HEALTH BELIEF MODEL ATTITUDES OF IRAQI WOMEN TOWARDS BREAST CANCER AND ITS EARLY DETECTION METHODS

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ABSTRACT: Health Belief Model is a very effective paradigm designed to explore behaviors, especially in breast cancer prevention. This study aimed to determine women's attitudes regarding breast cancer by using Health Belief Model and the interaction between attitudes and practice. This prevalence survey was performed on a consecutive sample of 657 women visiting the primary healthcare centers in Baghdad/ Iraq. The data were collected over four months in 2019. A specially designed questionnaire of modified and translated health belief model related to breast cancer was adopted and filled out through face-to-face interviews. The age of participants was between (20-59) years. The majority (95.3%) considered detecting health problems early as a target for them. Most of them (93.6%) believed that some activities can improve their health. Women with adequate practice of Breast Self-Exam had higher perceived benefits, susceptibility, and motivation than those who inadequately practiced it. Women with adequate practice of mammography had higher perceived benefits and health motivation, and lower barriers, threat, and severity of breast cancer other than those with inadequate practice. Those participants who were more likely to perform the Clinical Breast Examination adequately were with higher levels of perceived seriousness and health motivation. Study results suggested that practices of screening for breast cancer were inadequate in a majority of participants and need to be improved by educational health programs.

KEYWORDS: Health Belief Model, Breast Cancer, Early detection, Iraq, Mammography.

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INTRODUCTION

Breast cancer (BC) is the most repeatedly detected cancer in females globally, with around 2.3 million cases diagnosed in 2020[1]. At the end of 2020, the data showed that about 7.8 million females with breast cancer were newly reported during the last five years, making it the world's most prevalent cancer[2]. In Iraq, the incidence of breast malignancies alarmingly raised from 52.00 per 100,000 in 2000 to 91.66 per 100,000 in 2019[3]. It ranked first in the death rate (15.3%) among all cancer types in Iraq[4]. Studies suggested increasing survival from breast cancer when detected as early as possible[5]. Other studies' statistics showed that cervical and breast cancer are the leading cancers in women who live in developing countries[6].

Health Belief Model (HBM) is a psychosocial paradigm that is considered for health behaviors by recognizing such factors as they are related to individuals' beliefs that influence the behavior of patients[7]. Health Belief Model has been used globally to examine patients' beliefs, especially those related to screening behaviors for BC[8]. The most recent conceptualization of the HBM encompasses the following components: perceived susceptibility of the patient, severity, barriers, benefits, and finally, cues to action along with self-efficacy[9]. Therefore, a woman who thinks she is susceptible to breast malignancies or cancer, especially if it is severe, will increase her probability of performing breast examinations regularly or other behaviors. Also, a woman would be more likely to perform a Breast Self-Examination (BSE), especially if she supposes more benefits with fewer barriers to BSE[10].

In Iraq, few studies have been conducted in recent years to assess the attitudes towards BC early detection measures according to HBM[11]. Thus, this study was designed to evaluate the effect of HBM associated with breast malignancies among women in the community to early detection practice.

METHOD AND MATERIALS

An observational analytic cross-sectional study was performed in Primary Health Care Centers (PHCCs) selected in Baghdad province. All of them were providing Maternal and Child Health (MCH) services.

Using the sample size equation for a cross-sectional study, the required sample size was 687. All women between the ages of 20 and 60 years from different socioeconomic statuses were interviewed. We excluded women with any past or present breast pathology requiring medical care, a first-degree relatives' history of breast cancer, and those presenting with an acute disease that prevents them from being enrolled in the study. There are six PHCC districts in Baghdad city, and one PHCC from each district had been randomly selected. So, the total number of the included PHCCs was six.

In each PHCC, a non-random convenient sampling procedure had been used for the inclusion of the subjects. All women entering the center who fulfilled with inclusion criteria were interviewed after explaining the aim of the study.

The researcher interviewed for three months starting from February to April 2019 using a structured questionnaire form designed from the HBM questions derived from a study in Malaysia[12] with some summarization and modifications to be suitable to the Iraqi community, translated from English to Arabic, and tested for validity by two expert professionals, and tested for reliability by a pilot study. The practice was either adequate or not according to the ACOG and the NCCN for average-risk women[13].

Data analysis: Was done by SPSS version 26. Frequency and percentage were used to represent categorical variables. Mean and standard deviation were used for other continuous variables. For independent samples, a t-test was used to assess the dissimilarities in means between two independent groups of patients considering a P-value as significant if it is equal to or less than 0.05. The quartile method was used to calculate the crowding index as an indicator of social class because there

was no acceptable cut-off value for this social variable in Iraq.

