International Journal of Research Studies in Biosciences (IJRSB)
Volume 2, Issue 6, July 2014, PP 40-49
ISSN 2349-0357 (Print) & ISSN 2349-0365 (Online)
www.arcjournals.org

Effect of Breast Self-Examination Education Program on Knowledge, Attitude and Practice of Nursing Students

Maha Mousa Mohamed Moussa

Lecture Department of Community Health Nursing,
mahamoussa2000@yahoo.com

Nagat Salah Shalaby

Maternity, gynaecology and Obstetrics Nursing.
Faculty of Nursing, Port Said University, Egypt

Abstract: *Breast cancer has been considered as a major health problem in females, because of its high incidence in recent years. Breast self-examination (BSE) has a role in early diagnosis and prevention of morbidity and mortality rate of breast cancer, promoting student knowledge, capabilities and attitude are required in this regard. The aim of this study was to investigate the effect of an educational program about BSE on nursing students' knowledge, attitude and practice. This quazi-experimental study was implemented on 134 students in technical health institute in Damietta and Port Said cities. A self-administered questionnaire form was used to collect data regarding students' personnel characteristics, knowledge and attitude. Observation checklist for practice of BSE was used. An educational program was developed and to improve their related knowledge, attitude and practice. The evaluation of the effect of the program was done by comparing pre to post and 3months follow-up findings. The results demonstrated very low students' knowledge, attitude and practice before the intervention, with statistically significant improvements after the intervention. The study concluded that training nursing students in BSE has a positive impact on their knowledge, attitude and practice. Hence, similar training programs should be implemented in similar settings. The issue should also be incorporated in nursing schools curricula.*

Key words: *Breast-self-examination, breast cancer, health education*

1. INTRODUCTION

Breast cancer is the most prevalent cause of cancer morbidity and mortality among women in most parts of the world (1). It constitutes 13–35% of all female cancers. It is the most common cancer among women in Arab countries with a young age of around 50 years (2). In Egypt, the figure for people suffering from breast cancer is alarming. Breast cancer accounts for 35.1% of the cases of cancer and is the most prevalent cancer among Egyptian women. The median age at diagnosis for breast cancer in Egypt is ten years younger than in the United States and Europe (3).

Because of many Egyptian women fail to seek medical treatment or preventive screening, making it more difficult to treat cancers and by the time breast cancer is detected in Egypt, it is often advanced (4). Breast self-examination have a positive effect on the early detection of breast cancer (5). Although, there is debate surrounding the efficacy of routine BSE in early detection of breast cancer (6). BSE is still an important screening tool for early detection of breast cancer in developing countries, because it is cheap, widely available, and does not require complex technical training (7). In addition the American Cancer Society recommends it for early detection of breast cancer as it assists women in two main ways; first by becoming familiar with both the appearance and the sense of their breasts and second by helping them to detect any changes in their breasts as soon as possible (8). The current recommendations by (9), that all women should perform monthly breast self-exams (BSE), and also should be informed about the potential benefits and limitations associated with BSE.

Unfortunately, despite the relative benefits of regular BSE, few women actually examine themselves; in fact, a majority does not even know how to do a BSE (10). A cross-sectional study

was carried out among 262 female undergraduate students in University Putra Malaysia, showed that only 36.6% of girls performed BSE monthly (11).

Research suggests that women who receive personal instruction on BSE from a health care professional demonstrate greater knowledge and confidence and are more likely to practice routine BSE than those who become aware of the method from other sources (12). Because of nurses a health care professional play a unique role in alerting the community to the early detection of breast cancer as they usually have the closest contacts with female patients (13). So, the present study aims to investigate the effect of educational program on the level of knowledge among nursing students regarding facts related to BC and BSE, and their practice of BSE. Information regarding such a study population is important as; they are women and, thus, at risk of getting BC, and they as a nurse can give instructions to other women on how to perform BSE competently.

2. AIM OF THE STUDY

The present study aimed to investigate the effect of an educational program about BSE on nursing students' knowledge, attitude and practice.

The research hypothesis was

The application of BSE educational program will positively change nursing students' knowledge, attitude and practice

3. SUBJECTS AND METHODS

Design: The study used quazi-experimental design.

