

Breast Self-Examination Compliance among Visually Impaired Adolescent Girls: A Nursing Interventional Study

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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 helps in early detection of breast cancer. Purpose of the study: The purpose of the present study was to: evaluate the effect of a nursing intervention program on BSE compliance among visually impaired adolescent girls . Design: The study was conducted using quasi-experimental design to achieve the stated aim. Sample: A convenient sample of 14 adolescent girls was available. Setting: The study was conducted at Al Noor Institute for visually impaired students in Shebein ELkom City, Menoufia Governorate. Girl's knowledge regarding breast cancer, BSE and practice of BSE is inadequate before the BSE education program. Therefore; the targeted BSE education program was done for these adolescent blind girls to improve their early detection of breast cancer. Instruments: Instrument I: An Interviewing questionnaire, Instrument II consisted of 13 multiple choice questions about knowledge, Instrument III: A breast self-examination checklist and Instrument IV: compliance of the girls' with breast self-examination. Data were conducted using Lierman Instrument. Compliance was measured in terms of frequency and accuracy (Lierman, 1988). Results: There was a highly statistically significant difference in terms of knowledge and practice regarding breast cancer and breast self-exam between pre-post- test and compliance after 6 months. Conclusion: According to the results of the present study, it could be concluded that all the study participants had no knowledge about breast cancer and breast self-exam before the interventional program and also they did not know the procedure of performing breast self-exam. While after the interventional program, the study participants' level of knowledge about breast cancer and breast self-exam was highly improved. Also they could perform breast self-exam. There for the research hypotheses were supported. Recommendations According to the findings of the current study, the following recommendations are proposed:- The importance of conducting seminars about breast cancer prevention issues for girls in secondary schools and universities in their educational activities(extracurricular activities) and breast cancer screening is recommended especially for girls with family history of breast cancer. Further Studies:- Educational program about the importance of BSE and its practices by the female students in schools, vision impairment schools and universities should be held to increase awareness about early detection methods of breast cancer as BSE and awareness illustration posters of BSE, leaflets or braille books for visually impaired students in their schools libraries.

Keywords: Breast Cancer, BSE, Visually impaired adolescent girls, Compliance.

I. INTRODUCTION

Breast cancer (BC) is one of the most common in both low and middle income countries and the most aggressive women's cancer. The incidence in previously mentioned countries is high due to the adoption of Western lifestyles (Pengpid & Peltzer, 2014). The most common cancer occurred in women is breast cancer and the second most common cancer all over them. In 2018 there were over 2 million newly cases. (Bray, 2018). According to the National Cancer Institute- Egypt (NCI), (2016) breast cancer represents 18.9% of all cancer cases and 37% of women's cancer. Hussein et al., (2013) pointed out that in Egypt the incidence of breast cancer is 49.6 per 100,000 and mortality rate due to breast cancer is 9.3% of all cancer.

Mohamed (2017), director general of Baheya Foundation for the early detection and treatment of breast cancer stated that, 34 % of Egyptian women suffer from breast cancer. A study was carried out in Menoufia University Hospital (2012–2013) on 1463 female patients presented to Oncology department. The finding revealed that breast cancer was the most prevalent cancer among the female patients as 41% of all female cancer patients (El-Senbawy, Abd El Bary, Shehata, Shaltout, 2018).

When the tumor is small typically produces no symptoms, later it has grown and represented by one or more of the following symptoms and signs: painless lump in the breast, lump under the armpit, breast pain and swelling or thickness of the breast's skin. There is also spontaneous discharge of the nipple particularly if blood and erosion or inversion in the nipple (American Cancer Society, 2013).

Early detection encountered an important role for BC. Early detection methods of BC are breast self-examination (BSE), mammography, and clinical breast examination. Special attention should be raised to BSE to improve the possibility of early detection of any changes in breast tissues. Although BSE alone is not sufficient for early detection of BC, it allows women to be responsible for their own health, to recognize breast mass, as well as to ensure improved measures of prevention (Fotedar, et al., 2013).

Mammography is the most appropriate method for detecting breast cancer among women older than 50 years that were declared by WHO (2011). Mortality rates due to breast cancer have decreased by 25 to 30% with early detection, improving quality of screening activities, and enhanced treatment (Mai et al., 2009). If breast cancer detected as early as possible in earlier stage which leads to higher chance of responding successfully to treatment (Bener et al., 2009). But, it is found that Arab women currently face a significant risk of high mortality rate from breast cancer due to its late diagnosis.

