

## Evaluation of Breast Cancer Knowledge and Breast Self-Examination Practices among Adolescent Blind Girl's in Qena Governorate

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**Abstract:** Breast cancer is the most common cancer in women worldwide; and its incidence is increasing in many countries. Breast Self- Examination (BSE) is a simple and easy way to detect any changes in the breast and help in early detection of breast cancer, which is highly recommended in young age started from age of 20 years. The aim of the study is to determine breast cancer knowledge, and BSE practices among adolescent blind girls. In addition, an intervention program in form of BSE education program was carried out on blind girls in a group of 37 blind girl students'. Breast cancer knowledge; and breast self-examination practices were assessed before and after education session using a set of questionnaires designed for the study. Data show that blind girls' age was mostly between 17-20 years (54.1%). More than three quarters (86.5%) of the respondents said that they had never performed (BSE) before BSE education program, where the reasons could be lack of health awareness, or lack of right knowledge. Adolescent blind girl's knowledge regarding breast cancer and practice of BSE is inadequate before BSE education program. Therefore; targeted BSE education program was done for these adolescent blind girls to improve their early detection of breast cancer. Results show that participants' knowledge of breast cancer increased significantly after the education with significance difference in knowledge of blind girl's between pre and post educational programs, as well as in practices of BSE where all of blind girls examine their breasts monthly after menses. They felt confident to the teaching personnel and we're willing to hear information about breast cancer and BSE. The results also show difference in blind girl's knowledge about breast cancer and BSE according to residence and mother education. As expected blind girls urban residents with educated mother have higher knowledge than other blind girl's that may be attributed to more health awareness. Based on the findings of the study, researchers believe that schools for blindness in Egypt need to provide teaching sessions on a regular basis for blind students on breast cancer and breast self-examination in order to increase their knowledge, and hence their practices and skills about breast self- examination and breast cancer and its early detection.

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### 1. Introduction

Cancer is becoming a leading cause of death worldwide. Breast cancer is the most common form of cancer among females in developed and developing countries. According to World Health Organization report there were about 519,000 women who die from breast cancer annually and more new cases are found, which is estimated to be one million of women develop breast cancer each year approximately (WHO, 2010). Early identification of breast abnormality is an essential factor that signals special attention.

The Center for Disease Control stated that early detection is the best defense against morbidity and mortality from breast cancer (CDC, 2002). Preventive measures such as breast cancer awareness and early screening would contribute to reduction of breast cancer morbidity and mortality. Empowering women with breast cancer knowledge would assist them in modifying their behavior and seek early screening and medical assistances (McCready et al, 2005). Royal

College of Nursing emphasized that nurses play an important role in teaching Breast Self- Examination (BSE) and they are in an appropriate position to teach breast cancer awareness with no extra cost. Breast cancer awareness includes knowledge of breast cancer risk factors, signs, symptoms, and screening methods (Royal College of Nursing, 2002). Breast cancer is the most common cancer among women. It is becoming an issue of concern in women's health (Austein, 2006). A woman who was advised about BSE by health care providers demonstrated greater knowledge, confidence and was likely to practice it routinely (Abu-Salem et al, 2007 and Hacıhasanoğlu & Gözüm, 2008).

The American Cancer Society and National Cancer Institute recommend BSE as one of three screening practices for early breast cancer detection. However, there is controversy about the effect of BSE that has been discussed in many studies (McCready et al, 2005). Since there is no sufficient evidence to disapprove BSE, it is still considered a simple, non-

invasive, inexpensive, affordable and accessible method for younger and high risk women to discover early changes in their breasts (**Secginli, 2006**). The early detection of breast cancer is the most important and beneficial area of protection techniques and has been positively linked with decrease of mortality and morbidity of the illness (**Mele et al, 2005**). Early detection and screening activities of breast cancer include breast self-examination (BSE), clinical breast examination (CBE), and mammography. BSE is effective, cheap and less painful; however, it is dependent on knowledge, attitude towards BSE practice among women. Clinical breast examination is one of the primary modes of screening for breast cancer. Its effectiveness is dependent upon the skills of health care providers and available facilities. Mammography can reduce mortality rates for women aged 40 to 74 by 25% (**Mai et al, 2009**). WHO (2011) reported that mammography is the most successful way of detecting breast cancer among women older than 50 years (**WHO, 2011**). Mortality rates from breast cancer have decreased by 25 to 30% with early detection, improving quality of screening activities, and enhanced treatment (**Mai et al, 2009**). Breast cancer detection in the early stages has a higher chance of responding successfully to treatment (**Bener et al, 2009**). But it is found that Arabic women currently face a significant risk of high mortality rate from breast cancer due to its late diagnosis "in the advanced stages of the disease" (**Bener et al, 2008**).

Breast cancer incidence has increased and it is alarming for women affecting all ages. As a result, interpersonal relationships such as marital or sexual relationship are negatively affected. Breast cancer accounts for 37% of all types of cancer globally, moreover incidence of breast cancer varies from one country to another (**Manning-Walsh, 2004**). Breast cancer incidence in developing country is almost as high as in developed countries. Pakistani women breast cancer incidence "50 per 100,000", which is high compared to Indian women "19 per 100,000" (**Kumar et al, 2009**). Breast cancer is a major health alarm for many countries in the Eastern Mediterranean Region such as Bahrain represent 38.4% of all female cancers and in Jordan it represents 28% of all female cancers (**Khatib & Modjtabei, 2006**).

Likewise, breast cancer is the most common cancer among Egyptian women. According to Egypt National Cancer Institute (NCI), breast cancer represents 18.9% of all cancer cases "35.1% in women and 2.2 % in men" (**Omar et al, 2003**). Egypt incidence of breast cancer is not different when comparing with other countries; which represented (24 per 100,000) and mortality rate related to breast cancer is 9.3% of all cancers (**Nadia & Magda, 2000**). **Khatib and Modjtabei (2006)** showed that women

aged 50 years and older are the most commonly affected group. In Egypt breast cancer is usually detected at late stages (around 60% of cases detected in the third stage of breast cancer), when treatment options are limited, and fatality rate is high; as breast cancer is a highly fatal disease especially with late diagnosis; therefore early detection of breast cancer leads to better outcome and prognosis of breast cancer (**Bender et al 2005; Ibrahim et al, 2008**). Breast self-examination makes women more "breast aware", which in turn may lead to an earlier diagnosis of breast cancer (**Özgül, 2008**).