Setting: The study was carried out in two technical Institutes of nursing at Port Said and Damietta cities.

***Subjects*:** all students enrolled in the first grades of the aforementioned institutes were included in the study sample. Their total number was 134. The sample size was large enough to demonstrate an improvement in the knowledge, attitude and practices of nursing students.

Data Collection Tools: The researchers developed a self-administered questionnaire for data collection. It consisted of three parts. The first part involved biosocial data about student's age and marital status. It also included questions about history of breast problems, history of BSE, and sources of breast cancer information. The second part contain questions to assess student's knowledge, it contain 25 items about breast cancer and BSE. Then, each correct response was scored one point and each wrong response was scored zero. The third part, a three-point likert scale for student's attitude toward BC and BSE. The scale had 11 statements, both positive and negative. Each statement was to be marked as agree. Uncertain, or disagree.

Second Tool (observation checklist was developed by the researchers to assess student's competency in practicing BSE.

Pilot study: A pilot study was carried out to test the clarity and reliability of the tool and feasibility of the study. The internal consistency of the tool was done, and Chronbach alpha coefficient was calculated to assess the reliability. Needed modifications were done in the form of re-phrasing of some items. The pilot subjects were not included in the main study sample.

Fieldwork: The researchers fulfilled the official steps required to get the approval for carrying out the study from the Vice-Chancellor for Education and Student Affairs in Port Said University. Letters were issued to the manager of the two institutes asking for their permission to conduct the study. The researchers met with each manager, and explained the purpose and procedures of the study. Students were approached in groups. After explanation of the aim of the study, and informing them about their rights, those who provided their verbal consent to participate were handed the data collection tool for filling it out. The research team members were present all the time for any clarifications. The field work was carried out from beginning of October 2010 to the end of March 2011.

The study was carried out through four phases:

The first phase was *assessment* regarding BSE knowledge attitude and practice

The second phase was *planning and development* training program was planned and designed by the researcher based on result of the assessment phase. A film and hand out of information it covered the following aspects ; Definition of BSE, factors affecting breast cancer, common symptom of breast cancer, importance of BSE ,methods of BSE , best time for doing BSE , positions of BSE.

The third phase was implementation students nurse were divided into seven groups and implementation of the program was done for each group separately. Each group 19 students, the total duration of the program was 24 hours. These were divided into weekly sessions of two hours each. The weekly session were conducted for each group along a period of three months.

The fourth phase evaluation carried out 3 months after the implementation of the educational program to study the effect of the program on the students' knowledge, assess the rate of continuation of BSE practice and attitude.

Methods of teaching were lectures, discussion, demonstration and brainstorming. Teaching aids like film, power point presentation, handouts and flipchart were used.

***Ethical* considerations:** The study protocol was approved by pertinent bodies in the University. Students were informed about their rights to refuse or withdraw at any time. The data collection tools were anonymous, and total confidentiality of the information obtained was ensured. The study maneuver could not carry any risk to participants.

Data Analysis: Data entry and statistical analysis were done using SPSS 16.0 statistical software package version 20.0. Qualitative data were described using number and percent. Quantitative data were described using mean and standard deviation. For normally distributed data, comparison between two independent population were done using independent t-test while more than two population were analyzed F-test (ANOVA) to be used , comparison between pre, post and follow up program using ANOVA with repeated measures and Post Hoc test was assessed using Bonferroni adjusted. Statistical significance was considered at p-value <0.05.

4. RESULTS

Table 1 shows the distribution of students according to their demographic characteristics. Overall, the majority of students were never married (85.1%). (13.4%) of students reported having history of breast problem in the form of pain (66.7%), red and abscess (11.1%). also about half (55.97%) of students had information about Breast self-examination.

Table 1. *Socio-demographic characteristics of the study participants (n=134)*

	No.	**%**
3-Marital status		
Married	20	14.9
Single	114	85.1
2-Age	19.06 ± 0.58	
7-History of breast problem		
Yes	18	13.4
No	116	86.6
8-Type of breast problem		
Pain	12	66.7
Red	2	11.1
Crack nipple	1	5.6
Abscess	2	11.1
Unequal in size breast and rigid slightly	1	5.6

Blocks under sxillary	1	5.6
5-Information about breast self examination		
Yes	75	55.97
No	59	44.03

As shown in figure 1,the most common barriers for not practicing BSE among the study participants were lack of knowledge, dislike touching breasts and fear of finding breast mass.