Breast self-exam involves the woman herself to look at and feel the breast for lumps or other abnormalities. There is evidence that, women who correctly practice BSE monthly are more likely to detect a lump in the early stage, with early diagnosis and treatment yielding better survival (Verma, et al., 2013). Despite these benefits, few women regularly perform BSE and many do not even know how to perform it. Meanwhile, there is evidence that women are more likely to perform BSE effectively when taught by physicians or nurses. Unfortunately, in one study, only 19% of the nurses reported teaching BSE, and the major reason for not teaching was the belief that it was not relevant to their work (Sulik & Zierkiewicz, 2014).

Nurses should assess the women's compliance of performing self-breast examination that should entail not only if she merely performs the examination, but also when and how she is doing it. It is also the responsibility of the nurse to provide a resource to the patient that can properly demonstrate this. Women should be educated on the proper way to do a self-breast examination including the ideal time of month to perform the examination. This allows women to know what is normal and what is abnormal in breast tissue to aids in the early detection of breast cancer (Nichols, 2012).

1.2 Significance of the study

Only 17% of women were observed to perform BSE monthly (Boulos, Ramy, Ghali, 2014). In fact, the majority do not even know how to do breast self-examination. (Mazloomy, Zare, Feisal, Maleki, Servat, and Ahmadiéh, 2010). This does not differ from what transpire among health personnel.

Compliance with the prescribed medical treatment has been an ongoing issue and area of concern in nursing and medicine over the past 50 year. (Cramer & Rosenheck, 2010; Dimatteo, 2013). Poor medical compliance is a serious public health issue that continue to have a lasting impact upon patient outcomes and the cost of medical care (Donovan, 2010)

Unfortunately, breast cancer is a serious problem in Egypt among women (35.1%). On the other hand, the prevalence of vision impairment or vision loss (11.8%) creates a difficulty to discover any abnormal changes in their breast. So the researches find that the early detection of breast abnormalities helps to decrease the devastating consequences of this problem, particularly among this group of women.

1.3 Purpose of the Study

The purpose of the current study was to evaluate the effect of nursing intervention program on breast self-examination compliance among visually impaired adolescent girls

1.4 Research Hypothesis:

- H.1. - Visually impaired adolescent girls who receive nursing intervention program have higher score of knowledge about breast self-exam after intervention than before.
- H.2. - Visually impaired adolescent girls who receive nursing intervention program have higher score of compliance about breast self-exam after intervention than before.

2. MATERIAL AND METHODS

2.1 Research design:

The quasi- experimental (Non-Equivalent) design was used to carry out the present study.

2.2 Setting of the study:

The present study was conducted at Al Noor institute for the visually impaired students at Shebein El-kom City in Menoufia Governorate. The setting is located beside Shebein El-kom prison. The researcher selected this place as it is the only institute for vision impairment in Menoufia Governorate. It consists of two floors, on the first floor there is a room for the director, 6 classes for primary students, and two large bedrooms for male students. The second floor consists of a room for the library, a room for the computer lab, and 8 classes for the preparatory and secondary students and at the end of the entrance there are 2 large bedrooms for girls). Each class contains 5 desks, 2 students on each desk.

2.3 Sample:

2.3.1 Sample type: A convenient sample was used. The participants were all adolescent visually impaired girls. They were from rural and urban areas and were enrolled in Al Noor Institute for the visually impaired students in Shebein El.kom City, Menoufia Governorate.

2.3.2 Sample size: The study sample total number was 14. Their ages ranged between 14 to 18 years old.

2.4 Instruments:-

2.4.1 Instruments of data collection:

Four instruments were used and filled in by the researcher.

Instrument I: A Structured Interviewing Questionnaire: It was developed by the research team after reviewing the related literature. It consists of two parts: the first part contained questions related to socio-demographic characteristics, the second part contained data related to the girls' history which includes menstrual, family and surgical history.

Instrument II: : This instrument was adapted from (Yakout, El-shatbyMoursy, Moawad and Salem, 2014) to evaluate the girls' knowledge about breast cancer and breast self-exam. It consisted of 13 multiple choice questions about knowledge: five questions about breast cancer and eight questions about BSE.

Instrument III : Breast self-examination checklist that was adapted from (Yakout, El-shatbyMoursy, Moawad and Salem, 2014) to cover the steps of BSE.

