Effects of Peer Education on the Knowledge of Breast Cancer and Practice of Breast Self-Examination among Mansoura University Female Students

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Abstract: The purpose of the study was to investigate the effects of peer education on the Knowledge of Breast Cancer and Practice of Breast Self-Examination among Mansoura University Female Students. **Subjects and Method**: This study was conducted between December 2009 and may 2010 in the adult skill lab of Faculty of Nursing, Mansoura University, Egypt. Two categories of subjects were included in the study; A- 10 nursing students enrolled in the fourth year Bachelor of Nursing as trainees). B- 150 female university students. Two research tools were used in the study: 1- Knowledge of breast cancer and BSE form 2- Breast Self Examination Performance Checklist. **Results**: There was an improvement in total knowledge post education I (t= 43.020, p= 0.000). And the improvement (p= 0.000) was maintained post education II (t= 38.566). There was an improvement in practice score post education I (t= 58.083, p= 0.000), as well as post education II (t= 10.415, p= 0.000). BSE performance increased significantly following education (p= 0.000) from 8.0% to 52.7 %. **Conclusion**: Based on the findings of this study, there was inadequate knowledge about breast cancer and BSE among Mansoura university female students before peer education approaches. There was significant improvements in students' knowledge about breast cancer and BSE in post education I and improvement in post education I. Practicing BSE was lacking before peer education, it improved significantly after peer education. Data from this study re-enforce the continuing need for more BC education programs that are intended to attract the attention of young women. More education-based programming targeting female university students should be a primary consideration among health education/health promotion practitioners.

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1. Introduction

Breast cancer is the most common cause of cancer-related deaths among women worldwide ***(Lodha et.al, 2011; WHO, 2011).*** Epidemiological data showed that one in 8 women in the United States of America and one in 10 women in Europe will develop breast cancer at some time during their lives ***(Demirkiran et.al., 2007).*** Breast cancer is one of the oldest known forms of malignancies. The earliest known documentation on breast cancer discovered in Egypt and dates back to about 3000 BC. It is called the Edwin Smith Papyrus, and is a copy of part of an ancient Egyptian textbook on trauma surgery ***(Bland et. al, 2007).***

Recent record from ***American Cancer Society (2010)*** has shown that, the population and amount of cancer patients in the low and middle income countries are the highest worldwide. In Bahrain, Egypt, Jordan, Kuwait, Lebanon, Oman, Saudi Arabia and Tunisia, breast cancer is more commonly diagnosed in women under the age of 50, unlike the United States of America (USA), where women aged 50 years and older are the most commonly affected. In Egypt, similar to many other parts of the world, breast cancer is the most common cancer, it accounts for approximately 38% of the reported malignancies among Egyptian women ***(Denewer et.al, 2010; Omar et.al, 2010).*** Also it was reported that, according to the Gharbiah population-based cancer registry, the relative frequency of breast cancer is around 37.6% of all malignancies among females, with an age-standardized rate of 49.6/100000 ***(Elzawawy et.al, 2008; Omar et.al, 2010).***

The early detection and diagnosis rates of breast cancer are considerably lower among Egyptian women than among women in Western countries. Reports suggest that Breast Self Examination (BSE) is a reliable screening tool when used as an adjunct to clinical breast examination and imaging studies ***(Rosmawati, 2010; Dahlui et.al, 2011).***

Breast self-examination is a very important part of every adult woman's personal health regimen.

Regularly examining woman own breasts helps her more readily detect any changes that may occur. Many women naturally have some lumpiness and asymmetry (differences between the right and left breast). The key to the breast self-exam is to learn how to find changes in the breasts that persist over time (***Hou, 2010)***

Teaching BSE seems like a good idea: it sounds inexpensive, simple, and potentially applicable to people without access to mammography. Unlike the other methods, BSE is free, relatively easy, painless, non invasive, self care action, and can be performed privately. It allows women to take charge of their own health and teaches them about their bodies ***(Kamproh and Fungpong , 2008, Gursoy et.al, 2009a).***

Health education should be the basis of all early detection programs. There is good evidence that in most developed countries the combination of professional and public education resulted in the reduction in the size of breast cancers on presentation (***Miller, 2008).***

