Available online at **www.ijmrhs.com**

ISSN No: 2319-5886

International Journal of Medical Research & Health Sciences, 2019, 8(9): 51-59

Determinants of Breast Self-Examination Practice amongst Iraqi/ Sulaimani Women using Champion Health Belief Model and Breast CAM

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ABSTRACT

Breast cancer (BC) is one of the major threat to females health in Iraq which can be easily prevented through Breast self-examination (BSE). This study aims to find out the level of awareness and practice of BSE among women and investigates the relation of socio-demographic factors, other comorbid conditions, knowledge, and belief with the BSE practices. This cross-sectional study conducted on 750 women using predesigned questionnaires and two scales, Breast cancer awareness measure (BCAM) and Champion health belief model (CHBM). The findings indicate that 75.2% of women were aware regarding BSE and 49.7% knew that BSE should be done monthly. 31.7% of participants never practiced BSE, 51.8% and 18.0% of participants practiced BSE rarely and regularly respectively. Education, employment status, family history, past breast disorders, knowledge, lactation status, perceived seriousness, health motivation, confidence, perceived benefits and barriers for BSE were significantly associated with the regular practice of BSE. Increase in women's health motivation and sensitization of women about the benefits of BSE is suggested to increase the adoption and practice of BSE.

Keywords: Breast cancer, Breast self-examination, Breast cancer, Health belief model (HBM)

INTRODUCTION

Breast cancer is a leading public health problem in Iraq and worldwide with reporting of nearly 1.5 million new BC annually giving a large burden to health system in term of morbidity and mortality. In the year 2015, only around 5,70,000 deaths occur due to BC worldwide [1]. In Iraq, during last decade, 23,792 new cases were registered, accounted for 33.8% of all cancers reported during the time period [2]. In Iraq the incidence of this health condition is mostly in early age with mean age of diagnosis from 47 to 52 years old [3,4]. However, it is diagnosed in later stage, for instance, two different studies have shown that most cases of BC (26% and 34.1%) were diagnosed at stage 3 or 4 [4,5].

The reporting of BC in study area may be related to the implementation of early detection program in Iraq which was introduced in health system, in 2000 which has majorly influenced the BC reporting statistics. Data indicates that women who practice Breast self-examination (BSE) were diagnosed in early-stage as compared to the women who do not practice BSE [6-8]. Tumor of smaller size is also detected when women practice BSE [9-11].

In developed country such as United Kingdom (UK), the study showed that almost half of participants perform BSE regularly [12]. In Greek, 91.5% of participants knew about BSE and 71.3% had performed it [13]. However, it has been noted that this screening method is not advocated well by health system in developing countries leading to low awareness and low practice/irregular practice of BSE in public. The regular practice of BSE was much low, 7.6% and 14% in two different settings in Iran [11,14]. In Qatar, 24.9% of women recognized BSE as screening method and 18.7% of women practiced BSE [15]. In Saudi Arabia 43.4% identified BSE as a screening method but 67.6% never practiced BSE [16]. However, in Iraq, under the program, monthly practice of BSE has been recommended for women

aged more than 20 years hence better observations were found 69.1% of participants aware about BSE and 42.6% had practiced BSE occasionally regular practice of BSE was not found [10,11,17].

In addition to low awareness about BSE, various factors i.e., sociodemographic, medical background and knowledge about BC, influence the practice of BSE. Many studies observed that young, educated women and women who had family history of BC practice BSE monthly [7,8,13]. Other factors influence practice of BSE were parity, contraceptive use, age at menarche and breast disorder [18-20]. Further, a study of UK indicated that the Information, Education, and Communication (IEC) for signs, symptoms and risk factors of BC increased the practice of BSE by 15% [12].

Another factor associated with practice of BSE is women's individual belief about BC and screening behavior. The Health belief model (HBM) has been widely used to investigate women's belief regarding practice of the BSE [21,22]. This model, women's study various factors i.e., women's perceived seriousness and susceptibility to the disease, women's motivation and confidence towards health, perceived benefits and barriers of BSE and determine the women's beliefs and attitude about BC and practice of the BC screening behaviors such as BSE [11,14].