Instrument IV: The Instrument was adopted from (June Strickland, Feigl, Upchurch, King, et al., 2014). It was used to measure compliance of the girls' with breast self-examination. Data were conducted by using Lierman Instrument. According to (Lierman, 1988) compliance was measured in terms of frequency and accuracy . Frequency was measured with the following three questions:

Do you do BSE?, How often do you do BSE? and estimate the number of times you conducted BSE in the past 6 months

Accuracy was measured on an 8-point scale. The accuracy items includes questions regarding:

- Location/position: (3 points)
- Finger position: (1 point)
- Areas covered: (2 points)

- Pattern: (1 point)
- Opposite breast check: (1 point)

2.4.2: Instruments' validity and reliability:

For validity purposes, the researchers conducted an extensive literature review and developed the questionnaire from the previously used instruments and reviewing pertinent reviews. Instrument 1 was designed by the researchers and revised by five experts in the field of maternal and newborn health nursing in the Faculty of Nursing of Menoufia University (for content validity). Instruments II, III were adapted from the previous studies and Instrument IV was adopted. The interview questionnaire underwent some modifications according to the panel judgment regarding the clarity of sentences and appropriateness of content. Test-retest reliability was used to estimate the reliability of the instrument I. Cronbach's Alpha coefficient test was used to estimate the reliability for Instruments II, III and IV which revealed that each of the two instruments consisted of relatively homogenous items as indicated by the moderate to high reliability of each instrument.

3. Ethical considerations

A primary approval was taken from the Hearing and Ethical Research Committee at the Faculty of Nursing Menoufia University in 14/4/2017 before conducting the study. The permission from Faculty of Nursing, Menoufia University to Institute authority was obtained before starting data collection. After explanations prior to enrollment in the study, informed consent was obtained verbally from all girls in the presence of the Institute authority. Each girl was informed that participation in the study was voluntary and she could withdraw from the study whenever she decides.

4. Pilot Study

Piloting was conducted to be sure about the validity of the tools, the feasibility of the study and to estimate the time needed for data collection. It was conducted on 2 girls. Each one was given an opportunity to freely refuse participation. They were free to ask any question about the study details. On the basis of the piloting results; the girls were evaluated and the researcher rephrased some questions and sentences then set the final fieldwork schedule.

5. Study Maneuver

The current study was carried out in four consecutive phases, namely preparatory phase; implementation phase , evaluation phase and follow up phase.

5.1 The preparatory Phase:

An extensive review related to the study area was done using available books, articles and periodicals. A review of literature to formulate knowledge base relevant to the study area was also done. An official permission was granted from the faculty authorities and from the institute authorities. A booklet with Braille method was prepared and reviewed by a reviewer. The booklet consisted of three chapters that provided the girls with knowledge about breast cancer and BSE and how to perform BSE.

5.2 The implementation Phase: The researcher carried out the implementation phase in sessions according to the following:

5.2.1 Session one(Pre-test administration):- The purpose of the study was explained to the girls. At the beginning, the researcher identified the eligible girls through the informed consent. The researcher introduced herself to each girl and provided verbal explanation of the study in simple terms. Then, explained the instrument content and filled in the form by herself from each girl. Data Collection for this study was from January to June 2018. The researcher collected data in the class room. The researcher attended two days/week for each session from 9 Am to12 Pm. interviewed about 6-7 girls / day. Each girl took about 20-25 minute to explain and complete the interview questionnaire. The researcher collected the data from the girls by the first instrument that included socio-demographic information and apply the pre-test by using the second instrument that included their knowledge about breast cancer and BSE (pretest) and using the BSE checklist for practice. Then, data was analyzed through pre-test findings to assess the level of the girls' knowledge and identify the gaps in knowledge regarding breast cancer and BSE and know if they could perform BSE or not.

5.2.2 Session two (Health teaching):- The researcher explained the knowledge regarding breast cancer and BSE to the girls, explained the time of performing BSE, how to perform BSE and position of performance (lying position, sitting position and standing position during shower), explained the difference between the normal and abnormal characteristics of the breast by using simulators of normal and cancerous form of breast and let girls palpate it to be able to compare between the normal and abnormal breast, apply re-demonstration for the girls to insure that they were able to differentiate between the normal and abnormal breast, the researcher allowed the girls to re-demonstrate the procedure of BSE on simulators to insure that they performed the procedure of BSE correctly, the researcher provide the girls booklet with Braille method to help during explanation of the procedure booklet consists of three chapters that provided the girls with knowledge about breast cancer and BSE and how to perform BSE.

5.2.3 Evaluation Phase: Session three (post-test immediately after intervention):

This session aimed to evaluate comprehension of knowledge and practical performance of the previously mentioned items after health teaching using the pre-post-test questionnaire and BSE checklist.

5.4 Follow up Phase: Session four (compliance after six months):-

The researcher also evaluated the girls' knowledge of breast cancer and breast self-exam using the pre-post-test questionnaire and performance of breast self-exam using BSE checklist after six months. The fourth session was carried out 6 months after the implementation of the educational program to study the effect of the program on the students and evaluated the students' compliance with BSE. The researchers evaluated the girls' knowledge by using the pre-post-test questionnaire and evaluated also the performance of breast self-examination through a compliance instrument after 6 months which was adopted from Lierman (1988). BSE checklist was used in the pre-post-test evaluation to ensure that the girls applied the procedure.