Peer education is currently one of the most widely adopted health promotion strategies used with young people, and is almost universally represented as effective. Peer education is the process whereby well-trained and motivated young people undertake informal or organized educational activities with their peers (those similar to themselves in age, background or interests) over a period of time, aimed at developing their knowledge, attitudes, beliefs and skills and enabling them to be responsible for and protect their own health (***Price& Knibbs, 2009).***

2. Subjects and Methods

Subjects

Design:

A quasi experimental design

Setting:

The study was conducted between December 2009 and may 2010 in the adult skill lab of Faculty of Nursing, Mansoura University, Egypt.

Subjects:

Two categories of subjects were included to achieve the purpose of this study

A- 10 nursing students enrolled in the fourth year Bachelor of Nursing program who had received education about breast cancer and BSE during their faculty courses (Peer trainers).

B- 150 female university students from the dormitories of Mansoura University, students who had positive family history of breast cancer and who in Nursing and Medicine Faculties were excluded.

Tools of the study:

Two Tools were used for data collection:

1. Students' Knowledge questionnaire regarding breast cancer and breast self examination (*Knowledge of breast cancer and BSE form*);
2. Students' Performance of BSE (*Breast Self Examination Performance Checklist*). These were developed by the researchers based on literature review.

Tool I:

Knowledge of breast cancer and BSE form was used to assess participants' knowledge of breast cancer and BSE. It was composed of two main parts: the first part included sociodemographic data of the target groups e.g. age, faculty name, academic year, residence, and family history of breast cancer.

The second part consisted of twenty one questions in two parts:

A. Fifteen questions covered participants' knowledge regarding their understanding to nature of the disease which include structure of the breast, meaning of breast cancer, risk factors for breast cancer, signs and symptoms of breast cancer and methods of early detection of breast cancer.

Scoring system of participants' knowledge was done as follows: each question had a group of answer points, one point was awarded for each correct answer; incorrect or missed answer took zero. There are three questions has more than one answer. The scores obtained for each set of questions was summed up to get the total score for participants' knowledge. Total score for all questions reached 26 grades.

The knowledge scores were classified as:-

- Poor knowledge: less than 50% (the participant score <13 considered poor knowledge)
- Fair knowledge: 50 - < 75% (the participant score 13 – <19.5 considered fair knowledge)
- Good knowledge: 75% or more (the participant score 19.5 and more considered good knowledge)

B. The second part comprised eight questions related to knowledge of BSE which include meaning of BSE, purposes of BSE, proper time for performing BSE, the frequency of practicing BSE and the necessity of practicing BSE.

Scoring system of participants' knowledge was done as follows, each question had a group of answer points, each correct answer had one grade, while, incorrect or missed answer had zero. The total points for these items were between 0 and 8.

The total points that can be tailed from the questionnaire of Part I (Knowledge Structured Form) were between 0 and 34.

The knowledge scores were classified as:-

- Poor knowledge: less than 50% (the participant score <17 considered poor knowledge)

- Fair knowledge: 50 - <75% (the participant score 17– <25.5 considered fair knowledge)
- Good knowledge: 75% or more (the participant score 25.5 and more considered good knowledge)

Tool II:

Breast Self Examination Performance Checklist

This tool was developed by the researcher to assess and evaluate participants' performance of BSE through observation of participants. It consists of fifteen consecutive steps.

Scoring of the checklist of each item was made using 3- point likert scale ranging from 0 to 2, wrong or not done step scored 0, incomplete correct step scored 1 and complete correct step scored 2. The total score allotted was 30.

Methods

Official permission to conduct the study was obtained from the dean of the faculty of nursing, the vice dean of education and students' affair to approach students and the director of the dormitories of Mansoura University to participate in the study to conduct the study.

Tools were constructed and developed by the researchers. Tools were tested for content validity by 5 nursing and medical faculty members' experts' staff. Reliability test was done using cronbach's alpha technique.

A pilot study was conducted on 10 students for testing feasibility and applicability of the tools and modifications were done accordingly.

Selection of students who accepted to participate was assigned to become volunteer peer trainers after explaining the purpose and nature of the study.