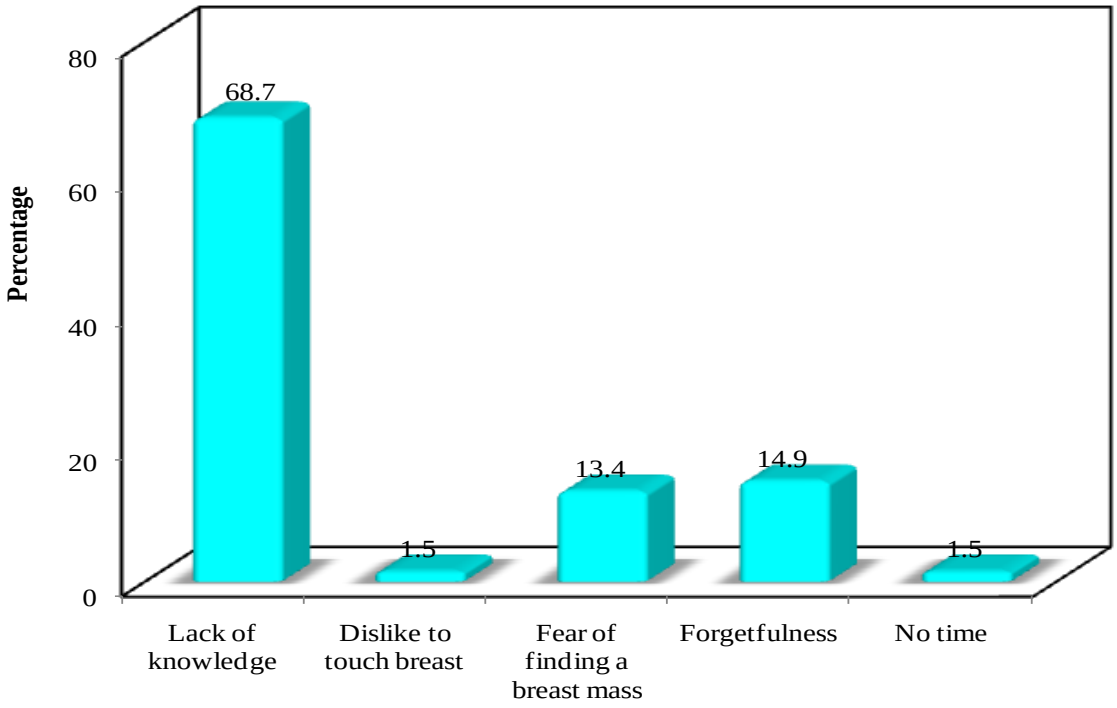

Figure 1. *Barriers for practicing breast self examination among the study participants*

As for students' source of information, figure 2 illustrates that friends, mother, media and internet were the common sources of information. While friends were reported by more than one thirds of students (38.5%) and mother were reported by slightly less than one thirds of students (32.3).