6. Statistical design

Upon the completion of data collection, each answer sheet was coded and scored. The researcher coded the data into a coding sheet so that data could be prepared for computer use. Data was statistically analyzed using Statistical Package for Social Sciences (SPSS) (version 16.0) on IBM compatible. Computer test of significance was used and the level of significance is $p < 0.05$. Quantitative data were expressed as means & standard deviation ($X \pm SD$) and analyzed by applying t-test. Qualitative data were expressed as numbers and percentages (NO & %) and analyzed by applying chi-square test. All these tests were used as tests of significance at p -value < 0.05 .

3. RESULT

Section I: Characteristics of the Study Participants:

Table (1): Socio-Demographic Characteristics of the Study Participants.

Variables	Study Participants (n=14)	
	No	%
Age (Y)		
≤14 year	1	7.1
>14 year	13	92.9
Residence		
Rural	12	85.8
Urban	2	14.2
Family members		
≤5 members	5	35.7
>5 members	9	64.3

Table 1 shows the socio-demographic characteristics of the study participants. The majority of the study participants their age more than 14 years old (92.9 %). While more than two thirds of them live in rural area. About more than half of them have family size more than 5 members.

Table (2): Medical History and Family History of Cancer of the Study Participants.

Variables	Study Participants. (n=14)	
	No	%
Girls' history of chronic disease		
Yes (Diabetes mellitus)	1	7.1
No	13	92.9
Girls' history of surgery		
Yes (Eye Operation)	12	85.8
No	2	14.2
Family history of cancer		
Yes	2	14.3
No	12	85.8

Table (2) shows the medical history and family history of cancer of the study participants. This table shows that 92.9% of the study participants were free from any chronic diseases. More than two thirds (85.8%) of the study participants have history of surgery. The majority of the study participants (85.8%) stated that there was no family history of cancer while the minority stated in affirmative (yes).

Table (3): Menstrual History of the Study Participants:-

Variables	Study Participants (n=14)	
	No	%
Age at menarche (in years)		
<14 year	4	28.6
14-16 year	10	71.4
Duration of menstruation		
3-5 days	8	57.1
>5 days	6	42.9
Menstruation interval		
≤28 day	6	42.9
>28 day	8	57.1
Amount of menstrual blood		
Moderate	13	92.9
Severe	1	7.1
Dysmenorrhea		
Yes	8	57.1
No	6	42.9

Table (3) shows the menstrual history of the study participants. The majority of the study participants (71.4%) their ages of menarche between 14-16 years old. More than half of them (57.1%) had duration of 3-5 days of menstruation with menstrual interval ≤28 days. Nearly all of the study participants had moderate amount of menstrual blood and nearly half of them (57.1 %) had pain during menstruation.