Participants were recruited using two phases:

Phase I: training of nursing students to become peer trainers.

Fourth year students were invited by the researcher after explaining the aim of the study, and those who accepted to participate and fulfill the criteria were assigned to peer trainers. Nursing students were prepared by receiving additional revision of information by the researcher about knowledge of breast cancer and performance of BSE.

The developed educational sessions were conducted in the adult skill lab of faculty of Nursing over 2 sessions. Each session took about 50 to 60 minutes, about one hour, (according to content provided). The education content included two types of sessions: theoretical and practical / training session.

Theoretical session (First session) included the following

Knowledge about breast cancer

- Structure of the breast
- Meaning of breast cancer
- Risk factors for breast cancer; including age,
- Signs and symptoms of breast cancer
- Methods of early detection of breast cancer

Knowledge about BSE:-

- Meaning of BSE
- Purposes of BSE, and the importance of practicing BSE.
- Accurate time for performing BSE
- The Frequency of practicing BSE

Practical / training session(second session)

Included steps of BSE technique:-

- Positions during BSE.
- Sites to be examined.
- Inspection technique.
- Palpation technique

Nursing students were evaluated for their knowledge about breast cancer and BSE, and performance of BSE using Tool I before teaching to the target students.

Students who get obtained 80 and above out of 100 in the theoretical course and (100 out of 100) in practical topic (BSE skills) were equipped and selected to become peer trainers. Reinforcement, redemonstration and evaluation are repeated until the twenty trainers reached the requested level.

Hand out containing the content of the educational sessions designed by the researcher, was given to each participant to use it as a future reference and during training their peers.

Phase II: Selection and training of trainees.

a. Selection of trainees

An announcement using Arabic posters illustrating the aim and nature of the study was placed at the entrance of the dormitory to invite Mansoura University students to participate in the study. The first 150 responding students were included

b. Training of trainees

Interview with the target students to collect and evaluate their knowledge about breast cancer, BSE, and performance of BSE using the questionnaire before starting education. This was achieved through distribution of questionnaires to participants and they were given time to answer. Answering questionnaire required about 15-20 minutes. Ethical commitment with regard to informed consent, confidentiality, and anonymity before answering questionnaires was maintained, their right to withdraw was also assured and their names were not used and replaced into codes during the study. After data was collected, it was checked by the researcher, incomplete or missed answers were deleted.

c. Education of trainees

Face-to-face education training was conducted in 2 adult skill laboratories of Faculty of Nursing at a mutually chosen scheduled time for all participants according their available time and availability of the lab.

Evaluation of students' feedback was done through the questionnaire (post test). The evaluation was done before, immediately after completing educational sessions and three months later

3. Results

The participants' ages ranged from 18-22 years, with mean age 18.88 ± 1.06. 20.7% of students were in Arts faculty, 53.3% were in the first year, more than half of students 68% were from rural.

Table I: Frequency distribution of students in relation to their knowledge pre education.

	Poor		Fair		Good	
	n	%	n	%	n	%
knowledge about nature of BC	139	92.7%	11	7.3%	0	0%
Knowledge about BSE.	111	74.0%	32	21.3%	7	4.7%
Total knowledge about nature of BC and BSE	144	96.0%	6	4.0%	0	0%

The majority of students (92.7%, 74.0%, 96.0%) had poor knowledge towards nature of breast cancer and breast self examination and total knowledge respectively pre education.

Table II: Frequency distribution of students in relation to their knowledge post education I.

	Poor		Fair		Good	
	n	%	n	%	n	%
knowledge about nature of BC	5	3.3%	87	58.0%	58	38.7%
Knowledge about BSE.	0	0%	0	0%	150	100%
Total knowledge about nature of BC and BSE	3	2.0%	58	38.7%	89	59.3%

More than half (58.0%) of the students had fair knowledge about nature of breast cancer, and all (100%) students had good knowledge about breast self examination post education I. In relation to total knowledge post education I, more than half of students 59.3%, had good knowledge.

Table III: Frequency distribution of students in relation to their knowledge post education II.