Promotion of self-care, an attitude fostered early in life, may pay lifelong dividends. The adolescent period is a time of rapid change that provides teaching opportunities for shaping health behaviors into adulthood. For example, teaching breast self-care may encourage positive behaviors such as performing breast self-examination (BSE) and seeking regular professional breast examinations (**Ludwick & Gaczkowski, 2001**). For younger women, BSE education and adherence are a gateway to health promotion behaviors which set the stage for adherence to clinical breast examination and mammography screening later in life (**Rosenberg & Levy-Schwartz, 2003**). Although the value of BSE is controversial (**Thomas et al, 2002**), American Cancer Society recommends BSE as an option for breast cancer awareness and its early detection. It benefits women as women become familiar with both the appearance and the feeling of their breasts and detect any changes in their breasts as early as possible (**American Cancer Society, 2008**). The rationale behind extending BSE practice as a screening test is the fact that breast cancer is frequently detected by women themselves without any other symptoms (**Siahpush & Sigh, 2002**). In Turkey, The Ministry of Health recommends BSE to increase awareness of breast cancer (**Turkey, 2006**). In Saudi Arabia, breast cancer is the most common cancer among women and it's found in young Saudi women and late presentation of advanced cases has also been observed. Therefore, the Saudi government is working intensively to fight breast cancer among female population (**Austein, 2006**). Egypt; is not far from these efforts done to fight breast cancer, where there are continuous rounds and sessions teaching Breast Self-Examination, our sessions are one of them. Also; in this current study there is a trial of linking between knowledge of breast cancer and Breast Self-Examination practice and blindness in adolescent girls as recommended by previous studies, as Coleman and Reiter recommended a retrospective Cohort study linking blindness and cancer registries (**Hann, 2013**). Further studies in Egypt link between cancer registry and blindness are needed.

### **Aim of the Study**

To determine the influence and effectiveness of breast self-examination education program on knowledge and practice of breast self-examination among adolescent blind girls.

## **2. Materials and Methods**

### **Research design**

Intervention study design without control group was used. As we test and examine the study group knowledge, and practices of breast self-examination before and after the education program for breast self-examination.

### **Research Setting**

The study was conducted at Al Noor institute for blind girls in Qena governorate, Egypt.

### **Subjects**

The study subjects were all adolescent blind girls both from rural and urban areas who enrolled in Al Noor institute for blind girls in Qena governorate. Their total numbers were 37. We select the blind female category for their inability to communicate with others, and to disseminate information on prevention of breast cancer among them and their families. Various health institutions recommend that girl should start to examine her breasts from the age of 20 years, this why we chose adolescent girls for Breast Self-Examination (BSE) teaching program.

### **Tools of data collection:-**

A specially designed interview questionnaire form was developed by the researchers to collect the relevant data needed for the study. It consists of two parts: the first part was concerned with socio-demographic data such as age, education of their mothers and fathers, residence. The second part includes (Pre and post-test) about general information and knowledge about breast self-examination (BSE). In addition; to the source of knowledge, e.g. radio, TV, friends and family, hearing any information about BSE? What is the number of BSE? What is the preferred method of BSE?

### **Methods of data collection:-**

The necessary official permission was obtained from the chairman of Al Noor institute for ethical consideration issues and to proceed with the study design and the purpose. A pilot study was carried out on few numbers of blind girls who were included then within the total study sample. The aim of the pilot study is testing the clarity of the tool and to estimate the time required to fill the sheet. Based on the results of the pilot study, the necessary modification in the sheet was done. Formal consent was obtained from blind girls orally before being involved in the study after explanation of the nature and purpose of the study, there are no risks or any cost of participation, there are voluntary participation and confidentiality of

each subject who agree to participate in the study. After filling the questionnaire, the researchers provided health education about breast cancer knowledge, and breast self-examination practices among adolescent blind girl then the post-test done.

The researchers were unable to recruit another group of blind girls for the control group. Pre and post program evaluations were carried out.

A total of 37 blind girls participated. The methodology of the study was explained to the participants. A serial number was given to each of the participants to maintain the anonymity. The participants were informed that they had the right to withdraw from participation, and were assured that the results would be confidential; also it would be used only for the purpose of the study and would not influence their grades in the institute. Average 4 - 6 participants were recruited for each time. The program consisted of 2 hours lectures on early detection of breast cancer, breast cancer presentations, screening program and steps of Breast Self-Examination (BSE). A practical session on BSE was implemented at the end of the lecture. The BSE was demonstrated using different breast modules. The participants were allowed to practice BSE on the modules under supervision of the researchers. After three days, the participants were assessed for their knowledge, information gained, and their skill in BSE through post-test questionnaire. The post-test questionnaire was filled by an individual interview with their same serial numbers used in the pre-test.

The post-test questionnaire was designed for the purpose of the program. It consisted of 3 sections: personal data, knowledge on breast cancer and attitude towards performing breast self-examination. The knowledge section consisted of close ended questions on methods of early detection and steps for breast self-examination. It also includes socio-demographic data about blind female residence and their mother's education.

### **Methods of data Analysis:**

The correct responses of the pre and post tests were summed up to get the total knowledge, practices score for each participant. Satisfactory knowledge and adequate practices considered if they achieved 70% from the total answers or examination required. For the content validity of the questionnaire; 3 staff of obstetrics and gynecological, community health nursing and public health medicine was invited to review the questionnaire. Ninety five percent of the experts stated that the items were relevant and adequate. The data were analyzed using statistical package for social sciences (SPSS version 16). Descriptive and inferential statistical tests were used. The results of pre and post-test were compared and

significance tests were used to detect if there is a significant difference between breast cancer knowledge, and breast self-examination practices of the blind girls before and after breast self-examination education program. The comparison is also made between residences of blind girls and mother education and information gained from breast self-examination teaching program.