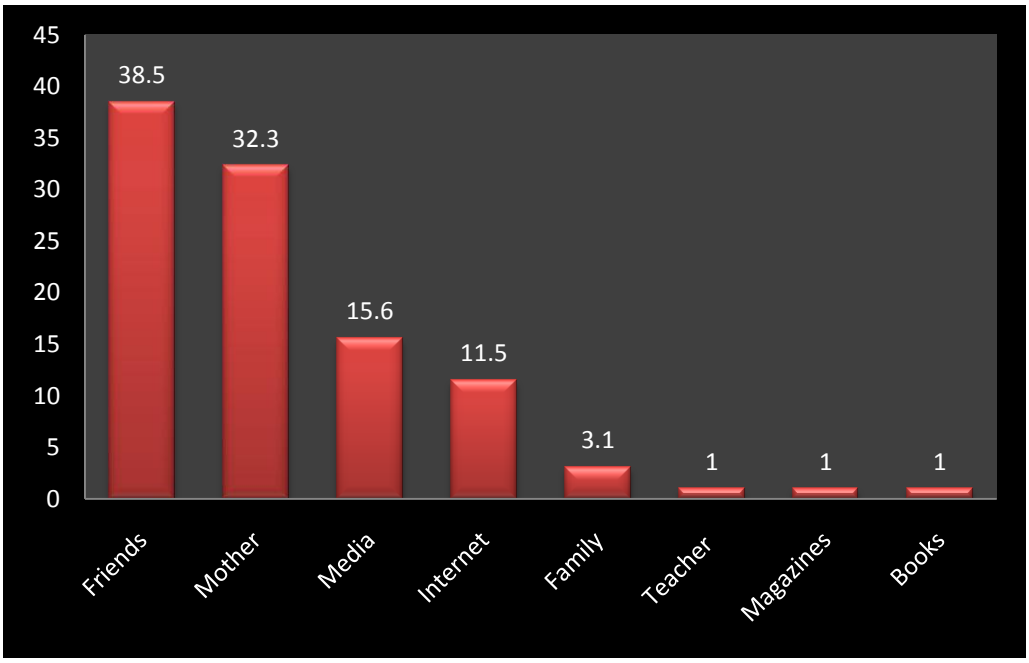

Figure 2. *Distribution of the studied cases according to source of information*

Regarding the participants knowledge of breast cancer and breast self examination throughout the educational program table (2) indicates improvement of the students' knowledge in all items and in total score. These improvements were statistically significant ($p<0.001$) .the percentage of satisfactory knowledge continued to improve at the 3-month follow up test, although, the total score of knowledge has slightly declined at 3- month follow-up. Nonetheless, it was a statistically significant higher compared to the pre- educational program level, ($p<0.001$)

Table 2. *Knowledge level of the study participants regarding breast cancer and breast self examination (pre/post program)*

	Pre-program	**Post-program**	**Follow up**	**F**	**p**
Causes of breast cancer	31.16 ± 19.06	98.88 ± 3.03	94.47 ± 6.85	136.288*	<0.001*
p_1		<0.001*	<0.001*		
Signs &Symptoms of breast cancer	35.61 ± 20.49	97.97 ± 5.0	97.01 ± 6.09	107.921*	<0.001*
p		<0.001*	<0.001*		
Total	33.38 ± 16.20	98.43 ± 2.88	95.74 ± 4.70	1814.38*	<0.001*
p_1		<0.001*	<0.001*		
Knowledge related to breast self examination	29.85 ± 45.93	100.0 ± 0.0	92.54 ± 26.38	207.062*	<0.001*
p_1		<0.001*	<0.001*		
Importance of BSE	29.60 ± 22.26	94.78 ± 12.16	90.05 ± 15.85	598.46*	<0.001*
p_1		<0.001*	<0.001*		
Right time for BSE	33.58 ± 47.40	94.03 ± 23.78	100.0 ± 0.0	202.07*	<0.001*
p_1		<0.001*	<0.001*		
Early preventive measure	4.85 ± 18.26	100.0 ± 0.0	92.54 ± 18.91	1671.85*	<0.001*
p_1		<0.001*	<0.001*		
Total	24.47 ± 19.15	97.20 ± 6.62	93.78 ± 9.50	1320.44*	<0.001*
p_1		<0.001*	<0.001*		
Total knowledge	26.26 ± 14.20	94.92 ± 2.76	92.14 ± 4.46	2655.19*	<0.001*
p_1		<0.001*	<0.001*		

F: F test (ANOVA) with repeated measures for comparing between the three periods

p_1: Stands for adjusted Bonferroni p-value for ANOVA with repeated measures for comparison between pre with post and follow up program

*: Statistically significant at $p \leq 0.05$

Regarding the participants practice table 3 shows that before the program all students don't practice BSE, after the program a significant was observed in the students' practice in relation to methods and techniques and total practice score. The differences between pre/post programs were statistically highly significant ($p<0.001$).