The present study aims to find out the awareness regarding BSE and practice of same among Iraqi/Sulaimani women. It also assess the association of various factors i.e., sociodemographic, health, knowledge/awareness etc. with practice of BSE. In addition, by using the health belief model, it assess the individual belief and attitude regarding BSE.

MATERIALS AND METHODOLOGY

Study Area

The study was conducted on visitors of Breast disease treatment center (BDTC) and other two health centers from Urban and Suburban area, North Iraq, Sulaimani province inhabited by population of around 2 million, mostly resided in the center of the city and suburban area. BDTC is the only center in city providing services for early detection and treatment of BC and other related diseases. In BDTC, screening of normal women and women with minor breast disorder done diagnosis, and further treatment.

Study Design and Sampling

The cross-sectional study designs wherein non-probability (purposive) sample of 750 women drawn from women visiting the BDTC (273) and other two health centers (477). As recommended in the screening model of Iraq, women aged >20 years are supposed to practice BSE monthly. Hence, any women of age >20 year visiting selected health centers during our study period from 13th December 2016 to 12th June 2017, were eligible to participate in the study after provision of oral consent.

Tools

The questionnaire designed to get information on socio-demographic and medical background. Content of the questionnaire was validated by 13 experts of different expertise, based on their opinion and suggestions. Two scales i.e., Breast Cancer Awareness Measure (Breast CAM) and Champion health belief model (CHBM) were utilized.

Breast CAM used to measure women's knowledge about BC and screening [23,24]. It consists of 4 subscales and 33 questions with various themes i.e., screening method (5 questions), breast cancer (5 questions), warning signs and symptoms (7 questions) and risk factors and health behaviors (12 questions). It was 3 Likert scale answer (yes, no, I don't know), knowledge in this scale is scored based on the number of true answers.

Champion health belief model (CHBM) is a standard instrument widely used in many different cultures. It is translated to many languages [23,25,26]. CHBMs in this study was consisted of 6 subscales and 26 items, (perceived seriousness: 5 items), (perceived susceptibility: 3 items), (health motivation: 5 items), (confident self-efficacy to practice BSE: 6 items), (perceived benefits of BSE: 4 items), (perceived barriers of BSE: 4 items). This scale is 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Women's attitude was measured by addition of each item score in each subscale. High score of each item indicated the strong attitude of concepts (subscale) except barriers subscale which was scored inversely. Reliability test for both the scales was performed through a pilot study on 50 women and Croanbach Alpha was calculated to assess the internal consistency. Alpha value for various subscale of CHBM was as below Seriousness: 84%, Susceptibility: 83%, Health motivation: 81%, Confidence: 83.1%, BSE benefits: 82%, BSE barriers: 82.5%. Alpha value for breast CAM was 78%.

Statistical Analysis

The data compilation, management, and analysis were done by using Statistical Package for the social sciences (SPSS) program version 21.0 [22]. Descriptive and inferential statistics tests were applied to data. The frequency, percentage, mean and standard deviation (SD) were calculated using SPSS. The inferential diagnosis was made based on the test of significance, Chi-square test, Analysis of variance (ANOVA). Binary logistic regression was done to make a prediction of the regular practice of BSE *vs.* never practiced.

RESULTS

Table 1 indicated that although 564 (75.2%) of women knew how to perform the BSE, but only 373 (49.7%) knew that BSE should be done monthly.

Table 1 Frequency of awareness regarding to BSE

Frequency of true answer regarding to screening method	Frequency (%)
Do you know how to perform BSE	564 (75.2%)
BSE should be done monthly	373 (49.7%)

Table 2 showed the BSE practice in women with respect to socio-demographic characteristics. More than half of study participants were of more than 40 years old, 426 (56.8%), 89 (11.8%) participants were uneducated, 586 (78.2%) of participants live in urban area, 598 (79.85%) participants were married, 493 (65.75%) participants were unemployed, and barely self-perceived the economic status 383 (51%). Among the participants 238 (31.7%) of women had never practiced BSE, and 377 (50.3%), 135 (18.0%) of women were doing BSE rarely and regularly respectively. Among socio-demographic variables, secondary level of education 57 (21.5%) and having a job (employed) 57 (22.2%) were significantly associated with practice of BSE regularly, statistic value were (X^2=6.7, p=0.04), (X^2=6.29, p=0.04) respectively.