**Limitations and Bias of the Study:** One of the limitations of the study; there was no control group to compare the effectiveness of the program; therefore the researcher compares knowledge of blind girls on breast cancer and Breast Self-Examination before and after the education program. The other limitation is the size of the participants was small; the results may not be generalized beyond the study. The current study has potential bias. To avoid bias to some extent, attempts

were made to approach all respondents in the interview location (all blind girls in Al Noor institute). This method has been used successfully in other studies to recruit respondents in hard-to-reach communities (CDC, 1999). In addition, data were collected from self-interviews, and may be subject to inaccuracy or social-desirability response bias. Despite these limitations, the benefits of this study's findings are potentially far-reaching and include: raising awareness levels of breast cancer and its screening activities in blind women; developing a culturally appropriate, socially acceptable effective intervention program; and ultimately, decreasing both morbidity and mortality from breast cancer in Egypt. Finally linking research findings to policy making, service delivery and practice; which is an important element of this study.

### 3. Results

**Table (1):** Personal data of the study group

Item	Number	Percentage
1-Age:		
• 17 yrs.	9	(24.3%)
• 17-20 yrs.	20	(54.1%)
• 21-23 yrs.	8	(21.6%)
2- Residence:		
• Rural	13	(35.1%)
• Urban	24	(64.9%)
3- Father education:		
• Educated	25	(67.6%)
• Uneducated	12	(32.4%)
4- Mother education:		
• Educated	22	(59.5%)
• Uneducated	15	(40.5%)
5- Mother Job:		
• House wife	13	(35.1%)
• Working	24	(64.9%)

It is observed from table (1) that more than one half (54.1%) of blind girls have age from seventeen to twenty years old. Nearly two third (64.9%) of them are living in urban areas. The same percent of them have working mother. High percent of them have educated fathers and mothers (67.6%, 59.5% respectively).

**Table (2):** Study group BSE knowledge and source

Item	Pre-Program	Post-program	P-value
1- Knowledge about breast self-examination:			
• Yes	34 (91.9%)	37 (100%)	P = 0.120 N.S
• No	3 (8.1%)	---	
2- Source of knowledge:			
• Mother	4 (10.8%)	---	P = 0.01
• Radio & T.V	14(37.8%)	---	
• Health education knowledge	13(35.1%)	37 (100%)	
• Friends or relatives.	3 (8.1%)	---	

This table clarifies that the vast majority (91.9%) of blind girls reported that they have knowledge about breast self-examination (pre-program); but only one third of them were from health education knowledge (35.1%).

After breast self-examination post educational program all of them stated that they have knowledge from health education knowledge.

**Table (3):** Study group performance of breast self-examination and time to do

Item	Pre-program	Post-program	P-value
<b>1- Make breast self examination</b>			
Yes	5 (13.5 %)	37(100%)	P = 0.01
No	32 (86.5 %)	0	
<b>2- No. of self examination:</b>			P = 0.0001
• Each month	0	37(100%)	
• Each 6 months	0	0	
• Each year	1(2.7%)	0	
• Once time	4 (10.8%)	0	
<b>3- By touch skin:</b>			P = 0.0001
• Before menses	1(2.7%)	0	
• After menses	2 (5.4%)	37(100%)	
• At any time during month	2 (5.4%)	0	

Table (3) shows that in the pre-program the majority (86.5 %) of the blind girls didn't make breast self-examination; while in the post-program all blind girls make breast self-examination in a right method "each month by touch skin after menses".

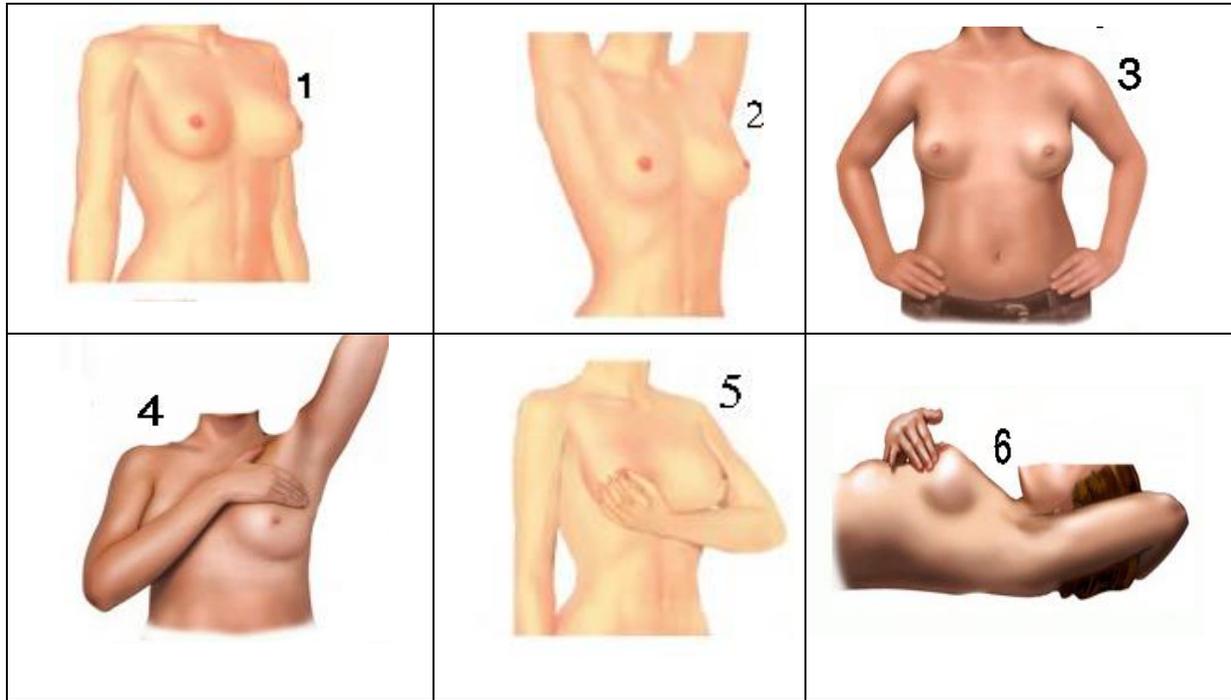
**Table (4):** Methods of breast self-examination and preferred method to do

