

## Beliefs and Reported Practices Related to Breast Self Examination among Sample of Egyptian Women

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**Abstract:** Breast cancer contributes to a high rate of death among women worldwide. In Egypt, breast cancer is the most frequently diagnosed cancer among women and it comprises 25.5% of all cancers in that country. Early detection of breast cancer through breast self examination (BSE), plays an important role in reducing its morbidity and mortality. The aim of this study was to evaluate beliefs and reported practices related to breast self examination and breast cancer among Egyptian women utilizing Champion's Health Belief Model (HBM). A descriptive correlational design was utilized in this study. A total number of 400 women employed in different faculties at Cairo University were chosen randomly. Various statistical tests were implemented. The mean age of women in the study was  $40 \pm 12.8$  years. The results indicated that 35.3% of women reported that they practice BSE and 17.3% of them mentioned they perform it once per year. Also, the motivation of women in the study to perform BSE has got the highest mean score ( $3.5 \pm 0.6$ ), followed by the seriousness of the disease ( $3.4 \pm 0.7$ ). While the lowest mean score was related to their confidence in performing BSE ( $2.7 \pm 0.7$ ). Conclusion: Women, who were more confident in their ability to conduct BSE, were more likely to perform BSE. It was emphasized the importance of BSE education. Periodic follow up of female employees and other women in different settings in the community is very important to ensure early detection of cases. In addition, BSE training programs should be adopted as an element of the services offered to the working females.

**Key words:** Beliefs and Practices- Breast Self-Examination • Breast Cancer • Health Belief Model • Egypt

### INTRODUCTION

Cancer has emerged as a major public health problem in both developed and developing countries. The burden on society caused by cancer is immense, not only in terms of human suffering, but also the cost of cancer in economic terms [1]. Globally, breast cancer accounts for 16% of all cancer deaths among adult women [2]. In Egypt, breast cancer is the most common cancer among Egyptian women. Based on cancer registries, breast cancer accounts for 37.6% of all reported cancers in women. Most cases occur between 30-60 years of age among Egyptian population [3].

Breast cancer contributes to a high rate of death among women worldwide [4]. It has been estimated that one out of every nine women living in western countries is likely to be afflicted by breast cancer in her lifetime [5]. The incidence of breast cancer varies between countries;

the highest rates occur in the United States and Canada and, the lowest rate is found in Asia. The Nordic countries have recently reported a steady increase in the incidence of breast cancer. A high prevalence rate of breast cancer is noted among women living in Denmark, Finland and Sweden. The incidence rate of breast cancer among Asian women has also increased in recent years and is likely related to life style changes [6]. In the past 20 years, breast cancer incidence in the world has a dramatic increase of 50-100%, which strongly supports the need for breast cancer prevention and screening programs [7].

In Egypt, breast cancer is the most frequently diagnosed cancer among women and it comprises 25.5% of all cancers in that country [8]. Breast cancer is the second leading cause of death and accounts for 24% of female cancers in Turkey [9]. The Arab world is facing similar and even more challenges, knowing that Arab women are affected younger than their counterparts in

industrialized nations [10]. The National Cancer Institute in Cairo Registry reported breast cancer to represent 35.1% of female cancers in Egypt [11]. Extensive disease was also reported at presentation with stages III and IV representing 80-90% of detected cases. This means that many women in the community with early but palpable breast cancer fail to seek medical attention until their cancer is advanced [12].

Breasts symbolize the femininity and nursing capabilities of women, thus, breast cancer not only threatens the health of a woman, but also jeopardizes gender identity and body image [13]. Although some of the risk factors that increase women's chance of developing breast cancer are known, most causes of breast cancers are still unknown. Since the process of how some of the known risk factors cause cells to become cancerous is not established, there is no certain way to prevent breast cancer. Therefore, the early detection of breast cancer is extremely important [14].

While very little can be done to limit the main causative risk factors which have been documented in epidemiological studies, important advances have been made in strategies for early detection and in therapeutic interventions which may contribute to more favorable outcomes for breast cancer patients [15-17]. Early detection of breast cancer plays an important role in reducing its morbidity and mortality. Theoretically, a 95% survival rate could be achieved if this cancer was diagnosed at an early stage. Breast self exam (BSE), mammography and clinical breast examination are considered as screening methods for early detection of breast cancer. Although there is controversy surrounding the efficacy of BSE in countries where mammography and clinical breast exams are readily available, elsewhere BSE remains a cost-effective method to detect breast cancer. A woman who performs regular BSE may be more motivated to seek medical attention, including mammography and clinical breast exams if available [18].

