggest barriers to BCS among women (Akhtari-Zavare et al., 2016; Alameer, Mahfouz, Alamir, Ali, & Darraj, 2019; Masoudiyekta et al., 2018). Likewise, poor knowledge and wrong health beliefs about BC among Yemeni women have been found to be the leading barriers of BCS as identified by Al-Sakkaf and Basaleem (2016), who have thus suggested for the need to conduct educational intervention in improving BCS in this group of population. This finding has therefore provided a solid basis for the selection of educational intervention method in improving BCS awareness among Yemeni women.

Practically speaking, early detection of BC via screening tests decreases BC mortality rate (ACS, 2017b). A number of epidemiological studies on BCS behavioral uptake have been performed on community samples of various women groups. Such studies have shown that the rate of BCS practice is low in various countries (Freund et al., 2017; Tuzcu et al., 2016; Yılmaz, Sayın, & Cengiz, 2017). In Yemen, the findings of similar studies show that the rate of women who practice BSE ranges from between 11% to 17.4% (Ahmed, 2010; Al-Sakkaf & Basaleem, 2016). It is reported in another study that 30.3% of the women practice regular BSE, only 1.6% of them have been exposed to MMG test (Bawazir, 2019).

In the Malaysian context, the Ministry of Health (MoH) is the main organisation responsible for carrying out activities related to cancer prevention in improving the public's knowledge, as well as in increasing their awareness on the importance of cancer screening. The ministry creates policies, organises activities and programs, and advocates health education campaigns to create and to promote awareness and knowledge of the general population on the common types of cancers. Prevention programs comprise of activities such as health campaigns, talks, carnivals, counseling sessions, outreach programs, media campaigns, focus group discussions, posting of educational materials through booklets, pamphlets, posters, flyers, and so forth. As part of the BC awareness campaign, the MoH promotes BSE and annual breast examination by trained healthcare workers. Nationwide MMG screening is also implemented for high-risk women, and is offered at primary healthcare facilities (Ministry of Health Malaysia, 2017). In addition to that, subsidised MMG screening is offered by various leading government entities in Malaysia. The National Cancer Council Malaysia (NCCM) for example, provides free MMG service while the National Population and Family Development Board (NPFDB) offers a program for underprivileged women who are unable to pay for MMG screening to perform it either with a minimum fee of RM50.00, or for free depending on their income (Mahmud & Aljunid, 2018).

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However, this situation does not apply to Yemeni women living in Malaysia, whom due to the recent instability and lack of security in Yemen, have decided to immigrate to Malaysia for educational purposes and/or job opportunities or to reside as immigrants. As foreign immigrants, these women face numerous challenges in accessing BCS-related information and services made available for Malaysian women. Such challenges include barriers in language, culture and health beliefs, the accessibility to transportation, BCS examination costs, as well as difficulty in accessing healthcare facilities. The unavailability of the appropriate healthcare insurance to cover for cancer-screening service among most of the Yemenis in Malaysia including workers adds to the challenge, and therefore has caused this group of women to seek for healthcare services provided by general practitioners or government clinics or hospitals.

To address this situation, this study has therefore proposed the use of female Yemeni teachers in Malaysia as a medium in advocating and promoting for BCS for a number of reasons. Firstly, education has been found to be a substantial component for effective BCS program in improving BC knowledge, beliefs, and behavior level, as well as in reducing the negative impact of the disease among women (Alwabr, 2016; Asuquo & Olajide, 2015). Numerous intervention studies on BCS performance have been carried out among women worldwide. Such studies have incorporated certain groups of women such as residents, university students, workers, as well as those who attended healthcare centers (Akhtari-Zavare et al., 2016; Eskandari-Torbaghan, Kalan-Farmanfarma, Ansari-Moghaddam, & Zarei, 2014; Masoudiyekta et al., 2018; Mirmoammadi, Parsa, Khodakarami, & Roshanaei, 2018; Ouyang & Hu, 2014). Nevertheless, despite the findings made on the insufficient knowledge and/or wrong beliefs on BC, and the lack of BCS among teachers as well as the recommendation for educational intervention to be performed for them (Abu-Shammala & Abed, 2015; Alabi et al., 2018; Chacko, 2016; Marzo & Salam, 2016; Yaya, Abuaisha, Samson, & Serakinci, 2018), only a few studies have been conducted on female teachers worldwide regarding their practice of BCS (Alameer et al., 2019; Alharbi, Alshammari, Almutairi, Makboul, & El-Shazly, 2012; Alice, 2014; Heydari & Noroozi, 2015; Parsa, Kandiah, Zulkefli, & Rahman, 2008; Temel, Dağhan, Kaymakçı, Dönmez, & Arabacı, 2017). In Malaysia for example, although a few studies have shed light on BCS practice among Malaysian teachers, yet no similar research has been conducted among Yemeni teachers residing in Malaysia.