Fig 1: Knowledge of the Study Participants about Breast Cancer

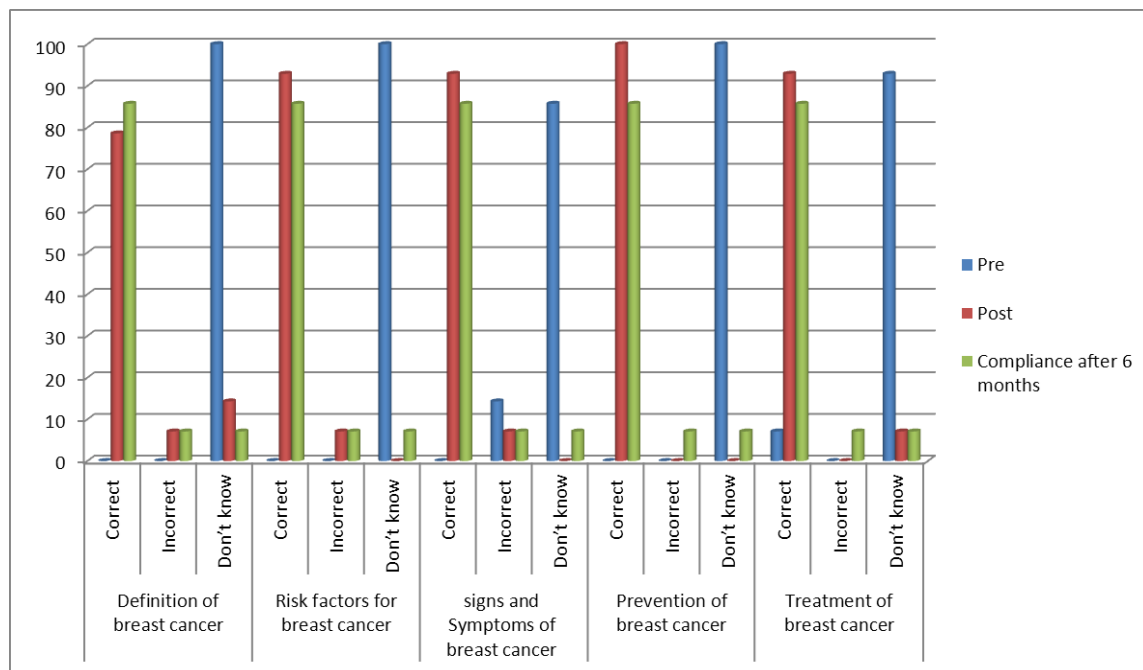


Figure 1 shows the study participants’ knowledge about breast cancer. This table revealed that there was a highly significant difference between the pre and post –test. There was also a highly significant difference between the pre-test and compliance regarding knowledge about breast cancer where p value was <0.001. There was no significant difference between the post-test and compliance after 6 months regarding knowledge about breast cancer where p value was >0.05.

Table (4): Knowledge of Study Participants about Breast Self- Exam:

Variables	Study participants						Test of sig	P value
	Pre No.=14		Post No.=14		Compliance after 6months No.=14			
	no	%	No	%	No	%		
Do you have any previous knowledge about breast self-exam?								
Yes	0	0.0	14	100.0	14	100.0	$\chi^2=28.0$	P1<0.001*
No	14	100.0	0	0.0	0	0.0	$\chi^2=28.0$	P2<0.001*
							$\chi^2= 0$	P3= 1
Definition of breast self-examination								
Correct	1	7.1	13	92.9	12	85.8	McNemar	P1<0.001*
Incorrect	0	0.0	0	0.0	1	7.1	$\chi^2=28.0$	P2<0.001*
Don't know	13	92.9	1	7.1	1	7.1	$\chi^2= 10.2$	P3 >0.05
Knowing how to Perform breast self-examination								
Yes	0	0.00	14	100.0	14	100.0	$\chi^2=28.0$	P1<0.001*
No	14	100.0	0	0.00	0	0.00	$\chi^2=28.0$	P2<0.001*
							$\chi^2= 0$	P3=1

Reasons for performing breast self-exam								
Correct	0	0.0	13	92.9	12	85.8	$\chi^2=24.26$	P1<0.001*
Incorrect	0	0.0	0	0.0	1	7.1	$\chi^2=24.27$	P2<0.001*
Don't know	14	100.0	1	7.1	1	7.1	$\chi^2= 10.2$	P3 >0.05
Position for breast self-exam								
Correct	0	0.0	11	78.7	11	78.7	$\chi^2=28.0$	P1=<0.001*
Incorrect	0	0.0	3	21.3	2	14.2	$\chi^2=24.27$	P2 <0.001*
Don't know	14	100.0	0	0.0	1	7.1	$\chi^2= 6.2$	P3<0.05

P1: comparison between pre and post

P2: comparison between pre and compliance after 6 months

P3: comparison between post-test and compliance after 6 months

Table (4) reveals the study participants' level of knowledge about breast self-exam. This table shows that there was highly significant difference between the pre and post-test. Also there was highly significant difference between the pre-test and compliance after 6 months regarding level of knowledge about breast self-exam when (p<0.001). There was no difference between post-test and compliance after 6 months regarding questions; do you have any previous knowledge about breast self-exam and knowing how to perform breast self-exam when P3=1. There was no significant difference between the post-test and compliance after 6 months regarding level of knowledge about breast self-exam concerning these questions; definition of breast self-exam and reasons for performing breast self-exam when P3 >0.05, while there was a significant difference between the post-test and compliance after 6 months regarding position for breast self-exam when P3<0.05.

Fig 2: The Difference between Pre- Post Test and Compliance after 6 Months Scores Regarding Total Knowledge Score of the Study Participants about Breast cancer and Breast Self-Exam.