Item	Pre- program	Post-program	P-value
<b>Make self-examination:</b>			P = 0.0001
<b>By touch skin:</b>			
• Examine breast under collarbone	0	0	
• Examine all breast parts	5 (13.5%)	1 (2.7%)	
• Examine lymph node	0	1 (2.7%)	
• All previous	0	35 (94.6%)	
<b><u>BSE follow up:</u></b>			P = 0.0001
• Record notes	0	0	
• Detect time of next exam	0	0	
• All previous	0	37 (100%)	
<b><u>Preferred method of BSE</u></b>			P = 0.0001
• Touch breast	5 (13.5%)	32 (86.5%)	
• Sleep on back	0	0	
• Under water during bath	0	0	
• All previous	0	5 (13.5%)	

**Table (5):** Methods used in breast self-examination and the part of hand used

Item	Pre-program	Post-program	P-value
<b><u>Methods of BSE</u></b>			P = 0.001
• circular	2 (5.4%)	10 (27.02%)	
• from inside to outside	2 (5.4%)	11(29.72%)	
• with clock wise	1 (2.7%)	9 (24.32%)	
• from upper to downward	0	5 (13.5%)	
• from side to side	0	2 (5.4%)	
<b><u>Part of hand used in BSE</u></b>			P = 0.001
• Palm of the hand.	2 (5.4%)	1 (2.7%)	
• Tips of fingers.	2 (5.4%)	35 (94.6%)	
• All hand	1 (2.7%)	1 (2.7%)	

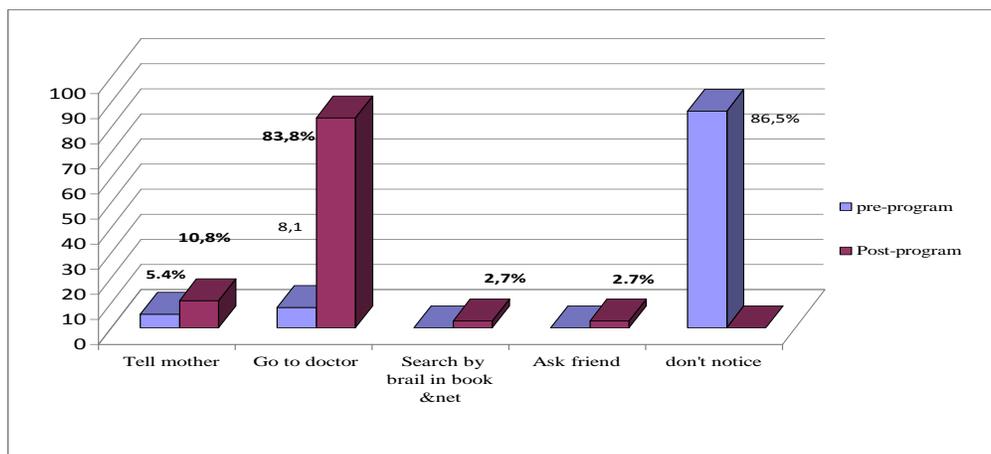
Table (4, 5) show that in the pre-program (13.5 %) of blind girls makes breast self-examination "BSE" by touch all breast skin without examining lymph nodes; while in BSE post-education program the vast majority (94.6%) of them examine all breast parts and lymph node by fingertips. Regarding (BSE) follow up: in the pre-program no one makes it; while in BSE post-education program all of them record notes and detect the time of the next examination. Also in BSE post-education program the majority of them (86.5%) preferred to "Touch breast".



**Fig1: Steps of breast self-examination**

**Table (6): The Referred Person "who is asked if breast size changed"**

Item	Pre-program	Post-program	P-value
• Tell mother	2 (5.4%)	4 (10.8%)	P = 0.01
• Go to doctor	3 (8.1%)	31(83.8%)	
• Search by brail in book & net	0	1(2.7%)	
• Ask friend	0	1 (2.7%)	
• I don't noticed	32(86.5%)	0	

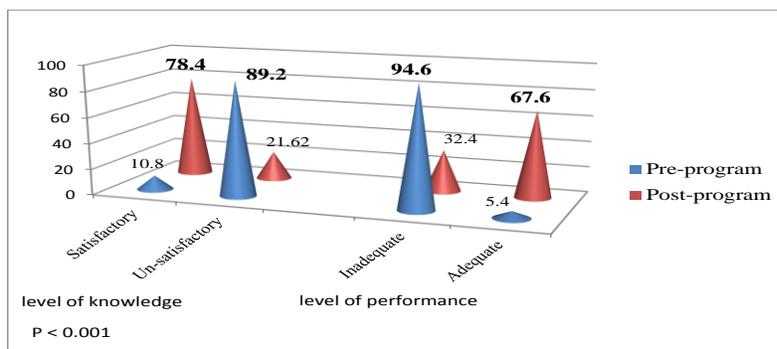


**Fig 2: The Referred Person who is asked if breast size changed**

From table (6), figure (2) it is noted that high percent of blind girls in pre-program of breast self-examination (86.5%) stated that they most probably will not notice changing of breast size as they don't make breast self-examination. While in breast self-examination post-educational program the majority stated that they will go to the doctor if there is change in breast size (83.8%).