Given that breast cancer patients in developing countries like Egypt, are relatively younger than their counterparts in western countries, breast cancer screening programs and breast self examination education should be accorded more attention by public health professionals in Egypt [19]. Variables such as demographic characteristics, knowledge and education influence the practice of BSE [20]. Furthermore, a lack of belief regarding the necessity of regular BSE has an impact on the engagement of this screening behavior. Understanding women's beliefs regarding BSE can be used to design appropriate educational interventions which promote this screening behavior.

Most recent researches had indicated that BSE leads to earlier diagnosis which will lead to reduced cancer mortality rate [21]. Other researches stressed the importance of preventive programmes and early diagnosis of breast cancer, in addition to identifying those risk factors associated with breast cancer, which will lead to a higher rate of therapeutic success. It is of vital importance to precociously diagnose the tumour before reaching the palpable stage. This can be achieved through educating women about breast self exam and performing it correctly [22].

Although breast cancer is one of the few cancers which can be detected in its preclinical stage, breast self exam is still only practised by a low proportion of the population in our country and this inconsistency forms the basis of the current study. Community health nurses, who form a significant part of the health system, are often engaged in giving health talks in clinics and interact with patients and their relatives. They can play a crucial role in providing patient education regarding breast cancer screening methods and the barriers that prevent women from performing BSE [23].

The Health Belief Model (HBM) is the conceptual framework of the study. This model was originally introduced by a group of psychologists in the 1950's to help explain why people would or would not use available preventive services, such as chest x-rays for tuberculosis screening and immunizations for influenza [24].

Many investigators studying beliefs related to cancer screening practices have used the HBM as a theoretical framework to study breast cancer screening behavior such as BSE or mammography screening [25]. The HBM has frequently been applied to breast cancer screening. It has been also translated, tested and used among women of various cultures worldwide. The model stipulates that health-related behavior is influenced by a person's perception of the threat posed by a health problem and by the value associated with his or her action to reduce that threat [26].

According to the HBM Scale a woman who perceives that she is susceptible to breast cancer and that breast cancer is a serious disease would be more likely to perform regular breast examinations. Similarly, a woman who perceives more benefits from and fewer barriers to BSE would be more likely to practice BSE. A woman who has an internal cue (body perception) or who has been exposed to an external cue (e.g., the positive influence of a health care provider or the media) would also more readily adopt BSE, as would a woman who wants to improve her health and who is confident of positive results [27]. The investigation of attitudinal components

of health-related behavior is important. If attitudes related to health behavior can be identified, health protection interventions for attitudinal change can be developed and an increase in desirable health behavior would result [28].

The current study aims at evaluating the beliefs and reported practices related to breast self examination and breast cancer among sample of Egyptian working women utilizing Champion's Health Belief Model (HBM).

### MATERIALS AND METHODS

**Design and Sample:** A descriptive correlational design was utilized in this study with a pre-coded self-administered questionnaire. A total number of 400 women employed in different faculties at Cairo University were chosen through random sampling. Data were collected during six months period (January to July, 2010). Written informed consent was obtained from each participant after explaining aim and other relevant information about the study. Anonymity of subjects and confidentiality of data were assured. Participation of subjects was voluntary.

**Measures:** The Arabic version of revised Champion's Health Belief Model Scale (HBM) was tested for validity and reliability in Mikhail and Petro-Nustas (2001) (29) and found satisfactory. The Champion's Health Belief Model Scale (CHBMS) consists of 6 concepts: perceived susceptibility to illness (5 items), perceived seriousness of the illness (7 items), perceived benefits for the presumed action (6 items), perceived barriers for the presumed action (7 items), confidence in one's ability (11 items) and health motivation (7 items). Behavior is also a result of the belief that certain actions will benefit the individual and that this benefit will outweigh any barriers (27). All the items have 5 response choices ranging from strong disagreement (1 point) to strong agreement (5 points). All scales are positively related to screening behavior, except for barriers which are negatively associated. The questionnaire in the current study, additionally, included items to assess demographic characteristics, such as age, gender, education, marital status, health insurance information, as well as family and personal history of breast cancer. Finally, it included questions regarding the participants' knowledge on BSE, their intention to practice it and their sources of information (cues to action).