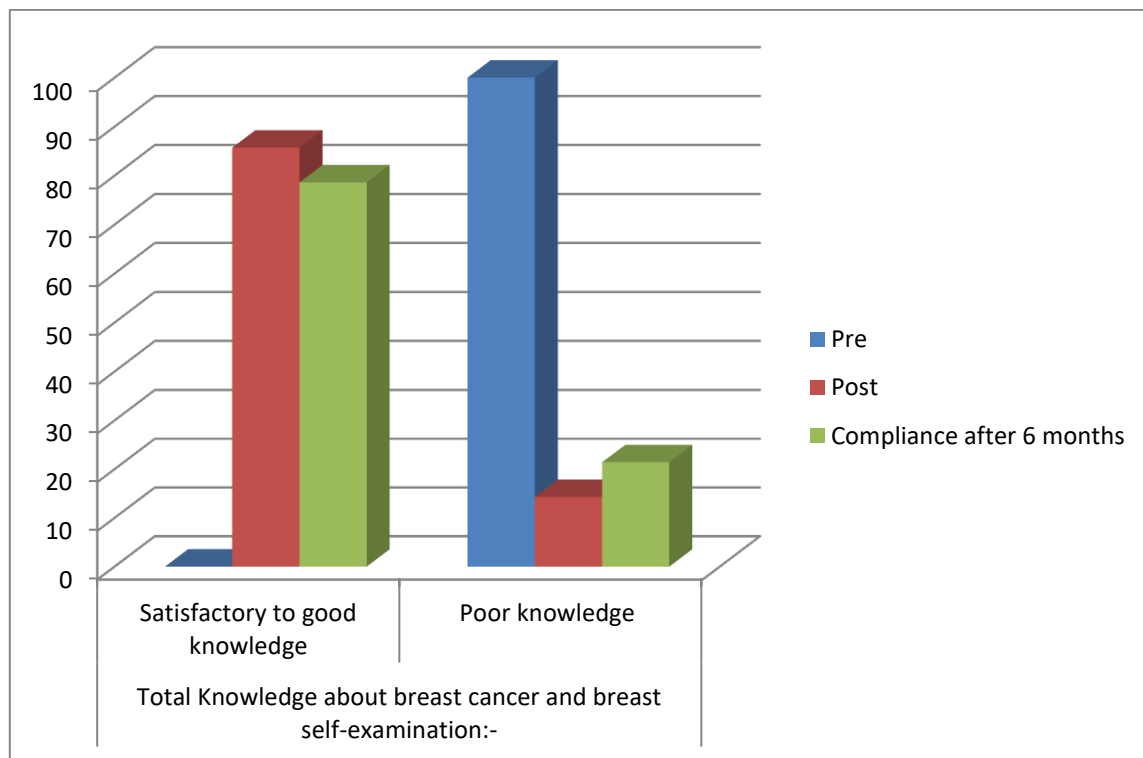
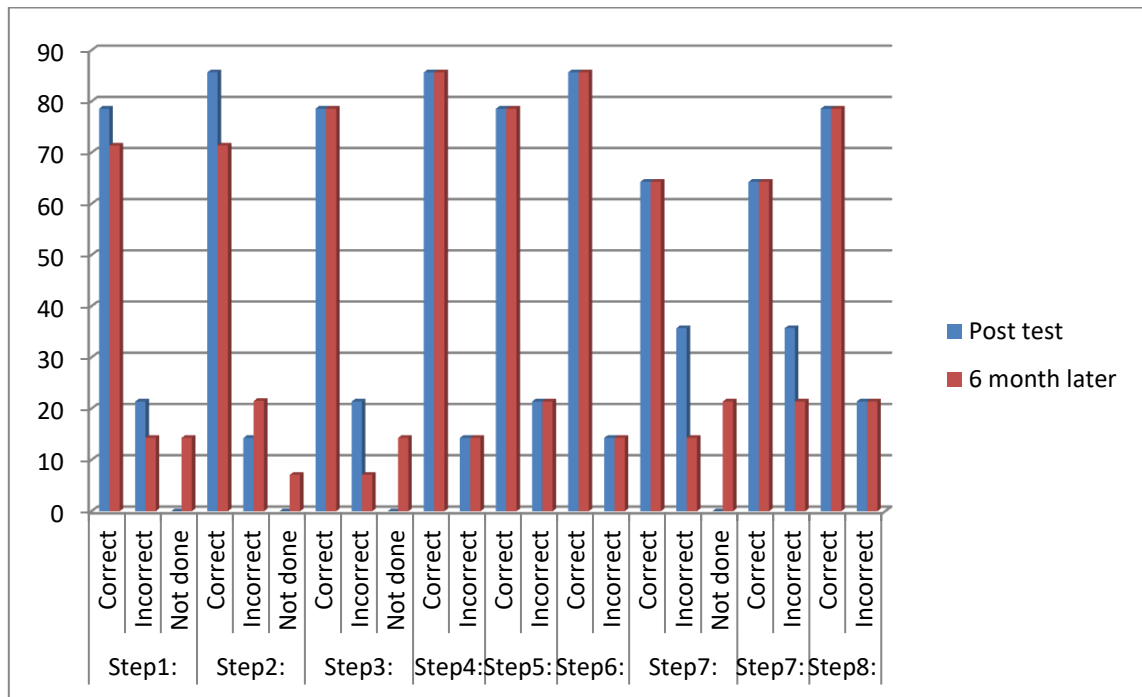


Figure 2 reveals the difference between pre–posttest and compliance after 6 months scores regarding total knowledge about breast cancer and breast self-exam. There was a highly statistical significant deference between pre and posttest when $p < 0.001$ regarding total knowledge about breast cancer and breast self-examination. Whereas there was no significant difference between the post-test and compliance after 6 months regarding knowledge about breast cancer and breast self-exam when p value was > 0.05 .