Ethical consideration: Formal approval from Wasit University/School of Medicine was obtained before the study. Verbal consent was taken from the participants who accepted to engage in this study after explaining the aim of this research and their freedom to refuse to answer any question and leave at any time they want.

The questionnaire stated the anonymity of respondents with no identification of names or contact information. Interviews were conducted in a discreet corner/room, away from other persons witnessing or overhearing the conversation.

Results:

Out of 687 eligible women, only 657 agreed to participate in the study with a response rate of (95.6%). The age range was (20-59) years with a mean of (37.5±11.3) years. Table 1 shows the sociodemographic features of the participant women. Around one-quarter (22.8%) of them were illiterate and without formal education, with (20.2%) with university and higher degree education. Nearly two-thirds of the respondents (71%) were housewives, and none of the responders was a part-time employer or student. Only (17.7 %) with low social class while (34.5 %) were with high social class.

Table 1: Frequency distribution of socio-demographic characteristics of 657 women attending 6 PHCCs in Baghdad in (February –April) 2019.

Socio-demographic variables	Number	Percentage
Educational level		
Illiterate/read and write	150	22.8
Primary school	125	19.0
Intermediate school	125	19.0
Secondary school	124	18.9
University/higher degree	133	20.2
Total	**657**	**100**
Employment status		
Never worked	467	71.0
Was employed but not now	30	4.6
Full–time employee	160	24.4
Total	**657**	**100**
Social classes		
High social class	227	34.5
Middle high class	102	15.5
Middle low class	212	32.3
Low social class	116	17.7
Total	**657**	**100**

Table 2 shows the HBM items´ positive responses related to BC and its early detection. Only (19.3%) of respondents thought they were more than the average women to get BC. Most of the women (76.4%) were scared from thinking about BC. The majority (95.3%) agreed or strongly agreed that they want to discover health issues as early as possible. An overwhelming majority (90.4%) either agreed or strongly agreed with the statement: If I have performed monthly BSE then it will aid me to find a lump that might be breast cancer earlier than being detected by a doctor or a nurse. Around one-quarter (26%) mentioned embarrassment as a perceived barrier for BSE. The majority of participant women (91.2%) were confident in their abilities to identify normal and abnormal breast tissue when doing BSE. The most frequent barrier (58.3%) reported for a mammogram was: not knowing how to go about getting a mammogram. About (89.5%) recognized the benefit of a mammogram to find lumps early.

Table 2: Frequency distribution of positive HBM attitudes items related to breast cancer and early detection items.

Selected attitude items in HBM	Number	Percentage
Attitude items for breast cancer		
Perceived susceptibility		
In the future, I feel I will get breast cancer.	275	41.9
I'm more likely to be susceptible to breast cancer than the average women	127	19.3
Perceived seriousness		
The thoughts of breast cancer scare me	502	76.4
Getting breast cancer would threaten my relationship with my husband.	318	48.4
My whole life would be changed if I had breast cancer,	441	67.1
Perceived health motivation		
Detecting health problems early is a target for me	626	95.3
I feel carrying out activities that can improve my health is important to me	615	93.6
I will be committed to regular health check-ups even if I'm healthy	547	83.3
Attitude items for breast self-examination		
Perceived benefits		
Doing a self-breast examination makes me feel positive about my well-being.	571	86.9
Performing regular monthly breast self-examination will decline the chances of dying due to breast cancer	563	85.7
Performing monthly regular breast self-examination will help me to discover a lump that might be breast cancer earlier than detection by a doctor or nurse.	594	90.4
Perceived barriers		
Performing breast self-examination will embarrass me	171	26.0
Too much time could be taken when performing a breast self-exam	223	33.9
Having enough privacy that allows me to perform breast self-exam is a real issue for me	108	16.4
Perceived confidence		
I'm confident that I can properly perform breast self-examination.	418	63.6
I'm able to discover a breast lump that is as small as a pea	512	77.9
I'm confident in my ability to identify normal or abnormal breast lumps or tissue while performing regular breast self-examination	599	91.2
Attitude items for mammogram		
Perceived benefits		
I feel confident about my health when I have been advised to do a mammogram	541	82.3
Discovering breast lumps earlier when having a mammogram on regular basis.	588	89.5
Decreasing the chances to do radical breast surgery if I will commit to performing mammogram regularly.	532	81.0
Perceived barriers		
How to go and get a mammogram for breast is a problem for me	383	58.3
Finding something wrong in my breast or breast lump makes me afraid of performing a mammogram	255	38.8
Having a mammogram would be too embarrassing for me	227	34.6
Too much time will be consumed when having a mammogram	178	27.1
I have other problems more important than getting a mammogram	167	25.4
I would be exposed to unnecessary radiation when performing a mammogram	146	22.2
Too much money to spend when having a mammogram	112	17.0
Having a mammogram would be too painful	108	16.4

In table 3, only 33 (5%) had adequate monthly practice BSE. Only 22 (7.6%) women had mammograms adequately (annually) for those above 40 years. There were 36 (5.5%) who followed the recommended routine examination schedule for Clinical Breast Examination (CBE).