**Statistical Analysis:** Descriptive statistics were used to examine the characteristics of the samples. The six subscales of the Health Belief Model were, accordingly, created based on the responses of the participants on the corresponding items. The average responses to the items on the six scales, along with the overall mean and standard deviation of each subscale were found. Data analysis was done using the SPSS version 17.0 statistical package and differences were considered significant at  $p < 0.05$ . Various statistical tests were implemented in the study as Contingency Coefficient (CC), which measure the relation between two nominal variables. Also, chi-square test was used to test independency variables in the study.

### RESULTS

To evaluate beliefs and reported practices related to breast self examination and breast cancer among working women, data were collected from 400 women working at Cairo University, Egypt. The mean age of women in the study was  $40 \pm 12.8$  years. The majority (73.7%) were married. A little over half of the women in the study sample (54%) had Baccalaureate degree education and 43.5% had technical education.

Table (1) shows that the majority of the sample (85.3%) heard or read about breast cancer, while nearly two third of the sample (74.3%) heard or read about breast self exam. The highest source of information as reported by women was TV and radio (26.8%). The same table indicates that only 35.3% reported that they practiced BSE and 17.3% of them mentioned they performed it once per year. Over two third (69.5%) had the intention to practice BSE in the future.

Table 1: Distribution of Knowledge and Reported Practices of Women in the Study Sample Regarding Breast Cancer and Breast Self Exam (n=400)

Statement	N	%
Hearing or reading about BC	341	85.3%
Hearing or reading about BSE	297	74.3%
Sources of information: - Family members	25	6.3
-Doctors or nurses	88	22
-Friends	57	14.3
TV and Radio	107	26.8
Newspapers and magazines:	20	5
Performing BSE	141	35.3%
Once per month	28	7.0%
Every 2 or 3 months	31	7.8%
Every 6 months	31	7.8%
Every year	69	17.3%
Intention to perform BSE if not done yet	278	69.5%

Table 2: Distribution of Perceived Susceptibility to Breast Cancer as reported by Women in the Study Sample (n=400)

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Susceptible to BC in the future	24	6.0	51	12.8	244	61	73	18.3	8	2.0
I feel that I am susceptible to BC	33	8.3	90	22.5	200	50	76	19	1	0.3
I am highly susceptible to BC during next 10 years	24	6	87	21.8	218	54.5	69	17.3	2	0.5
My personal chance of getting BC is big	32	8	127	31.8	177	44.3	62	15.5	2	0.5
I think I am susceptible to BC more than anyone	42	10.5	142	35.5	155	38.8	59	14.8	2	0.5

Table 3: Distribution of Perceived Seriousness of BC as reported by Women in the Study sample (n=400)

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Thinking about BC made me afraid.	7	1.8	54	13.5	72	18	145	36.3	122	30.5
Thinking about BC increase my heart beats	12	3	72	18	97	24.3	143	35.8	76	19.0
I am afraid of thinking of BC	8	2	57	14.3	86	21.5	156	39	93	23.3
I think that problems due to BC will persist longer	6	1.5	33	8.3	130	32.5	141	35.3	90	22.5
If I got BC, this will threaten my marital life	20	5	98	24.5	146	36.5	91	22.8	45	11.3
All my life will be changed if I got BC	14	3.5	48	12	122	30.5	140	35	76	19
I think I will not live more than 5 years if I got BC	41	10.3	81	20.3	207	51.8	52	13	19	4.8

Table 4: Perceived benefits for the presumed action as reported by Women in the Study Sample: (n=400)

Statement	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
When I perform BSE, I became self satisfied.	6	1.5	54	13.5	150	37.5	160	40	30	7.5
Performing BSE decrease anxiety about the disease	12	3	66	16.5	140	35	147	36.8	35	8.8
Performing BSE monthly, help in early detection of breast cancer.	7	1.8	56	14	113	28.3	160	40	64	16
Performing BSE monthly will decrease complications of breast cancer if I got it.	9	2.3	59	14.8	147	36.8	147	36.8	38	9.5
Performing BSE decrease the chance of making operation if I got it	12	3	57	14.3	141	35.3	140	35	50	12.5
Performing BSE monthly will help in detection of tumors before going to doctors.	23	5.8	53	13.3	134	33.5	156	39	34	8.5