Table 2 The association of practice BSE *vs.* Socio-deomographic characteristics

Variables	Frequency (%)	Practice of breast self-examination			Chi-Squre	p-value
		Never n (%)	Rarely n (%)	Regularly n (%)		
Age group						
Age 20-29 years	89 (11.8%)	31 (34.8%)	44 (49.4%)	14 (15.7%)	6.7	0.193
Age 30-39 years	235 (31.3%)	83 (35.3%)	104 (44.3%)	48 (20.4%)		
Age 40 and above	426 (56.8%)	124 (29.1%)	229 (53.8%)	73 (17.1%)		
Total	750 (100%)	238 (31.7%)	377 (50.3%)	135 (18.0%)		
Education levels						
Uneducated	89 (11.8%)	36 (40.4%)	48 (53.9%)	5 (5.6%)	16.1	0.041
Primary	218 (29%)	64 (29.4%)	114 (52.3%)	40 (18.3%)		
Secondary	265 (34.1%)	89 (33.6%)	119 (44.9%)	57 (21.5%)		
Diploma	108 (14.4%)	31 (28.7%)	56 (51.9%)	21 (19.4%)		
Bachelor and above	70 (9.3%)	18 (25.7%)	40 (57.1%)	12 (17.1%)		
Place of residence						
Urban (Sulaimani)	586 (78.2%)	189 (32.3%)	297 (50.7%)	100 (17.1%)	1.28	0.526
Sub urban (District)	163 (21.7%)	49 (30.1%)	80 (49.1%)	34 (20.9%)		
Marital Status						
Married	598 (79.8%)	185 (30.9%)	303 (50.7%)	110 (18.4%)	2.87	0.82
Widowed	39 (5.2%)	12 (30.8%)	20 (51.3%)	7 (17.9%)		
Single	84 (11.2%)	32 (38.1%)	38 (45.2%)	14 (16.7%)		
Divorce	28 (3.7%)	9 (32.1%)	16 (57.1%)	3 (10.7%)		
Occupation						
Employed	257 (34.2%)	70 (27.2%)	130 (50.6%)	57 (22.2%)	6.29	0.043
Un employed	493 (65.7%)	168 (34.1%)	247 (50.1%)	78 (15.8%)		
Perceived self-economic status						

Insufficient	181 (24.1%)	56 (30.9%)	95 (52.5%)	30 (16.6%)	4.3	0.36
Barely Sufficient	383 (51%)	113 (29.5%)	201 (52.5%)	69 (18.0%)		
Sufficient	184 (24.5%)	67 (36.4%)	81 (44.0%)	36 (19.6%)		

Table 3 illustrate the association of medical and health condition with the practice of BSE. Most women had 3 children, 160 (21.3%), 541 (72.1%) participants used a contraceptive, 552 (73.6%) participants were in lactation phase, 353 (47%) participants had participated in early diagnosis program and 317 (42.2%) participants had past history of minor breast disorders. 108 (14.4%) of participants had history of BC in family and 46 (6.4%) were smokers.