Section III: The Study Participants’ Scores Regarding the Practice of Breast Self-Exam within the Post-Test and Compliance after 6 Months.

Figure (3): The Study Participants Scores regarding the Practice of Breast Self-Exam within the Post-Test and Compliance after 6 Months.



Step1: Palpate the breasts and report any differences

Step2: Palpate the nipples and note the size and direction

Step3: The girl lies down on the examining table, places a pillow under her left shoulder

Step4: Palpate the left breast and report any differences

Step5: Palpate the entire breast using the spiral technique

Step6: Squeeze the nipple gently and note any discharge

Step7: Sit up with arms at sides and palpate the left breast

Step8: Raise hand Palpate the tail of the breast

Step9: Repeat this procedure for the right side

Figure 3 shows the study participants’ scores regarding the practice of breast self-exam within the post-test and compliance after 6 months. This table reflects that there were statistically significant differences between the post-test and compliance after 6 months ($p < 0.001$) regarding step 1, step 2, step 3 and step 7.

Table (5): Total practice score of the study Participants regarding practice of Breast Self-Exam in post-test and compliance after 6 months.

Variables	Study Participants				Test of sig	P value
	Post-test		6 month later			
	Mean ±SD		Mean ±SD			
Practice:-						
Acceptable performance	10	71.6	10	71.6	McNemar	-
Good performance	4	28.4	4	28.4		

Table 5 shows the total practice score of the study participants regarding breast self-exam in post-test and compliance after 6 months. This table reflects that there were no differences between the post-test and compliance after 6 months regarding the practice of breast self-exam.

Section VI: Compliance of the Study Participants after 6 Months Regarding BSE.

Table 6: Compliance of the Study Participants after 6 Months regarding Breast Self-Exam:

Variables	Study Participants (n=14)		χ ²	P value
	No	%		
Did you do Breast Self-Exam?				
Yes	14	100.0	-	-
No	0	0.00		
How many times did you do Breast Self-Exam in the last 6 months				
>3 times	3	21.3	4.57	0.033*
3-6 times	11	78.7		
What positions did you use when performing Breast Self-Exam?				
Standing during shower	2	14.2	7.14	0.008*
Standing during shower and lying down	12	85.8		
What part of finger did you use while performing Breast Self-Exam?				
Finger pads	13	92.9	10.28	0.001*
Don't know	1	7.1		
What is the area of breast that you should cover when Breast Self-Exam is done?				
Correct	11	78.7	4.57	0.033*
Incorrect	3	21.3		
What is the direction of motion used in checking the breast:				
Circular motion	3	21.3	4.57	0.033*
Circular motion and grid motion	11	78.7		
Which hand did you use to check the right breast?				
Right hand	2	14.2	7.14	0.008*
Left hand	12	85.8		

*significant

Table (6) shows the compliance of the study participants regarding breast self-exam after 6 months. This table revealed that all of the study participants performed breast self-exam and about two thirds performed it 3 to 6 times in the last 6 months. The majority of them (85.7%) perform breast self-exam in standing position during the shower and lying down

and nearly all of them (92.9%) used the finger pads during the exam. About two thirds of the study participants covered the entire breast and the arm pits during BSE by using the circular method and grid method and also more than two thirds (85.7) of the study participants used the left hand to check the right breast

4. DISCUSSION

Regarding age, the present study was carried out on a sample of adolescent girls having vision impairment and enrolled in El Noor institute in Menoufia governorate with age ranging between 14-18 years old. It was found that the majority of the study participants' ages were more than 14 years old. The researcher selected this age group as there is a fact that those target group participants were not aware of obtaining any information about BSE and breast cancer. This finding was supported by a study conducted by Abd El-Mohsen and Abd El-Mohsen (2015) who aimed to, "improve knowledge, beliefs and behavior of undergraduate female nursing students in Al-Azhar University toward breast self-examination practice and breast self-examination teaching. The study was conducted in Health Technical Institute for female students at Al-Azhar University on 113 female student nurses with age ranging between 17-20 years old. It found that more than two thirds of them seventeen years old.

Regarding the family history of cancer, the present study found that the majority of the study participants stated that there was no family history of cancer and the minority had a family history of cancer. The results of this study are similar to the reports of Yucel, et al., (2014) who conducted a study for determining the factors that affect breast cancer and self breast examination beliefs of Turkish nurses in Academia". This study was conducted at the Faculty of Nursing on a 284 female students. The results revealed that 91.5% of the participant nurses did not mention breast cancer in the family history.