Regarding perceived susceptibility, Table (2) indicates that 18.3 and 2% of the study sample agreed and strongly agreed (respectively) that they are susceptible to BC in the future. Also, 15.5% of the women in the study agreed that their personal chance of getting BC is big and 14.8% of them believed that they are susceptible to BC more than anyone. Regarding perceived seriousness, Table 3 indicates that 36.3 and 30.5% of women in the study agreed and strongly agreed (respectively) that they are afraid of thinking about BC, in addition to 35.8% and 19% agreed and strongly agreed (respectively) that thinking about BC increases their heart beats. The same table also shows that 22.8 and 11.3% of women agreed and strongly agreed (respectively) that their marital life will be threatened if they got BC. Finally, 13 and 4.8% of the sample agreed and strongly agreed (respectively) that they will not live more than 5 years if they got BC.

In regard to perceived benefits, Table (4) shows that 40 and 7.5% agreed and strongly agreed (respectively) to the statement that when women perform BSE on monthly basis, they became self satisfied, while 40 and 16% agreed and strongly agreed (respectively) that performing BSE helps in early detection of breast cancer. The same table indicates that 36.8 and 9.5% of women in the study sample agreed and strongly agreed (respectively) to the statement that performing BSE monthly decreases complications of BC, while 39 and 8.5% agreed and strongly agreed (respectively) that BSE helps detecting tumors before seeking medical help.

Regarding the perceived barriers to perform BSE by the studied women, Table (5) indicates that only 8.5 and 0.5% of them believed and strongly believed (respectively) that BSE is a trivial thing, while 25.3 and 6.5% agreed and strongly agreed (respectively) that

Table 5: Distribution of Perceived Barriers to Performing BSE as reported by Women in the Study Sample: (n=400)

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
Performing BSE is a trivial thing	107	26.8	180	45	77	19.3	34	8.5	2	0.5
Performing BSE increases my anxiety about liability of having BC	28	7.0	116	29	129	32.3	101	25.3	26	6.5
Feeling of shame & embarrassment when performing BSE	57	14.3	172	43	90	22.5	68	17.0	13	3.3
Performing BSE takes long time	28	7.0	171	42.8	142	35.5	52	13.0	7	1.8
Performing BSE is unfavorable thing	66	16.5	172	43.0	97	24.3	58	14.5	7	1.8
No private place at home to perform BSE	82	20.5	169	42.3	81	20.3	62	15.5	6	1.5
I think getting BC is a destiny and BSE will not change it	26	6.5	93	23.3	116	29	109	27.3	56	14

Table 6: Distribution of Confidence in Performing BSE as reported by Women in the Study Sample: (n=400)

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
I am Confident in performing BSE correctly	53	13.3	114	28.5	132	33.0	84	21.0	17	4.3
I know how to perform BSE	52	13	108	27	104	26	114	28.5	22	5.5
I am confident I can discover breast tumors by performing BSE	35	8.8	110	27.5	143	35.8	98	24.5	14	3.5
I am able to discover breast tumors alone through performing BSE	39	9.8	153	38.3	142	35.5	58	14.5	8	2.1
I can discover breast tumor at size of big spot	52	13	165	41.3	121	30.3	59	14.8	3	0.8
I can discover breast tumor at size of small spot	62	15.5	183	45.8	118	29.5	33	8.3	4	1.1
I can discover breast tumor at size of small peas	58	14.5	141	35.3	120	30	74	18.5	7	1.8
I am sure of the steps of BSE	52	13.0	140	35.0	122	30.0	72	18.0	14	3.5
I am able to differentiate between normal and abnormal breast tissues through BSE	51	12.8	166	41.5	114	28.5	59	14.8	10	2.5
When I look at mirror, I can identify abnormal changes in my breast	30	7.5	95	23.8	138	34.5	121	30.3	16	4
I can use the correct parts of my fingers when performing BSE	45	11.3	134	33.5	108	27.0	97	24.3	16	4.0