**Table (7):** Blind girls' knowledge and performance of BSE pre & post program

Item	Pre-program	Post-program	P-value
<b>Knowledge level:</b>			
• Satisfactory	4 (10.8)	29 (78.4%)	P = 0.001
• Un-satisfactory	33 (89.2%)	8 (21.6%)	
<b>Performance level:</b>			
• Inadequate	35 (94.6%)	12 (32.4%)	P = 0.001
• Adequate	2 (5.4%)	25 (67.6%)	



**Fig 3:** Blind girls Knowledge, Performance level of pre & post program of BSE

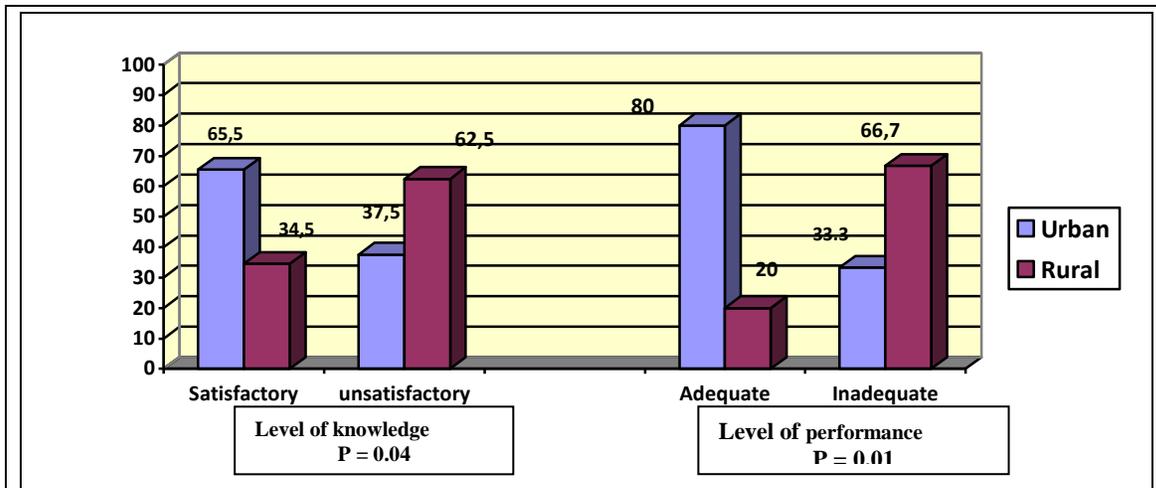
**Table 7, figure 3** show that few (10.8%) of blind girls had satisfactory level of knowledge in pre-program; while the majority (78.4%) of them have a satisfactory level of knowledge about BSE post-education program with statistical difference (P value 0.01) that indicate the effectiveness of the education program.

Table (8), figure (4) show a statistical difference between rural and urban resident's and the level of knowledge of breast self-examination (P value 0.04) and also the same table and figure show a statistical difference between rural and urban resident's in level of BSE performance (P value 0.01). This could be attributed to increase in health awareness of urban resident's than rural one.

**Table (8):** Relation between blind girls' knowledge level and performance of BSE (post-education program) and their residence

Item	Residence		P-value
	Urban	Rural	
<b>level of knowledge</b>			
Satisfactory "n=29"	19 (65.5%)	10 (34.5 %)	P = 0.04
Unsatisfactory "n=8"	3 (37.5%)	5 (62.5%)	
<b>level of performance</b>			
Adequate "n=25"	20 (80%)	5 (20%)	P = 0.01
Inadequate "n=12"	4 (33.3%)	8 (66.7%)	

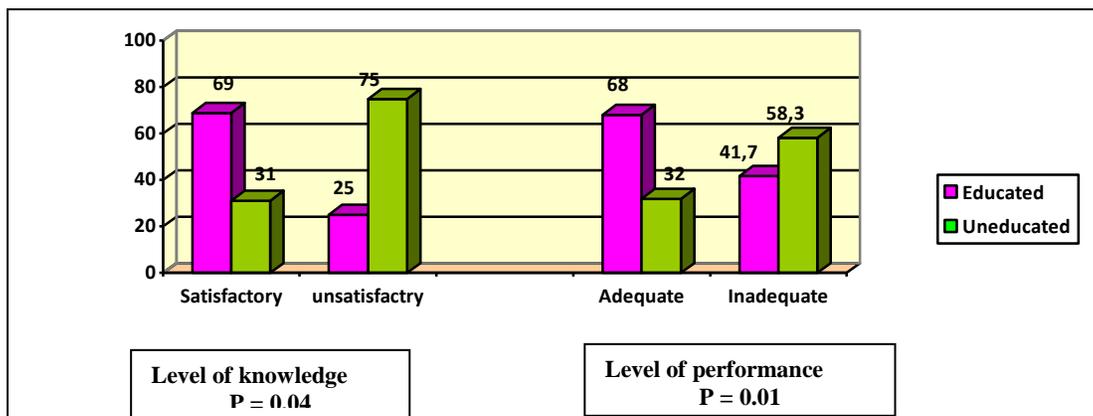
The following table (9) and figure (5) show a statistical difference between the level of breast self-examination knowledge and education of mothers of blind girls as (P value 0.04). Also the same table and figure show a statistical difference between educated and uneducated mothers of blind girls and the level of BSE performance (P value 0.01). This could be attributed to more health awareness in blind girls with educated mothers.



**Fig 4:** Relation between blind girls' knowledge level and performance of BSE (post-education program) and their residence

**Table (9):** Relation between blind girls' mother education and their knowledge level and performance of BSE (post education program)

Item	Educated Mother	Uneducated Mother	P-value
<b>level of knowledge</b>			
Satisfactory "n=29"	20 (69%)	9 (31 %)	P = 0.04
Unsatisfactory "n=8"	2 (25.0%)	6 (75%)	
<b>level of performance</b>			
Adequate "n=25"	17 (68%)	8 (32%)	P = 0.01
Inadequate "n=12"	5 (41.7%)	7 (58.3%)	



**Fig 5:** Relation between blind girls' mother education and their knowledge level and performance of BSE (post education program)

**4. Discussions**

Breast self-examination teaching carried out on a sample of adolescent blind girls with age ranging between 17-23 years in El Noor institute in Qena. It found that more than one half of blind girls (54.1%) have age from seventeen to twenty years old. Nearly two thirds of them live in urban area and have working mother (64.9%). High percent of them have educated fathers and mothers (67.6%, 59.5%) respectively. Increase breast cancer awareness of blind girl's

encourages them to adhere to breast examination and screening, and may have an impact on breast cancer mortality in this group. Therefore; this study was conducted to describe knowledge of Qena blind female students about breast cancer and Breast Self-Examination (BSE) practices. In addition, this current study is expected to provide handicap females with some understanding and proficiency of screening practices of breast cancer by BSE teaching. This is similar to Mamma Care Learning, which is an

effective protocol for learning to perform proficient manual breast self-examination; it is a system of advance tactile skills enabling clinicians and women to detect small simulated lesions in tactually accurate breast models and to transfer that skill to breast tissue. Approximately 10 million blind and visually impaired women and deaf and hard-of-hearing women were enrolled (**Mark et al, 2013**).