Table 3: Frequency distribution of adequacy practice early detection procedures.

Adequacy of practicing	Number	Percentage
Adequacy of practicing breast self-examination		
Adequate (monthly exam starting from the age of 20)	33	5
Not adequate	624	95
Total	657	100
Adequacy of practicing mammography above 40 years		
Adequate (at least once a year from age 40)	22	7.6
Not adequate	266	92.4
Total	288	100
Adequacy of practicing clinical breast examination		
Adequate [a]	36	5.5
Not adequate	621	94.5
Total	657	100

a) Every three years for the age range (of 20-39) and then yearly afterward

Table 4 shows that women with an adequate practice of BSE had higher mean scores of perceived confidence, benefits, health motivation, and susceptibility than those who did not. No significant differences in perceived barriers to BSE and perceived seriousness of breast cancer between the two groups were found.

Table 4: Comparison of the mean perceived HBM items between those who adequately practiced BSE and those who did not.

Attitude score	The practice of BSE [a]		P-value
	Not adequate	Adequate [b]	(t-test)
Perceived health motivation			<0.001
Range	(20 - 100)	(66.7 - 100)	
Mean	88.1	96.8	
SD	13.8	9.1	
n	624	33	
Perceived seriousness			0.77[NS]
Range	(20 - 100)	(53.3 - 80)	
Mean	73.3	72.1	
SD	22.7	5.4	
n	624	33	
Perceived susceptibility			0.002
Range	(20 - 100)	(20 - 70)	
Mean	48.5	62.1	
SD	24.3	17.5	
n	624	33	
Perceived barrier to BSE			0.12[NS]
Range	(20 - 115)	(20 - 60)	
Mean	48.8	55.8	
SD	25.6	11	
n	624	33	
Perceived benefit of BSE			<0.001
Range	(20 - 100)	(88 - 100)	
Mean	80.5	98.5	
SD	21.6	4	
n	624	33	
Perceived confidence in BSE			<0.001
Range	(20 - 100)	(66.7 - 100)	
Mean	80.1	95.6	
SD	17	10	
n	624	33	

a) Breast self-examination.

b) monthly exam starting from the age of 20 years old.

As shown in Table 5, women with higher perceived benefits and lower recognized barriers to mammograms had adequate practice for mammography. Women with the adequate practice of mammography had a significantly higher perceived health motivation, lower perceived seriousness, and perceived susceptibility compared with those who inadequately did it.

Table 5: Comparison of the mean perceived HBM scores between those who adequately practiced mammography and those who did not.

Attitude score	The practice of mammograms (only for those 40+ years of age)		P-value (t-test)
	Not adequate	Adequate [a]	
Perceived health motivation			0.049
Range	(20 - 100)	(66.7 - 100)	
Mean	87.3	93	
SD	13.4	8.8	
n	266	22	
Perceived seriousness			<0.001
Range	(20 - 100)	(20 - 100)	
Mean	74.7	54.8	
SD	19.3	39.7	
n	266	22	
Perceived susceptibility			0.035
Range	(20 - 100)	(20 - 60)	
Mean	48	38.2	
SD	21	20.4	
n	266	22	
Perceived benefit of mammography			<0.001
Range	(24 - 96)	(68 - 100)	
Mean	77.5	95.3	
SD	20.6	7.3	
n	266	22	
Perceived barrier to mammography			<0.001
Range	(27.5 - 95)	(20 - 67.5)	
Mean	55.9	25.2	
SD	20.7	10.1	
n	266	22	

a) Annual examination from age of 40.

Table 6 shows that women who regularly performed CBE perceived more seriousness and health motivation. No significant associations between perceived susceptibility and CBE practice were found in this study.

Table 6: Comparison of the mean perceived HBM scores between those who adequately practiced CBE and those who did not.