Table 3. *Practice level of the study participants regarding breast self examination (pre/post program)*

	Pre-program	**Post-program**	**Follow-up**	**F**	**p**
Methods	0.0 ± 0.0	98.51 ± 5.20	94.65 ± 9.28	14621.8*	<0.001*
p_1		<0.001*	<0.001*		

Technique phase	0.0 ± 0.0	98.21 ± 6.70	97.16 ± 8.19	19386.9*	<0.001*
p_1		<0.001*	<0.001*		
Total Practice	0.0 ± 0.0	98.37 ± 4.84	95.79 ± 6.75	27811.4*	<0.001*
p_1		<0.001*	<0.001*		

F: F test (ANOVA) with repeated measures for comparing between the three periods

p_1: Stands for adjusted Bonferroni p-value for ANOVA with repeated measures for comparison between pre with post and follow up program

*: Statistically significant at $p \leq 0.05$

As regards the students' attitudes to BSE and its practice, the present study (table 4) highlighted that, about two thirds of the students had positive attitude. While there were improvement of the students' attitude related to all items of BSE, the percentage of positive attitudes continued to improve in the 3-month follow-up test.

Table 4. *Attitude of the study participants regarding breast self examination (pre/post program)*

	Pre-program	**Post-program**	**Follow- up**	**F**	**p**
Attitude	65.85 ± 12.37	99.01 ± 2.25	90.78 ± 7.02	667.150*	<0.001*
p_1		<0.001*	<0.001*		

F: F test (ANOVA) with repeated measures for comparing between the three periods

p_1: Stands for adjusted Bonferroni p-value for ANOVA with repeated measures for comparison between pre with post and follow up program

*: Statistically significant at $p \leq 0.05$

Examining the relation between Mean Knowledge Score of students regarding breast self-examination according to socio-demographic data, Table 5 indicates although there were not statistical significant relation between age, family history and marital status and knowledge score, the finding reveled the older student their knowledge score were higher compared to younger students , also married students and who had family history of breast cancer their knowledge score were higher than single and no family history

Table 5. *Relation between age and total knowledge and practice of the study participants regarding breast self examination (pre/post program)*

Knowledge	**Pre-program**	**Post-program**	**Follow up**
Age			
18 year	20.57 ± 9.89	94.20 ± 3.82	91.68 ± 3.62
19 year	27.79 ± 14.45	95.37 ± 2.45	92.30 ± 4.63
20 year	25.01 ± 15.13	93.91 ± 2.66	91.92 ± 4.51
^{F}p	0.127	0.027*	0.830
Family history			
Yes	32.70 ± 14.86	95.39 ± 2.78	92.36 ± 4.08
No	25.56 ± 14.02	94.86 ± 2.77	92.12 ± 4.52
^{t}p	0.085	0.516	0.850
Marital status			
Married	29.42 ± 15.74	95.06 ± 2.27	92.88 ± 3.90
Single	25.70 ± 13.92	94.89 ± 2.85	92.01 ± 4.56
^{t}p	0.282	0.801	0.421

p: p value for comparing between the different studied group

F: F test (ANOVA)

t: Student t-test

*: Statistically significant at $p \leq 0.05$

Table 6 illustrates the relation between Mean practice Score of students regarding breast self-examination according to socio-demographic data although there were not statistical significant relation between age, family history and marital status and practice of BSE, married students had satisfactory performance 3 month posttest.

Table 6. *Relation between family history and total knowledge and practice of the study participants regarding breast self examination (pre/post program)*

Practice	Pre-program	Post-program	Follow up
Age			
18 year	0.0 ± 0.0	98.48 ± 4.68	96.97 ± 6.97
19 year	0.0 ± 0.0	98.16 ± 5.34	95.51 ± 7.14
20 year	0.0 ± 0.0	98.99 ± 2.91	95.96 ± 5.25
^{F}p	-	0.737	0.699
Family history			
Yes	0.0 ± 0.0	99.30 ± 2.52	95.80 ± 7.97
No	0.0 ± 0.0	98.27 ± 5.02	95.79 ± 6.64
^{t}p	-	0.469	0.995
Marital status			
Married	0.0 ± 0.0	100.0 ± 0.0	98.18 ± 3.73
Single	0.0 ± 0.0	98.09 ± 5.20	95.37 ± 7.08
^{t}p	-	<0.001*	0.011*

p: p value for comparing between the different studied group

F: F test (ANOVA)

t: Student t-test

*: Statistically significant at $p \leq 0.05$

5. DISCUSSION

This study was carried out to test the research hypothesis that the implementation of an educational program will improve nurses' knowledge, attitude and practices about breast self examination. The study results lead to acceptance of this hypothesis since nurses' knowledge improved significantly, and their attitude and practices has also improved due to the improvement of their knowledge.