To compare our results with other studies it found in a study of Saudi nurses; that nurses lack knowledge of breast cancer and BSE practices (**Shadia, 2010**). In the same line **Shalbia El-said (2005)** in a study conducted in Assuit University Hospital, Egypt about assessment of knowledge, attitude and performance of nurses who are working with women breast cancer, reported that 40% of the nurses' lack knowledge about BSE. This could be explained by lack of continuous educational program and absence of training courses. Another study carried out in Ain Shams University, Egypt about the effect of Breast Self-Examination training program on knowledge, attitude and practice of a group of working women almost : one fourth (24.6%) only of the participants heard about breast self-examination (**Nadia & Magda, 2000**). This finding goes along with a study in South East of Iran about (21.6%) women had good knowledge about BSE (**Heidari et al, 2003**). This finding also concordant with a study carried out among female Traders in Ibadan, Oyo state, Nigeria showed (31.7%) of females aware of BSE (**Balogun & Owoaje, 2005**). And this finding agrees with a study in Port Harcourt (Nigeria) but with a higher percentage (85.5%) of women have knowledge about breast self-examination (**Jebbin & Adotey, 2004**). And also this finding agrees with a study in Western Turkey about knowledge and attitudes of BSE and mammography in a group of women but with a higher percentage (72.1%) of the participants reported having knowledge of BSE (**Pinar et al, 2006**). In this study in Qena governorate on blind females; it found that blind females don't lack knowledge about BSE as 91.9% of them stated they have knowledge about BSE, but their knowledge before the BSE teaching program were inadequate. In addition the sources of knowledge is not the right source; as they stated 37.8% from Radio and T.V, 10.8% from mothers, 8.1% from friends and relatives, and only nearly one third 35.1% from health education knowledge that consider for them the right method; in which a female educator educate them on models besides taking their hands and show them how to perform BSE properly.

In another study on Qena University students less than one-fifth of female students: 18.6%, 13.8% respectively in the two groups (architecture and education students) obtained their knowledge from

books and magazine, 38.6%, 40% from the Radio, TV (**Reda, 2011**), and this findings concordant with a study carried out in Cairo, Egypt showed that books represented (23.1%), media (TV and radio) represented 30.4% from knowledge about BSE and breast cancer (**Nadia & Magda, 2000**). Also agree with a study of female health workers' knowledge and practice of BSE in a Nigerians urban city, in which, information from journals 31.1% (**Adenik & Omuemu, 2009**). This finding agrees with a study carried by **Yan, 2009** in which newspapers (37.1%) was source of information, while Radio and TV (58.6%) were the major sources of information for breast self-examination and breast cancer. In our view it's important that effort should be intensified in using media to create BSE awareness and emphasize its importance in early detection of breast cancer; as this appears to be better; as media reach to a wider audience. The previous findings disagree with the study in Turkey between nurses and teachers which showed that the most important source of information for both groups were books and Magazines (**Demirkiran et al, 2007**). In the study on Qena university students, it found that only less than one-sixth of students of architecture and education 14.3%, 3.1% respectively obtained their information from friends in both groups (**Reda, 2011**). This findings agree with the study of knowledge and BSE practice of female health workers in a Nigerian urban city in which information of BSE, breast cancer obtained from colleagues (4.1%) from 393 women (**Adenik & Omuemu, 2009**). And this disagree with a study carried out in Cairo, Egypt showed that the main source was a peer group (47.8%), this could be due to a long time that working women spent with each other at the workplace, discussing different issues, which creates strong relation among each other (**Nadia & Magda, 2000**).

The blind girls who were advised to practice Breast Self- Examination by health care providers demonstrated greater knowledge and were likely to practice it routinely each month (100%). This finding agrees with a lesser degree with the study of Jordanian women, in which only (18%) of women reported that they practice Breast Self-Examination on a monthly basis, (**Alkhasawneh, 2002**). Also agree with lesser degrees with study in a group of women at rural area in Western Turkey only (10.2%) of the participants reported they practicing BSE on a regular monthly basis (**Pinar, et al, 2006**). In study on Qena University architecture and education students, it is found that half of female students (50%, 43.1% respectively) make BSE and there is no significant difference between both groups  $p=0.26$ , and less than one third of these female students (28.6%, 32.1% respectively) do BSE on monthly basis in both groups (**Reda, 2011**).

These findings agree with a study of Chamorro women in South California showed that (37%) of respondents perform BSE (**Tanjasiri, et al, 2001**). These findings also agree with lesser degree with a study in Saudi Arabia, mentioned that only (12%) women who perform BSE (**Milaat, 2000**). Also the previous findings of Saudi women concordant with a study of Asian women in Toronto and Chinese women in Hong Kong showed that only less than one sixth of the women in both groups (12%, 16% respectively) claimed to practice BSE on a monthly basis (**Fung, 2001**). This finding disagrees with a research in Iranian women reported that only (6%) performed BSE on a monthly basis (**Montazeri et al 2003**). The previous findings among Iranian women disagree with a study conducted in Nigeria revealed that only (18%) of participants reported regular application of BSE and also disagree with results among Iranian women (240) found that only (17%) conducting regular BSE (**Balogun & Owoaje, 2005**). Furthermore, the women, who did not perform BSE, believed that it was not necessary (**Jarvandi et al, 2002**).