Attitude score	Practice for CBE [a]		P-value (t-test)
	Not adequate	Adequate [b]	
Perceived health motivation			<0.001
Range	(20 - 100)	(73.3 - 100)	
Mean	88.1	95.9	
SD	13.8	9.3	
n	621	36	
Perceived seriousness			<0.001
Range	(20 - 100)	(60 - 100)	
Mean	72	93.9	
SD	22	13.1	
n	621	36	
Perceived susceptibility			0.83[NS]
Range	(20 - 100)	(30 - 70)	
Mean	49.1	50	
SD	24.8	7.9	
n	621	36	

a) Clinical Breast Examination.

b) Every 3 years for the age range (20-39) and then yearly afterward.

DISCUSSION:

The beliefs that can have a positive effect on women's early detection methods and practices can be understood well by using the HBM variables for the assessment by health planners. Raising awareness among Iraqi women will increase the likelihood of earlier breast cancer detection. Identifying and reducing the barriers to early detection of breast cancer can be achieved by such results.

Based on the HBM, screening behaviors are negatively associated with assessed barriers while positively associated with concepts of vulnerability, severity, confidence, advantages, and motivation [10]. According to this study's results, the women who performed BSE regularly (adequate) were more likely to gain more BSE advantage, and the ability to perform BSE with more confidence, more perceived probability of breast cancer, and place a higher value on their health than those who had never or inadequately performed this behavior.

Women who were more likely to practice regular BSE were those who perceived themselves as more vulnerable to breast cancer (perceived susceptibility) and gained more confidence in their preparedness to perform BSE (perceived confidence); the findings above were in parallel with the HBM constructs. In addition, the probability of engaging in such behavior is high for women who gained more benefits from BSE. The same was found in the previous research performed among Iranian females[14].

No association was found between the considered barriers to BSE and adequate practice of BSE, and this is contrary to HBM. This finding can be explained that it may be related to very few numbers of women who mentioned barriers to BSE. Only 16.4% mentioned the absence of privacy to do BSE as a barrier, while some suggested that it requires too much time. Around one-quarter thought it was embarrassing to them. On the contrary, Iranian women[15] perceived lower barriers among those performing BSE than those not or inadequately performing this test.

In addition, this study did not detect a significant association between the perceived seriousness of BC and adequate practice of BSE. This may partly be explained by the fact that most women in this study agreed with the seriousness of BC, but they thought that they would acquire it if they just thought of it. As other studies found, the seriousness of the condition itself could not be able alone to raise awareness regarding preventive health behaviors. The BC itself will lead to change in women's life by influencing all aspects of life including the psychological, social, financial, and so on and this subject is known to many women[16]. The idea that a woman has about not being susceptible or immune to breast cancer and that only a few would be affected by breast cancer may lead to low compliance to regular BSE as the results show in the current study or the lack of promotion or raising the culture of BSE and its advantages for breast cancer early detection.

In this study, only 7.6% of women aged 40 years and above underwent yearly mammography in compliance with the international recommendations, similar to that of a Malaysian study[17].

Considering the mentioned barriers when planning for a health program would be wise enough to design a proper intervention to improve mammography practice. One of the suggested solutions, especially for those who are too busy or less mobile, is to use a moving vehicle scan or temporary mobile places near the target population. In Iraq, mammography is relatively free, so few women in this study thought that the cost of mammography was a barrier.

Women who adequately practiced mammography perceived lower seriousness and susceptibility to BC than those with inadequate practice, contrary to the HBM concept. Most of the women in this study didn't consider themselves susceptible to breast cancer. However, a significant percentage of them in this study considered BC itself as a serious condition. Many reasons could explain this finding and one of them is due to a lack of BC and screening practice culture or promotion of women's belief in fatalism, i.e., It is all the will of God so detecting the condition in an early or even late stage will not have any effect on the results. This was also supported by another researcher in Jordan[18].

Another study conducted in Turkey found that the rates of performing mammography were statistically higher in those who felt at risk compared to those that did not[19].

In Malta, a study found that the most important variables to delineate the differences between

lifetime attendees and non-attendees were perceived benefits, barriers, and cues to action[20].

CONCLUSIONS AND RECOMMENDATIONS:

The lower screening rate in women was associated with their beliefs and perceptions of preventive health measures. Improving breast cancer screening practices may be achieved by emphasizing breast cancer awareness through educational health programs and by minimizing the identified barriers. Providing accurate information regarding breast cancer will aid reduce women's fear. Women might need help to increase confidence regarding the BSE technique and its benefit for them.

This study recommends the increase of the awareness and advocacy campaign on breast cancer in the country. Also, extending of periodic screening programs. Emphasize more on using the latest methods to deliver health information related to breast cancer and this includes the use of social media and animated videos and finally through TV channels. To investigate different women's motivation issues that are related to practicing early detection behaviors, further researches are also needed as motivation showed significant relation to all 3 practices.

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