Table 3 The association of practice BSE *vs.* health conditions

Variables	Frequency (%)	Practice of breast self-examination			Chi-squre	p-value
		Never n (%)	Rarely n (%)	Regularly n (%)		
Women parity						
Nulpara	133 (17.7%)	48 (36.1%)	62 (46.6%)	23 (17.3%)	8.7	0.55
1 para	62 (8.2%)	22 (35.5%)	29 (46.8%)	11 (17.7%)		
2 para	141 (18.8%)	47 (33.3%)	73 (51.8%)	21 (14.9%)		
3 para	160 (21.3%)	44 (27.5%)	81 (50.6%)	35 (21.9%)		
4 para	114 (15.2%)	29 (25.4%)	60 (52.6%)	25 (21.9%)		
5 and more	140 (18.7%)	48 (34.3%)	72 (51.4%)	20 (14.3%)		
Contraceptive use						
Yes	541 (72.1%)	162 (29.9%)	282 (52.1%)	97 (17.9%)	3.2	0.19
No	209 (27.7%)	76 (36.4%)	95 (45.5%)	38 (18.2%)		
Family history of Breast Cancer						
Yes	108 (14.4%)	17 (15.7%)	57 (52.8%)	34 (31.5%)	23	0
No	642 (85.6%)	221 (34.4%)	320 (49.8%)	101 (15.7%)		
Lactation						
Yes	552 (73.6%)	161 (29.2%)	289 (52.4%)	102 (18.5%)	6.4	0.04
No	198 (25.7%)	77 (38.9%)	88 (44.4%)	33 (16.7%)		
Smoker						
Yes	46 (6.4%)	6 (13.0%)	21 (45.7%)	19 (41.3%)	20.1	0
No	701 (93.5%)	230 (32.8%)	355 (50.6%)	116 (16.5%)		
Purpose of visting the screening center						
Not visited	288 (38.4%)	142 (49.3%)	122 (42.4%)	24 (8.3%)	85.8	0
For screening	109 (14.5%)	15 (13.8%)	57 (52.3%)	37 (33.9%)		
For diagnosis	353 (47%)	81 (22.9%)	198 (56.1%)	74 (21.0%)		
Minor disorder past history						
Yes	317 (42.2%)	65 (20.5%)	178 (56.2%)	74 (23.3%)	34.3	0
No	433 (27.7%)	173 (40.0%)	199 (46.0%)	61 (14.1%)		

In this study a significant association was found between the BC family history (X^2=23.0, p=0.00), women in lactation phase (X^2=6.4, p=0.04), smoking (X^2=20.1, p=0.00), undergoing Clinical breast examination (CBE) either for screening or early diagnosis (X^2=85.6, p=0.00), and having past minor disorder (X^2=34.3, p=0.00) with the regular practice of BSE. Regular practice of BSE was found more in women who had BC family history 9 (25%), lactating mothers 102 (18.5%), smokers 19 (41.3%), undergone the CBE 37 (33.9%), have past minor breast disorder 74 (23.3%).

Table 4 the means of breast CAM and CHBM subscales with respect to the practice of BSE. The study found that there is a significant association between BC knowledge and practice of BSE (F=86.05, p=0.000). The breast CAM mean was significantly higher among those women who practice BSE regularly (23.25 ± 2.85) in respect to rarely (20.86 ± 3.52) or never practice (18.15 ± 4.39).

Table 4 Mean of (breast CAM) and (CHBM) sub-scales *vs.* practice Of BSE

Practice BSE	BC Knowledge	Perceived Seriousness	Perceived Susceptible	Perceived Motivation	Perceived Confident	Perceived Benefit of BSE	Perceived Barrie of BSE
Never practice	18.15 ± 4.3	19.02 ± 5.7	7.92 ± 1.6	17.22 ± 3.3	17.63 ± 4.1	14.22 ± 2.3	9.82 ± 2.2
Rarely practice	20.86 ± 3.5	19.79 ± 5.2	8.18 ± 1.8	19.17 ± 3.4	20.93 ± 3.9	15.67 ± 2.2	8.16 ± 2.0
Regular practice	23.25 ± 2.8	18.22 ± 5.1	8.31 ± 1.8	20.95 ± 2.4	23.13 ± 3.9	16.70 ± 1.8	7.01 ± 2.0
Total	20.43 ± 4.1	19.26 ± 5.3	8.12 ± 1.7	18.87 ± 3.5	20.28 ± 4.4	15.40 ± 2.3	8.48 ± 2.3
F-test	86.053	4.589	2.48	58.911	90.254	59.044	82.454
p-value	0.000	0.010	0.084	0.000	0.000	0.000	0.000

Mean of perceived seriousness (18.22 ± 5.11) was significantly lower in those women who regularly practice BSE (F=4.589, p=0.010). However, perceived susceptibility of BC was higher in women who regularly practice BSE (8.31 ± 1.86) compared to those who rarely practice or not practice, but, this relationship was not statistically significant. The high value of mean for health motivation (20.95 ± 2.46) was observed as significant in women who regularly practice BSE, (F=58.911, p=0.000). Similarly, the high value of mean for self-confident (23.13 ± 3.94) was observed as significant in women who regularly practice BSE (F=90.254, p=0.000).