Table 7: Health Motivating factors to Perform BSE as reported by Women in the Study Sample: (n=400)

Statement	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	n	%	n	%	n	%	n	%	n	%
I wish to discover health problems that may occur early	6	1.5	38	9.5	82	20.5	200	50.0	74	18.5
Keeping my good health is important to me	3	0.8	16	4	57	14.3	142	35.5	182	45.5
I always seek new information that improve my health status	2	0.5	22	5.5	72	18.0	177	44.3	127	31.8
I feel the importance of activities that improve my health	2	0.5	22	5.5	69	17.3	197	49.3	110	27.5
My diet contains complete and balanced meals	31	7.8	50	12.5	147	36.8	151	37.8	39	9.8
I practice exercise at least 3 times weekly	36	9.0	118	29.5	159	39.8	71	17.8	16	4.0
I perform periodic medical checkup	56	14	138	34.5	131	32.8	61	15.3	14	3.5

performing BSE increases their anxiety about liability of having BC. On the other hand, 17 and 3.3% agreed and strongly agreed (respectively) to the statement that a woman would feel ashamed and embarrassed when performing BSE and 13 and 1.8% believed that performing BSE takes long time. Finally, 14.5 and 1.8% indicated that performing BSE is unfavorable thing and 15.5 and 1.5% indicated that no private place at home to perform BSE.

Regarding women confidence in performing BSE, Table (6) shows that 21 and 4.3% of women in the study sample were confident and strongly confident to perform BSE correctly, 24.5 and 3.5% respectively indicated that

they are able to discover breast tumors by performing BSE. On the other hand, 18 and 3.5% indicated that they are sure of the steps of BSE, 14.8 and 2.5% indicated that they were able to differentiate between normal and abnormal breast tissues through BSE. Finally, 24.3 and 4% indicated that they use the correct parts of fingers when performing BSE.

Regarding health motivating factors among the studied women, Table (7) explains that 50 and 18.5% of them agreed and strongly agreed (respectively) that they wish to discover health problems that may occur to them early, while more than three quarters of the women

Table 8: Mean and Standard deviation of the subscales of Health Belief Model

HBM main concepts	Mean	SD
Susceptibility	2.8	0.7
Seriousness	3.4	0.7
Benefits	3.4	0.8
Barriers	2.5	0.7
Confidence	2.7	0.7
Motivation	3.5	0.6

Table 9: Correlation between demographic characteristics of the study sample (n= 400) and the six subscales in the HBM:

Variables	Age		Education	
	Chi-Square	P-value	Chi-Square	P-value
Susceptibility	33.95	0.47	81.996	0.572
Seriousness	56.45	0.188	153.396	0.021
Benefits	70.799	0.006**	126.44	0.135
Barriers	59.59	0.086	320.170	0.0005**
Confidence	113.64	0.008**	174.548	0.903
Motivation	75.066	0.004**	112.113	0.559

(44.3% and 31.8%) agreed and strongly agreed (respectively) that they search about new health information to improve their health status. The same table also indicates that only 17.8% of women in the study agreed that they practice regular exercise, 15.3% of them perform periodic medical checkup and 37.8% of women had well balanced diet in their food.

As regard to the distribution of Mean and Standard Deviation of Subscales of the Health Belief Model, Table (8) shows that the motivation of women in the study to perform BSE has got the highest mean score (3.5±0.6), followed by the seriousness of the disease (3.4±0.7) and the benefits of performing BSE (3.4±0.8). While the lowest mean scores were related to their confidence in performing BSE (2.7±0.7) and their susceptibility to BC and BSE (2.8±0.7). Regarding the correlation between the six subscales of the Health Belief Model, the results showed that there is a highly significant relation among the subscales of HBM, which indicate its strong effect on women’s performance of BSE.

Regarding the relation between some socio-demographic characteristics of the women in the study (as age and education of women), Table (9) shows that there was a significant correlation between benefits of performing BSE and age of women (p= 0.006). Also, the same table indicates that there was a highly significant relation between the barriers that prevent women from performing BSE and their education. Also, there was a significant relation between women’s age and the motivation to perform BSE.