According to the current study findings, although more than half of students had heard or read about breast self-examination (55, 9%) but no one of respondents performed BSE. This could be contributed by the apparently unconvincing and somewhat contradicting perceptions towards BSE found in this study such as Dislike to touch breast or Fear of finding a breast mass. In a study by (14) that reported 90% of the participants heard about BSE, only 19% stated that they performed BSE on a regular monthly basis. Also (15) found that (97%) of women heard about breast cancer but only 36.7% of respondents performed BSE.

Slightly more than one thirds of students reported their main source of information of BSE as friends and mothers, this might due to the adolescent spent most time with friends , it might also be due to some parent have a knowledge on some of these topics to discuss. This finding gives a

spot on the importance of knowledgeable friends and mothers in increasing adolescents awareness about the importance of breast self examination. This result is congruent with WHO which reported that family and friends were significant motivators to practice BSE, also (16)found that the main resource of information was the peer group (47.8%) while the media represented 30.4%. in contrast, (17) reported that sufficient information about BC and BSE , acquired from their health professionals.

The present study has also revealed that, about one quarter of students had satisfactory information about BC and BSE, this could be attributed to poor awareness related to the value of health. Post program, the students' level of knowledge about BC and BSE significantly improved, which is consistent with (18), the knowledge about the frequency and the appropriate time for BSE increased significantly. Another study in 2010 found that the score average of the women before study was84.2$\pm$ 26.7while the score average after training was 94$\pm$ 16.4; it indicated that there was difference between pretest and final test score average (19).

According to the results of the current study, the educational program had a significant impact in the remarkable increase in practice of BSE from no one of students to overwhelming majority of students (98.3$\pm$ 4.8%) performs BSE correctly. The main reason for not practicing BSE prior to the program was that they did not know how to perform it. These results are in agreement with the effect of an education program carried out in other studied (17. 24, 7, 20, 21), where the majority of the sample had unsatisfactory information and practice of BSE before the program that improved significantly post intervention. The majority of them mentioned that the main barrier for not practicing BSE was lack of knowledge.

Concerning the students' attitude toward BSE about two-thirds of students had positive attitude score before educational program, which were increased after education to 99.01$\pm$2.25. Regarding the effect of education on inducing positive attitude to breast self-examination in students, there was a significant difference between scores of attitude before and after education.

6. CONCLUSION AND RECOMMENDATIONS

The study concluded that training nursing students about BSE has a positive impact on their related knowledge, attitude and practice. Since nurses can implement these simple, inexpensive and effective approach independently. It is recommended that similar training programs be implemented in similar settings. This issue should also be incorporated in nursing schools' curriculum. It is also important to increase the information about breast cancer, early diagnosis and BSE practice given by health care stuff and especially to use media effectively (such as television, magazine, newspaper) can be provide information and raise awareness about breast cancer and BSE practice.

ACKNOWLEDGMENT

First of all, I would like to express my endless and deepest thanks to "GOD" for his magnificent help, which enables me to accomplish this work.

I great of gratitude should be saved to professor. Amal Ahmed Khalil Professor of Pediatric Nursing Faculty of Nursing Port Said University for her continuous support, guidance, understanding, generous help, and valuable advices during the conduction of this study.

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COMPETING INTERESTS

The author(s) declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

Maha Moussa conceived the study idea, collected data, designed the program and review methodology, conducted the critical appraisal of the studies and drafted the manuscript.

Nagat Salah developed the search strategies, assisted in designing the review methodology, conducted the searches, conducted the critical appraisal of the studies and prepared the final manuscript for publication.