The study found that mean of perceived benefit of practicing BSE regularly was increased with regularity/ frequency of practicing of BSE (F=59.044, p=0.000), the mean of never practice, rarely practice and regular practice of BSE were (14.22 ± 2.33), (15.67 ± 2.29), and 16.70 ± 1.8 respectively. Similarly, the mean of women perceived the barriers of practicing BSE was regularly decrease with the regularity of practicing of BSE (F=82.454, p=0.000), the mean of never practice, rarely practice and regular practice of BSE was (9.82 ± 2.27), (8.16 ± 2.08), (7.01 ± 2.06) respectively.

DISCUSSION

One aim of this study was to find out the awareness and practice frequency of BSE in women in Iraq/Sulaimani. While practice and awareness about this screening behavior vary worldwide, a review study indicated that the practice of the BSE ranged from 2.6% to 84.7% [27-29]. Regarding awareness in this study, high BSE awareness was observed as compared to many countries of the region however they did not recognize the BSE as regular screening practice, only half of women (49.7%) knew that BSE should be done monthly. Regarding practice, this study found that only one-third of women, 31.7% never practiced BSE, 50.3% of women practiced rarely and only 18.0% of women practiced BSE regularly which is higher than 30.3% found in Iraq but lower than 51.1% findings from UAE study [30-33]. While another study among health worker in Iran shown the high percentage of the BSE, 73.2% of participants performed BSE and 26.9% of them performed it regularly, indicating BSE was only introduced among the health staff.

In this study, however, more women were aware of the BSE, but advocacy for screening is low only 49.7% of women were aware of regular practice of BSE. This finding is in cognizance of another Iraqi study which illustrated that out of participants of study who were aware of BSE only 57.4% perform the BSE [17]. A similar finding was observed in Arabi Saudia, wherein 57% of participants performed BSE [28].

Further, with respect to the association of various factors with BSE it was found that Low regular practice of BSE may be related to low education level of women and status of un-employment. Among socio-demographic variables, education and employment were significantly associated with practice of BSE regularly, statistic shows (X^2=6.7, p=0.04), (X^2=6.29, p=0.04) respectively. The positive association of education and employment status has been concluded in many studies [7,8,30,34,35]. They never practice of BSE was significantly high among illiterate (40.4%) and unemployed (34.1%). High practice of BSE in employed and educated women could be explained by health belief model. The study indicated that high perceived benefits of BSE, self-efficacy, health motivation were higher in employed women and gradually increases with level of education [36]. Additionally educated women would have good knowledge about BC early symptoms and benefits of early detection [37]. Regarding other variables, however regular practice BSE was more among women age 30-39 years, sub-urban resident, married, sufficient self-perceived economic status, but significant association could not be found. Although, some other studies have found the significant association of marital status, resident and age with practice of BSE [20,30,34,37]. Regarding medical and health condition, significant association was found between the positive BC history (X^2=23.0, p=0.00), women in lactation phase (X^2=6.4, p=0.04), smoking (X^2=20.1, p=0.00), utilizing CBE (X^2=85.6, p=0.00) and having past minor disorder (X^2=34.3, p=0.00) with practice of BSE regularly.

In the present study, almost half of women utilized the CBE and only two-third practiced the BSE. Marital status and parity were not significantly related with practice of BSE, although lactation was significant. Significant relation of marital status with practice of BSE was indicated in some studies [11,34], but relation of lactation with practice of BSE was not studied yet. Smoking is negative health behavior which is adversely associated with practice of BSE while our finding was controversial with this consisting finding [20,32].

This study found that there was a significant association between BC knowledge and practice of BSE (F=86.05, p=0.000). Breast CAM mean was significantly high among those women who practice BSE regularly in respect to those practices BSE rarely or never practice. The knowledge about early signs of BC and early detection would increase the positive attitude toward BC and increase the seeking for positive health behavior and practice BSE [37-39]. Many studies have revealed the significant improvement in the practice of screening behavior (BSE) by providing knowledge [33,40] as improved knowledge about BC would enhance the women's perceived seriousness about BC and susceptibility of BC. This, in turn, improve the women health motivation and self-efficacy, increase perceived benefit towards practice of BSE and decrease perceived barrier of BSE [41,42].