In the present study on blind girl students after the BSE teaching program all of them (100%) practice BSE on a monthly basis, but before the teaching program no one did it on a monthly basis, 2.7% of them did BSE once in a year, 10.8% of them once in a time. In another study on Qena architecture and education students; less than half of participants (42.9%, 38.5% respectively) in both groups answered that the exact time for doing Breast Self-Examination (BSE) is on a monthly basis (**Reda, 2011**). This findings concordant with a study in Lagos university in Nigeria reported that less than half of students (35.6%) answered that the exact time for BSE is on a monthly basis (**Rosemary et al, 2010**).

For pre-menopausal women, the most commonly recommended time of BSE is just after the end of menstruation, because the breasts are least likely to be swollen and tender at this time. Women who are postmenopausal or have irregular cycles might do a self-exam once a month regardless of their menstrual cycle (**BSE Wikipedia, 2013**). In the present study after the teaching program on BSE, blind girl students do BSE on a monthly basis and after menstruation by 100%, before the teaching program only 5.4% did BSE after menstruation. This finding differs than a study on female architecture and education students at Qena University; which showed that half of female students (50%, 43.1% respectively) in both groups practicing BSE, less than one third of them (28.6%, 32.1% respectively) practicing it on a monthly basis and before menstruation in both groups (**Reda, 2011**), these findings agree with a study showed that Jordanian women are not proficient in BSE. In a sample of 150 women, only less than half of women

(48%) practiced BSE; of those who practiced, only (12%) practiced BSE on a monthly basis and before the time of menstruation (**Alkhasawneh, 2002**). The previous findings oppose with a study of (how do nurses and teachers perform BSE: Are they reliable source of information? In Turkey a significantly greater percentage of nurses (69.3%) than a teacher (46.7%) knew the correct timing of BSE (after menstruation) for women with a regular menstruation, because nurses have the correct knowledge about BSE procedures according to her profession (**Demirkian et al, 2007**). This disagree with a study among high school students in Turkey showed that a small percentage of the students (13.2%) had knowledge about time for BSE (after menstruation), but agree with a study by Budden, (77%) of female students correctly identified the recommended time for BSE (**Budden, 1999**). Millat reported that (14.4%) of secondary school female students in Jeddah have knowledge about time of BSE (**Milaat, 2000**).

The present study shows that only 13.5% of the blind female students could observe and look for abnormal breast mass before BSE teaching program, which reach to 100% after teaching program. In a study on Qena university architecture and education students 28.6%, 20% respectively could observe and notice abnormal breast mass (**Reda, 2011**). This findings disagree with a study among female undergraduates students (221) of Alhmadu Bello University; Zaria, North Western Nigeria, (0.9%) reported that they could have observed a breast mass (**Gwarzo et al, 2009**). In other surveys, it was found that more than 50% of breast cancer was detected by the woman herself or her physician as a result of changes in the appearance or sensation of the breast, 57% of women identified a lump, 34% of women identified a discharge from the nipple, and 16% identified puckering or dimpling of the skin. Another report showed that, women who felt a lump, identified a change in the nipple, or change in discoloration were "63.8%, 38.9%, 39.1% respectively" (**Salaudeen et al, 2009**).

In our present study of blind female students the preferred method for breast examination before the BSE teaching program was 13.5% prefer to touch the breast and after teaching BSE program this percentage increases to 86.5% and the other 13.5% prefer using different methods (touch breast, or while sleeping on back or during a shower). These vary from Qena study on architecture and education students; where it found that less than one third of female students (28.6%, 23.1% respectively) preferred when examine their breasts to stand in front of a mirror and while taking a shower in both groups (**Reda, 2011**) and this findings agree with a study in Lagos, in Nigeria among nursing students, show that about half of the students prefer to

do BSE in front of a mirror while taking a shower (50%, 28% respectively) as this group consider proficient group for their job or field (**Rosemary et al, 2010**).

The blind girls in our study after BSE teaching program 94.6% of them examine their breast by finger tips "that considered the correct method of BSE"; the other 2.7% use palm and another 2.7% use all hand. This differs from Qena studies on architecture and education students were less than one third of female students (28.6%, 30.8% respectively) use palm of the hand in examination of the breast in both groups (**Reda, 2011**). This finding agrees with a study in Lagos, Nigeria showed that nursing students use palm of hands in palpation of the breast but with a higher percent about 85.6% (**Rosemary et al, 2010**).

The steps of BSE involve six steps: Steps 1-3 involve inspection of the breast with the arms hanging next to the body, behind the head and on the side. Step 4 is palpation of the breast. Step 5 is palpation of the nipple. Step 6 is palpation of the breast while lying down. A variety of methods and patterns are used in breast self-examination. Most methods suggest that the woman stands in front of a mirror with the torso exposed to view. She looks in the mirror for visual signs of dimpling, swelling, or redness on or near the breasts. This is usually repeated in several positions, such as while having hands on the hips, and then again with arms held overhead. The woman then palpates her breasts with the pads of her fingers to feel for lumps (either superficial or deep in tissue) or soreness. There are several common patterns, which are designed to ensure complete coverage. The vertical stripe pattern involves moving the fingers up and down over the breast. The pie-wedge pattern starts at the nipple and moves outward. The circular pattern involves moving the fingers in concentric circles from the nipple outward. Some guidelines suggest mentally dividing the breast into four quadrants and checking each quadrant separately. The palpation process covers the entire breast, including the "axillary tail" of each breast that extends toward the axilla (armpit). This is usually done once while standing in front of the mirror and again while lying down. Finally, women that are not breastfeeding gently squeeze each nipple to check for any discharge. Various mnemonic devices are used as teaching devices. One is called the seven P's of BSE, after seven steps that are named to have the same first initial: Positions, Perimeter, Palpation, Pressure, Pattern, Practice, and Planning what to do if a change is found in the breast tissue (**BSE Wikipedia, 2013**).