	Poor		Fair		Good	
	n	%	n	%	n	%
knowledge about nature of BC	0	0.0%	87	58.0%	63	42.0%
Knowledge about BSE.	0	0%	72	48.0%	78	52.0 %
Total knowledge about nature of BC and BSE	0	0.0%	73	48.7%	77	51.3%

None of the students 0.0% had poor knowledge about nature of breast cancer, breast self examination and total knowledge post education II. The knowledge score ranges between fair and good.

Table V: Mean score, standard deviation and t- value differences of students' total knowledge**.**

Total knowledge	pre education		post education I	post education II
X ± SD	8.48 ± 4.95		25.64 ± 3.10	25.47 ± 3.23
Pre vs. Post I	**t-**	43.020		
	P	0.000*		
Pre vs. Post II	**t-**	38.566		
	P	0.000*		

The mean score and standard deviation pre education was 8.48 ± 4.95, while the mean score and standard deviation post education I was25.64 ± 3.10. There was an improvement in total knowledge post education I (t= 43.020, p= 0.000). And the improvement (p= 0.000) was maintained post education II (t= 38.566).

Table VII: Mean score, standard deviation and t- value differences of students' total practice score.

Practice score	pre education	post education I	post education II
X ± SD	1.51 ± 5.48	28.64 ± 1.52	15.02 ± 14.22
Pre vs. Post I	**t-** 58.083		
	P 0.000 *		
Pre vs. Post II	**t-** 10.415		
	P 0.000 *		

The mean score and standard deviation of the students regarding the practice of breast self examination was 1.51 ± 5.48.while the mean score and standard deviation was 28.64 ± 1.52 post education I, There was an improvement in practice score post education I (t= 58.083, p= 0.000), as well as post education II (t= 10.415, p= 0.000).

Table VIII: Frequency distribution of students in relation to their performance of BSE.

Perform BSE	Pre		Post II		X^2
	n	%	n	%	P
Yes	12	8%	79	52.7%	70.80
No	138	92%	71	47.3%	0.000*

BSE performance increased significantly following education (p= 0.000) from 8.0% to 52.7 %.

Table XV: Relation between total knowledge score (pre education and post education II) and performance of BSE.

Total knowledge		**(n=150)** BSE performance			
		yes		No	
		n	%	n	%
Pre education	poor	9	75.0	135	97.8
	fair	3	25.0	3	2.2
X^2		14.980			
p		0.000*			
post education II	poor	5	6.3	18	25.4
	fair	74	93.7	53	74.6
X^2		10.423			
p		0.001*			

The majority 97.8 % of the students who did not perform BSE pre education were had poor total knowledge, while post education the majority 93.7 % of the students who perform BSE had fair total knowledge.

4. Discussion

Findings from the present study showing that, the majority of the students had poor knowledge regarding breast cancer. Similar study by ***Royse & Dignan (2009)*** examining breast cancer knowledge also found lack of knowledge. These findings were also congruent with ***Guilford (2011) and Isara and Ojedokun (2011)*** who found that college women have relatively low overall knowledge regarding breast cancer.

Poor knowledge and awareness of breast cancer preventive measures remain a common feature among the South Asian communities in the UK; as reported by the South Asian breast cancer patients in study done by ***Karbani et. al (2011)***. These findings had also been reported elsewhere as in ***Rosmawati (2010)*** and ***Alharbi et al (2012).*** Another study by ***Sambanje & Mafuvadze (2012)*** showed the general lack of adequate knowledge on breast cancer by university students in Angola. In the same line, despite the fact that majority of respondents in ***Salaudeen et.al*** study ***(2009)*** were aware of breast cancer, the knowledge and understanding of the respondents about the disease was very low.

Overall results, in agreement with studies done in other parts of the world ***Gwarzo et.al (2009), Ahmed (2010), Sait et al., (2010), Yadav and Jaroli (2010)***, ***Al-Naggar et al., (2011)*** showed a general lack of breast cancer awareness and knowledge among university students. This demonstrated the need for health education programmes on breast cancer.

This study portrayed that there were a statistically significant improvement in the knowledge level score of the students between the pre- and post- education sessions. These findings were also congruent with ***Abd El Aziz (2009)*** and ***Beydağ & Karaoğlan (2010)*** who found that there was a highly significant improvement in all knowledge score of the intervention group from pre to post test. It indicates that education given to the students is effective in covering the lack of knowledge and correcting the incorrect previous knowledge.