Concerning level of knowledge about breast cancer and breast self-exam, the total study participants had poor knowledge about BSE and breast cancer, but after the post-test most of the participants' knowledge became excellent. The total study participants have poor score of knowledge about breast cancer and breast self-exam before intervention but after intervention, the score of knowledge was improved to (85.7%) in the post-test and to (78.6%) at compliance after 6 months. That is because of the intervention.

The results are consistent with another study about the "evaluation of breast cancer knowledge and breast self-examination practices among adolescent blind girls in Qena Governorate. This study was carried out on a group of 37 blind girls. The results came in the same line as the present results in improvement of knowledge of BSE after the training program with a significant difference after the program. The level of knowledge increased from 10.8% before intervention to 78.4% after intervention (Mohamed, El-Magrabi, & Ahmed (2013). Such agreement was due to presence of a statistical difference in total knowledge score by 85.7%. This difference was similar to Mohamed, El-Magrabi, & Ahmed, (2013) as their study's score of knowledge was improved by 67.2% than before the program.

On the other hand, this finding is incongruent with Fondjo, et al., (2018) who revealed that almost all of the studied participants were aware of BSE. This difference in the results may be due to the different residences, the different level of education and their previous awareness about breast self-exam.

Regarding the practice of breast self-exam, according to the present study, the results revealed that the total study participants have not known anything about practicing BSE before the program and after the intervention the score of practice was improved in post-test and in compliance after six months. Such improvement in practice score was due to giving all the study participants sufficient intervention about practicing breast self-exam. Moussa & Shalaby, (2014) investigated the effect of breast self-examination education program on knowledge, attitude and practice of nursing students. The results revealed that the educational program had a significant impact on the remarkable increase in practice of BSE from no one of students to overwhelming the majority of students.

These findings came in line with a study conducted by Mohamed, El-Magrabi, & Ahmed, (2013) who showed that all 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. Moreover, these findings were harmonious with a study conducted by Gabriel, (2016) about "awareness and practice of self-breast examination among female nurses at the federal teaching hospital Ido-Ekiti, Nigeria". Gabriel observed that the practice of SBE examination among the nurses was poor. Only one third of them practiced the monthly SBE. Contradicting with the present study findings is that of Phungula, (2011) who conducted a study about "an investigation of knowledge and practice of breast self-exam among female high school learners: an intervention study". Phungula reported that more than half of the total sample were aware of breast self-

exam. The researcher emphasized on the need for the female youths to be properly taught the routine of BSE, as this will decrease the incidence of breast cancer. This difference may be due to previous knowledge this group had about breast self-exam and how to perform it.

Regarding compliance with BSE, The compliance of the study participants regarding breast self-exam after 6 months. It increased as about two thirds performed it 3 to 6 times in the last 6 months. The majority of them performed breast self-exam in standing position during the shower and lying down. Almost all of them used the finger pads during the exam. About two thirds of the study participants covered the entire breast and the arm pits during BSE by used the circular method and grid method and also more than two thirds of the study participants used the left hand to check the right breast.

This result came in line with a study conducted by Strickland, (2014) about “improving breast self-examination compliance: a Southwest Oncology Group randomized trial of three interventions”. This study was carried out on 400 women enrolled in oncology department. The findings showed that (87%) of women reported doing BSE at 6 months. On the other hand, such results were incongruent with a study conducted by Amoroto, (2014) entitled “breast self-examination: awareness, compliance, and confidence of Lyceum of the Philippines university - Laguna students”. The findings revealed that the level of compliance of the studied participants in performing the breast self-examination was decreased. It is indicated in the results that 356 out of 496 or above 70% did not perform BSE while 40 or a little less than 29% of the studied participants performed the BSE. This decreased level of compliance may be due to lack of interest.

5. CONCLUSIONS

According to the results of the present study, it could be concluded that all the study participants had no knowledge about breast cancer and breast self-exam before the interventional program and also they did not know the procedure of performing breast self-exam, while after the interventional program, the study participants' level of knowledge about breast cancer and breast self-exam was highly improved. Also they could perform breast self-exam. There for the research hypotheses were supported.

- Visually impaired adolescent girls who receive a nursing intervention program have a higher score of knowledge about breast self-exam after intervention than before.
- Visually impaired adolescent girls who receive a nursing intervention program have a higher score of compliance about breast self-exam after intervention than before.

6. RECOMMENDATIONS

According to the findings of the current study, the following recommendations are proposed:-

- The importance of conducting seminars about breast cancer prevention issues for girls in secondary schools and universities in their educational activities (extracurricular activities).
- Breast cancer screening is recommended especially for girls with family history of breast cancer

Further Studies:-

- Educational program about the importance of BSE and its practices by the female students in schools, vision impairment schools and universities should be held to increase awareness about early detection methods of breast cancer as BSE.
- Awareness illustration posters of BSE, leaflets or braille books for visually impaired students in their schools libraries.

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