The previous paragraph stated that the final step of BSE is deciding what to do and who is asked if a female found a change in breast size. In this study after the BSE teaching program 83.8% of the blind girls stated they will go to the doctors and the others

chose other options as tell the mother (10.8%) or friends (2.7%) or search in brail books (2.7%). While before the teaching program only 8.1% of them said they will go to the doctor if they found changes in breast size. This finding similar to the finding of breast cancer knowledge and perception study among Iranian women with a slight increase in percentage; as only 12 % of them "from 261 women" answered that they could ask the doctor or nurse if there is change in the breast; as they are the only one who could find the lump and detect breast cancer. It is obvious from previous results that the health education program targeted younger women is necessary to improve breast cancer prevention, develop confidence in BSE technique as well as accurate information about BSE and breast cancer and reduce female's fears (**Parisa & Mirnalini, 2005**).

The knowledge and practices of blind girls in the study improved after the BSE teaching program with significance difference (P value .01); which indicate the effectiveness of the education program. The knowledge increased from 10.8% pre-program to 78.4% post program, while BSE practices improved from 5.4% to 67.6%. In another training program for a group of working women in Ain Shams University; Egypt; the results run in the same line as our results in improvement of knowledge and practices of BSE after the training program with significance difference before and after the program (P value < .01). Knowledge increased from 15% pre-program to 95% post program and BSE practices from 5.2% to 86% (**Nadia & Magda, 2000**). Also in Saudi nurses study, the researcher found that the participants' knowledge significantly improved in the post-test. It is a short term effect due to immediate influence of the workshop. In order to maintain permanent knowledge retention, continuous intervention is needed (**Balkaya et al, 2007**). A 6 months follow-up post-test was carried out, only 60% replied back. Of this 60%, all of them (100%) started to practice BSE. About 41% performed it on a regular basis (monthly) and 41% every two months. Only 6% performed BSE every 6 months (**Shadia, 2010**). The reasons for not performing BSE regularly were mainly lack of knowledge, forgetfulness, fear or anxiety to discover breast cancer, dislike to touch breast, no time, and cultural and health beliefs (**Nadia & Magda, 2000**). Factors that are associated with women's compliance or lack of Breast Self -Examination or clinical Breast Cancer activities must be investigated to create an effective intervention strategy. Studies have also shown that physician's recommendation acts as an enabler, while not receiving a recommendation can act as a barrier (**Bigby, 2006**). Studies have shown that knowledge; attitudes; beliefs and practices related to breast cancer screening practices are influenced by

social and cultural frameworks (Bener et al, 2002). Therefore, it is essential to examine knowledge, attitudes, beliefs, practices, barriers and enablers for specific populations before designing and implementing an intervention strategy (Bigby, 2006; Shirazi et al, 2006).

In study on Qena architecture and education students; regarding relation between observation of abnormal mass and residences; more than half (62.5%) of education students from urban areas observe the presence or absence of abnormal breast mass if compared with less than one-third (26.2%) of archaeology students from an urban area observe breast mass (Reda, 2011). The results of urban residents of education students are somewhat similar to our present study in which blind female students urban resident show higher knowledge and performance level of BSE after BSE teaching program than the rural one (for satisfactory knowledge 65.5% urban, 34.5% rural) and (for satisfactory performance 80% urban, 20% rural) with significant differences.

In Relation between blind female student's mother's education and their knowledge and performance of BSE, knowledge and performance of BSE were higher in blind female students with educated mother as expected. In a study of knowledge and practice of Jordanian Women towards BSE; participants who completed high school levels of education were found to be more knowledgeable in practicing BSE than those with other lower levels of education (Aya et al, 2011). In another different report; the higher knowledge of practicing BSE screening was in those who had completed college or more (Iam et al, 2008). Another un-similar report found that no relationship between knowledge of breast cancer and the level of education (Yucel et al, 2005).

### Conclusions

The present study described the outcomes of breast self-examination education program among 37 adolescent blind girl students. Before BSE education program blind girl students have knowledge about breast self-examination (92%), but it is inadequate with a small percentage practice BSE (13.5%). With BSE education program to these blind girl students, all of them practice breast self-examination on a monthly basis and after menstruation (100%) as a means for early prevention of breast cancer in a perfect way and properly (touch all breasts by finger tips with examination of lymph nodes). Higher knowledge and performance of BSE were found with significance difference in blind girls 'urban residence and with those having educated mother than other blind girls.

Concerning source of knowledge and the referred person who is asked if there is change in breast size,

the majority 86.5% stated before BSE education program that they most probably will not notice any change in breast size as they don't do BSE, after BSE education program nearly 84% stated that they will go to the doctor if they detect any change in breast size by BSE technique, and for source of knowledge after education program all of them stated health education knowledge was their source of knowledge, which fed them with right and satisfactory information. With breast self-examination, women learn to explore natural building to her breasts; allowing them to identify any mass or differences in their breasts that may appear and hence early detection of breast cancer.

### Recommendations

Health education messages and doctor recommendations are the strongest predictors of screening practices. It is therefore critical to raise awareness among physicians and other health care professionals such as nurses, and health educators of the effectiveness of their explanations and demonstrations to adolescent girls especially blind girls' about breast cancer and its screening methods to reduce breast cancer morbidity and mortality among Egyptian girls. The following recommendations were found useful within the context:

1. Held educational program about importance of BSE and its practices to female students in schools, blindness schools, and universities to increase awareness about breast cancer and methods of its early detection, and empowering students with information about early detection methods of breast cancer as BSE and expanding their role as client educators to disseminate this information to others (family, relatives and community) in a correct and good model, because most of the cases detected by women themselves.
2. Incorporate breast cancer prevention issues (healthy lifestyles, preventive measures, early detection methods of breast cancer and importance of breast self-examination and how to perform) into all school curriculum especially blindness school, as well as in university curriculum.
3. Coordination and communication with the media to provide BSE programs on TV, and radio. In addition concerned authorities and charities distribute leaflets and awareness illustration posters of BSE or brail books for blindness in (schools, blindness schools and universities).

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