## DISCUSSION

Breast self exam is one of the most important methods for early diagnosis of breast cancer. About 95% of breast cancers can be diagnosed in primary stage by BSE [26]. Breast cancer is a community health problem in Egypt. Government is working hard to fight breast cancer. Early detection of breast cancer may play an important role in minimizing the number of deaths from BC [30].

We are now starting to face the challenges of early detection of breast cancer as well as the implementation of proper BSE technique among Egyptian women [31].

It is a great responsibility to empower Egyptian women with BC awareness and methods for early detection as BSE.

Based on the results of the current study, the mean age of the women was 40±12.8 years old. This age is considered the most common age that women are susceptible to develop breast cancer. This may be mainly due to hormonal changes that happen to women at this age. This age agrees with similar studies conducted to evaluate women awareness regarding BSE in Tehran [4] and in Saudi nursing students [30]. Other studies were conducted on smaller age group of women to evaluate their beliefs and practices regarding BSE [32, 33].

The results of this study also indicated that more than half of women (54%) have got Baccalaureate level of education and the majority of them (85.3, 74.3%) have heard and read about breast cancer and breast self exam, respectively. This result agrees with the result of recent studies. A study done by Montazeri *et al.* [4] which was a population- based survey, carried out in Tehran. A total of 1402 women were interviewed, It was found that 64% of the respondents are familiar with breast cancer and 17% of the whole sample indicated that they are performing regular BSE.

In the same context, a study done by Ceber *et al.* [34], to evaluate health beliefs and BSE behavior of female academicians in a Turkish university, it was reported that the mean age of participants was 35.6 years (SD=9.1) with an age range between 23 and 60 years. The majority of the participants (64.7%) had up to a PhD degree and 28.1% had MSc degree.

Oluwole [35] showed that most respondents (94%) are aware of BSE. Some of them (30%) knew the different methods for screening for BC, however, most of them (56%) knew that BSE should be performed monthly.

The literature supports the argument that regular practice of BSE influences treatment, prognosis and survival rates [33, 36]. In this study only 35.3% of the

participants reported practicing BSE. Only 7% of them perform it on a regular monthly basis (once per month), while 21% stated that they perform it irregularly (every 6-12 months). Although we found in our study that more than two third of female employees at Cairo university perform BSE occasionally, the percentage of those with regular BSE was very low. The reason may be that participants do not attach importance to BSE personally or they may be afraid of discover anything that may cause troubles in their daily life.

On the other hand, a higher percentage was found among academicians who perform regular BSE (27.7%) which is much higher than a previous Turkish study (13.4%) in academicians [37]. A different study that was carried out in Western Turkey by Dundar *et al.* [38] who reported that only 10.2% of the Turkish women studied perform regular BSE. Nahcivan and Secgili [9] found that only 5% of the women perform regular BSE. Some studies found out a similar percentage of BSE performance in teachers, 53.8% of the teachers in Western Turkey decelerated BSE [39] and 30% of the teachers in Italy undertook monthly BSE [40]. Contrarily, in a study conducted by Odusanya [41], it was found that 11% of the Nigerian school teachers perform BSE monthly. Parsa *et al.* [20] reported that 19% of Malaysian teachers perform regular BSE while Jarvandi *et al.* [6] determined that 6% of the female teachers perform regular BSE in Tehran.

In a study done by Karimi and Sam [42], the results of their study showed that 13.5% of 149 studied women in Ramsar perform BSE at least once per month. A study from Saudi Arabia, found that only 30.3% of the women heard about BSE and 18.7% reported that they practice BSE within the previous year [43]. Another study from Nigeria demonstrated that women lacked enough knowledge about breast cancer and only 34.9% claimed to ever-practiced BSE [44]. While a study of BSE behavior among Chinese immigrant women living in San Francisco indicated that 80.9% reported having heard of BSE but only 53.9% of the women had performed BSE during the past year [45]. These rates were higher in developed countries. A recent study has been shown that 75% of women in the United States conduct BSE and its adequate quality was rated 27%. While other Austrian women reported that about 31% of them examined their breasts thoroughly [46]. These differences might be related to time of education in Austria and USA as the students took early education regarding BSE in school ages.