Secondly, the possibility for female teachers to play a vital role in offering health and healthcare education, and in promoting healthy behavior pertaining to BCS practice to be adopted by the future generation should be harnessed since as teachers, they are regarded as role models and an essential source of education. Within the framework of a theoretical model, a positive effect on the awareness, knowledge, and behavioral change of cancer screening practices could be established through the provision of training on cancer screening practices to teachers who could effectively share and transfer relevant information to their students and the community (Temal, 2017). Therefore, as educated and respectful figures of the Yemeni community in Malaysia, teachers have been selected as the study population as the agent of change in the transfer of BC-related knowledge to students and members of the community. It is common for Yemeni teachers to share and discuss common health issues with their students by conducting health and healthcare educational sessions at school. Besides that, these

teachers might one day return to their native land, and thus help spread the knowledge gained in this domain to the local community.

Due to the barriers discussed earlier, as well as the role played by teachers in promoting healthy behavior with regard to health and healthcare practices among their students, educational intervention has therefore been identified as the best method in increasing the awareness on BCS among the general population since it is more effective and less costly. Besides that, teachers can also play a role in offering health and healthcare education since they are the role models, which enable them to reach a larger number of the population by connecting with the students and community members. In addition to that, since no study has been published on the BCS of Yemeni women in Malaysia, this study might therefore help in providing information for the undertaking of future plans in increasing the number of BC awareness programs, as well as in defining preventive strategies within this group which could be one of the effective means in the development of educational programs for other groups in the future. To the best of the researchers' knowledge, this study is the first of its kind, which evaluates educational intervention of BCS using the HBM among female Yemeni teachers in Malaysia.

1.3   Significance of the Study

In recent years, the importance of disseminating effective BCS interventions has been highlighted as one of the strategies for bridging health disparities. Therefore, this research is carried out to develop an intervention study in enhancing screening approaches among Yemeni female school teachers in the Klang Valley, Malaysia. This research aims to identify those who require BCS, to remind them to go for screening and to help reduce screening barriers apart from bridging the gap due to limited access to information and BCS service for immigrant women. This study may contribute to the credibility of the effectiveness of utilizing a theory-based intervention in educating women about BCS. Education is a crucial procedure in encouraging women to participate in BCS programs. In this regard, this study is expected to be of a great effort in increasing knowledge about the early detection and prevention of BC among women. This educational program may serve as a plan in BC prevention to engage the underserved population, and therefore improve BCS outcome and reduce disparities.

Considering that teachers play a vital role in educating and motivating the younger generation and future society, it is thus very important for them to be provided with better health education. This research will directly benefit teachers, their students, families, and friends, as well as to provide information to the researchers and health care workers who strive to produce beneficial interventions for women. These programs should strengthen the health system for the widespread dissemination of appropriate knowledge in the community of the target population with the aim of ensuring awareness at both the individual and societal levels. The knowledge gained from this study could be used in planning appropriate BCS programs for other women in different contexts. If proven effective, this educational intervention may be evaluated and implemented in a diversity of settings that provide health education intervention for women.

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Breast cancer is the most common type of female cancer, which warrants the attention of health policy makers. The understanding of BCS can provide useful information for planning and developing a BC control policy at the health organizational level. Thus, an evaluation of BCS programs, including the ideal age to commence screening is urgently needed, and effort should be made to reduce the proportion of cancers of unknown grade and stage. The increase in morbidity and mortality associated with BC in the developing world, as well as the low uptake of BCS, have all emphasized the need for more public awareness programs to educate people about BC and its early detection. Such type of awareness is of great significance in increasing general attention to female health issues.

1.4   Research Question

The research question of this study is what is the effect of educational intervention on the improvement of BCS uptake (BSE, CBE, and MMG), knowledge and beliefs among Yemeni female school teachers?

1.5   Research Objectives

1.5.1   General Objective

The general objective of this study is to develop, implement, and evaluate the effectiveness of educational intervention based on the HBM in improving BCS uptake (BSE, CBE, and MMG), knowledge, and beliefs among Yemeni female school teachers in the Klang Valley, Malaysia.

1.5.2   Specific Objectives

The specific objectives of this study are:

1.   To describe the socio-demographic characteristics, BCS uptake (BSE, CBE, and MM G), knowledge and beliefs of the respondents.
2.   To develop and implement an educational intervention based on the HBM on BCS uptake (BSE, CBE, and MMG), knowledge, and beliefs among Yemeni female school teachers in the Klang Valley, Malaysia.
3.   To determine and compare the proportion of BCS uptake (BSE, CBE, and MMG) between and within the intervention group and the control group at baseline, one-, three- and six-months afte commencement of intervention, and after controlling for covariates.
4.   To determine and compare BC knowledge scores between and within the intervention group and the control group at baseline, one-, three- and six-months after the commencement of intervention, and after controlling for covariates.

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5. To determine and compare BC beliefs (perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, health motivation, and confidence) scores between and within the intervention group and the controlled group at baseline, one-, three- and six-months after the commencement of intervention, and after controlling for covariates.

1.6   Hypothesis of the Study

The alternative hypotheses in this study are:

1. There is a significant difference in the proportion of BCS uptake from baseline to one-, three- and six-months after the commencement of intervention between and within the two groups.
2. There is a significant difference in knowledge of BC and BCS scores from baseline to one-, three- and six-months after the commencement of intervention between and within the two groups.
3. There is a significant difference in the beliefs of BC and BCS scores from baseline to one-, three- and six-months after the commencement of intervention between and within the two groups.

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