According to the health belief model, women attitude regarding BC and women's perceived benefits regarding the practice of BSE and barriers of screening methods would directly relate to screening behavior and practice of BSE [11,33,36]. Similar findings were found in current study, perceived benefits of practicing BSE was significantly high in women who regularly practice BSE as compared to rarely practice and never practice, (F=59.044, p=0.000). As well as, current study found perceived of barriers of practicing BSE was decline regularly in never practice (9.82 ± 2.27) to rarely practice (8.16 ± 2.08) and regular practice of BSE (7.01 ± 2.06). Significant value was (F=82.454, p=0.000).

There is not a significant finding regarding Perceived susceptibility in the study. In this study, the regular practice of BSE was high in women who perceived high susceptibility, but a significant difference was not found. The greater susceptibility of BC was observed in women who perform BSE in two studies while other studies in Iran found out the negative relation [11,13,14,39]. Similarly, in the Turkish study, perceived susceptibility and perceived barriers were low among those who performed BSE [39]. The high mean of health motivation (F=58.911, p=0.000) and confidence (self-efficacy to practice BSE) (F=90.254, p=0.000) were significantly associated with regular practice of BSE which is in cognizance with other studies [11,14,33]. The study found that women's perception of seriousness was significantly low in those women who regularly practice BSE (F=4.589, p=0.010).

In an Iranian study, some socio-demographic and health-related variables were determined as the predictors for BSE practice. Age, IEC, having a family history of BC, current marital status, years of education, menarche,and menopausal status also predicted BSE performance [11,18,43]. Similarly, in this study, the logistic analysis model was constructed for predicting regular practice of BSE (Table 5). All variable regarding sociodemographic, medical and health condition, knowledge and sub-scales of CHBM were included in this analysis. The model accounted for 58% of the variance in performing BSE. In this study, eleven variables could predict the regular practice of BSE with a significant odds ratio. The non-lactating women were over 10 times more likely to practice BSE regularly (OR=10.23, p=0.009), and those women who got pregnant first time in high age,had practiced BSE regularly (OR=1.151, p=0.009). Women who have good knowledge about BC (OR=1.241, p=0.002), perceived susceptibility (OR=1.721, p=0.001), high health motivation (OR=1.340, p=0.001), high self-confident (OR=1.211, p=0.001), and perceived benefits of BSE (OR=1.332, p=0.001) were over one time more likely practice BSE regularly. Meanwhile, women perceived barrier of BSE were more like to never practice BSE (OR=0.514, p=0.000).

Table 5 Logistic regression defining the predictors of regular practice of BSE

Variables	B	Sig.	Odd ratio	95% C.I. for EXP (B)	
				Lower	Upper
Address (sub urban)	-1.493	0.009	0.225	0.073	0.693
Age at delivery	0.141	0.004	1.151	1.045	1.268
Not history of BC	-2.677	0.000	0.069	0.015	0.31
Not lactation	2.326	0.009	10.23	1.766	59.331
Good knowledge of BC	0.216	0.002	1.241	1.083	1.423
Perceive seriousness	-0.121	0.031	0.886	0.794	0.989

Perceive susceptibility	0.543	0.001	1.721	1.245	2.38
Health motivation	0.292	0.001	1.34	1.122	1.599
Perceive confident	0.191	0.004	1.211	1.064	1.378
Perceive benefit (BSE)	0.286	0.035	1.332	1.021	1.737
Perceive barrier (BSE)	-0.666	0.000	0.514	0.379	0.695
Constant	-17.39	0.000	0.000		

CONCLUSION

Awareness and regular practice of BSE among participants was considerably high with respect to other studies of the region. The results of this study illustrated that although women have awareness about BSE, only a few of them knew that this screening exercise is to be done monthly as it was found that more than two-third participants performed BSE but only few performed BSE regularly. Education, employment status, family history, past history of breast disease, lactation was significantly associated with regular practice of BSE. In addition various factors i.e., nonlactating phase, pregnancy in high age,good knowledge, perceived susceptibility, self-efficacy, health motivation, awareness regarding benefit of BSE and low barrier of breast self-examination were found associated with regular practice of BSE.

DECLARATIONS

Ethical Clearance

Ethical clearance was taken by the ethical committee of the University of Sulaimani.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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