Another study by Petro-Nustus and Mikhail [25], the aim of this study was to investigate factors and beliefs that may be related to the practice of breast self-examination (BSE) among a group of Jordanian women. The main findings indicated that although the majority of the sample population (67%) had heard/read about BSE, only a quarter of them reported that they had ever practiced BSE in the previous 12 months and only 7% had performed it on a regular monthly basis.

Another study with similar results to our study was done by Montazeri *et al.* [4] in Tehran, Iran. When the respondents were asked about breast self-examination, 37% (n = 520) reported that 'they practice breast self-examination'. Only 17% of women said that 'they do regular breast self-examination'. Similarly, some studies have reported that less than half of their study groups actually practice BSE monthly. In contrast, some studies have found that the majority of older women performed breast screening activities on a regular basis [47].

Contrarily, in a study conducted by Odusanya [41], it was found that 11% of the Nigerian school teachers performed BSE monthly. Parsa *et al.* [20] reported that 19% of Malaysian teachers performed regular BSE while Jarvandi *et al.* [6] indicated that 6% of the female teachers performed regular BSE in Tehran. In this regard, we were expecting more percentage among University employees as they know about the subject and the ramifications of breast cancer in society, so they should perform BSE more often and more regularly than the general population.

The current study had shown that 67% of the women were afraid of thinking about breast cancer, while around half of them perceived many benefits of performing BSE.

Regarding the perceived barriers that prevent women from performing BSE, it was found that 9% of the studied women indicated that BSE is a trivial thing, while two third of them indicated that performing BSE make them anxious about getting breast cancer. One fifth of the women in the study mentioned that BSE cause shame and embarrassment to themselves. These findings go along with the result of a study done by Seif and Aziz [48], under the aim of evaluating the effect of BSE training program on knowledge, attitude and practice of group of working women in Ain Shams University-Cairo-Egypt. Its main findings indicated that almost two fifth of the participants had negative attitude and misconception toward BSE (importance, value and practice), this result could be attributed to horrible feeling of the disease (BC), unknown causes, non-specific treatment and poor prognosis.

Regarding the barriers of performing BSE, the same study [48] also indicated that the majority of the subjects mentioned that the main barriers are lack of knowledge, lack of time, fears and worries about discovering the disease (BC). This result could be attributed to multi-responsibilities of working women, also shortage of time urge the working women to postpone their own affairs for the sake of other family members.

The results of the current study showed that there was a statistically significant relation between the age of women and benefits, confidence and motivation to perform BSE. These results are opposite to the result of a study by Yousuf [30], which was conducted to assess the effect of a breast cancer workshop on a group of 33 Saudi nursing students. Its main findings did not show a significant relationship between the practice of BSE and the knowledge of the participants of how to examine their breasts and demographic data of the participants. This may be attributed to the small sample size of Saudi students and being all in the same age and education level.

The findings of the current study revealed that education of the participants had no significant relation with the subscales of HBM except the barriers that prevent them from performing BSE. When the obtained findings are compared with the study of Petro-Nustas and Mikhail [25], our participants were found to perceive fewer barriers when compared with Jordanian women. This difference may have originated from our participants being better informed about the BSE practice as they work in Cairo University and having higher educational level than Jordanian women. In societies having low level of social and economic conditions, it is seen that the belief in external power increases. It is also common in the Arabic culture that they believe in destiny approach. Other researches revealed that the health motivation of the participants who are well educated is quite high than who are not [9, 49-52].

Other studies found a significant relationship between BSE practice and women's age, education level and personal history of breast problems. Haji-Mahmoodi and his colleagues' [53] showed a significant association between BSE practices and the age, level of education and personal history of breast problems. Another study by Balkaya *et al.* [54] found out a strong association between education of the participants and performing BSE correctly. So, it is important to keep nursing students informed with any health issues that are not covered in detail in their education course.

Our study revealed that there was a highly significant correlation among the subscales of HBM, which indicate its strong effect on women's performance of BSE. These findings agree with a study done by Tavafian *et al.* [5] who studied 240 eligible women, who were selected from eight health centers located in Bandar Abbas, Iran. It was found that there is a strong correlation between the six subscales of HBM.

Also, the results of the current study indicated that the motivation of women in the study to perform BSE has got the highest mean score ( $3.5\pm 0.6$ ), followed by the seriousness of the disease ( $3.4\pm 0.7$ ) and the benefits of performing BSE ( $3.4\pm 0.8$ ). This means that we must increase women's confidence in their ability to perform BSE and perception of benefits, in order to be sure that they will do it on regular basis. These findings are in alignment with the constructs of HBM that predicts that women who perceive themselves to be susceptible to breast cancer (perceived susceptibility), who also believe that breast cancer is a serious disease (perceived seriousness), who have got high motivation, high benefits and low barriers, are more likely to practice regular BSE.

In the same context, a study done by Ceber *et al.* [34], this study was conducted at various faculties located in Ege University, Izmir, Turkey. The results indicated that health beliefs toward BSE of the participants in this study are found as favorable. Benefit perception of BSE had the highest values and barrier perception had the lowest value among the health beliefs of the academicians related to BSE practice. Similar result was indicated by Gozum and Aydin [55] in their study. The results in both studies considered that high level education is important in acquiring health behaviors. The participants with good education can come due to high level of benefit perception. The higher perceived benefits of the participants in this study also indicate that the motivation and likelihood of beginning the behavior is high. Health motivation of our participants was observed high. This may be mainly due to high level of education of the participants.

Regarding health motivating factors, the result of the present study showed that more than two third of the studied female employees (68.5%) wished to discover health problems that may occur to them early, while more than three quarters of them (76%) searched about new health information to improve their health status. Also, it was found that only 22% of women practice regular exercise, 48% had well balanced diet in their food and 19% did medical checkup regularly. These findings agree with the findings of



Yousuf [30] who found that a very few of participants in the study knew that fatty food consumption is one of the risk factors for breast cancer. Egyptian foods usually are high in fats and oil content as they depend mostly on fast food. Thus, this issue needs to be emphasized when teaching nursing students and the women in the community.

In contrast with our study, a recent study by Sharma *et al.* [56] which was conducted to systematic review the barriers to care that result in patient delay of breast cancer screening methods among developing nations. It was emphasized that poverty constitutes the underlying common denominators and most important barriers contributing to delayed patient presentation in developing countries. The subjects were less keen on searching for new health information; they gave less value to exercise and seeking medical checkup regularly, which all due to poverty that characterize these countries. In another study it was found out that culture and health motivating factors represent one third of the participants' wishes to discover any health problem that may occur to them [48].

Finally, it is clear from the present study that the subjects who did not perform BSE regularly, they feel it as an embarrassing behavior and they did not have enough privacy to engage in this practice. Some of these women also suggested that regular BSE requires too much time; for others it is a matter of trying to remember to do BSE regularly. Health program planners would be wise to consider these barriers in designing effective interventions to improve BSE. This study concluded that women, who perceived more benefits in relation to breast self examination, were more likely to engage in the behavior. Women who were more confident in their ability to conduct BSE-subjects with higher self efficacy scores-were more likely to perform BSE. The findings also showed that a lack of skill in the performance of BSE was associated with limited to no BSE activity. Therefore, educational interventions that foster BSE skills and efficacy would likely contribute to higher rates of its performance.

### Recommendations

- Breast self examination is an examination that should be perfect for all Egyptian women. They need to have adequate knowledge about early signs of breast cancer and methods for early detection.
- Programs regarding proper technique of breast self exam should be developed by community health nurses to encourage monthly breast self examination

which is important for early detection of breast cancer. Also, women need to support realistic beliefs about screening of breast cancer to ensure proper practice.

- Furthermore, Egyptian women need to be aware of the importance of the early detection of breast cancer for a successful treatment. It has been shown that confidence in one's early detection ability is strongly correlated to early detection practices in the general population.
- Though awareness regarding early detection of breast cancer among Egyptian women was satisfactory, but to create more awareness, we need to give education in the form of seminars or conferences to ensure that breast cancer screening techniques are done periodically.
- It is important to establish specialized resource centers in different governorates in Egypt, to promote and integrate BSE training programs for all working women.
- Periodic follow up of female employees and other women in different settings in the community is very important to ensure early detection of cases. In addition to that, BSE training programs should be adopted as an element of the services offered to the working females.
- Further research is recommended using a larger sample size with women in rural and urban areas, including the cost-effectiveness of designing and implementing preventive care and to investigate the factors that hinder women from practicing BSE.

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