Concerning total knowledge score, the findings of the present study showed that, mean and standard deviations was 8.48 ± 4.95 pre education sessions. While post peer education sessions mean total knowledge and standard deviations increased to 25.64 ± 3.10 with highly statistically differences between knowledge score pre and post peer education (P = 0.000). This is accordance with a study carried out by ***Abedzadeh & Taebi (2009)*** who found that, 78% gained a good knowledge after teaching compared to only 6% had a good knowledge pre teaching. T test showed statistically differences between knowledge score before and after teaching (P = 0.0001).

The disappointing finding that more than two third of the young females, who having college education, have poor knowledge score about BSE, which is the most important diagnostic tool for the early diagnosis of breast cancer. This finding was consistent with ***Abd El Aziz (2009) and Zavare*** et al.,. ***(2011)*** who found that most respondents were not knowledgeable about BSE, in two separate study in Egypt (Alexandria) and Malaysia respectively. This showed that many respondents still assumed that breast cancer is a rare disease and that they can never be affected by it.

Lack of knowledge on BSE has been a common finding of many different studies in Turkey ***(Balkaya et al.,, 2007; Malak & Dicle, 2007; Gursoy, 2009b)***. Also in Nigeria, a study done by ***Isara (2011)*** stated that three quadrant of the respondents had poor knowledge of BSE. The low level of knowledge found in this study is in keeping with reports of other researchers ***(Alharbi et al, 2012; Omotara,et al., 2012).***

Contrarily, In a study done by ***Al-Dubai et al.,(2012),*** most of the respondents (91.0%) were aware about breast-self examination (BSE). This rate of awareness was comparatively higher to that found in this study; only 5% had good knowledge about BSE. It may be attributed to socioeconomic characteristics differences as more than half of them have positive family history, about two third of them were university graduates and with different marital status. Increasing in awareness also may be through other means of information especially the media, and friends.

Based on the effect of peer education, ***Goldfinger et al (2012)*** reported that Peer educators are widely available, cost effective, culturally appropriate, and may help overcome mistrust of the medical community. ***Gozum et al (2010)*** added peers can reinforce learning through ongoing contact. Peer education can be used to improve early diagnosis of breast cancer and breast cancer awareness in asymptomatic women. Furthermore, ***Campbell et al (2012)*** showed that peer-led teaching is an effective tool to promote health knowledge.

Participants' BSE knowledge level in this study doubled by the end of the education, which demonstrates the effectiveness of the education method. This finding is similar with ***Gursoy et al (2009b).*** Also ***Golbasi et al (2007***) observed an increase in women's knowledge after they were trained in groups**.**

The results of the present study also revealed that, above ninety percent of total participants never perform BSE. These findings were in-agreement with ***Beydağ & Karaoğlan (2010),*** who found that more than half of the participants have no knowledge about BSE, and have never done BSE. This result was also supported by the researches conducted by ***Abd El Aziz (2009) Zavare (2011)***, ***Bellgam & Buowari (2012) and Dardas & TahaInt (2013)*** which concluded that, the most of the students did not practice BSE, and studies done by ***Isara and Ojedokun (2011*****) and** ***Moodi et. al (2011)*** who stated that only 10.1%, 11.5% respectively of university students had history of performing BSE at least once. These findings highlight the overall problem of not performing regular BSE amongst women all over the World ***(Rosmawati, 2010).***.

Students' knowledge and practice of breast self examination (BSE) clarifies a highly significant improvement after peer education from pre to post-test I and post- test II. This finding also agreed with ***Abd El Aziz (2009)*** who indicated that 70.0% did not practice BSE in pre-test compared to75.0% practicing it in post-test after the intervention. In this respect ***Moodi et.al (2011)*** expressed in their research that education intervention on BSE in their university students increased their knowledge. ***Tuna Malak (2009) and Karayurt et al (2008b***) also concluded that performance of BSE is reported to be increased by peer education.

Many studies expressed that the most important factor for not doing BSE is lack of breast cancer knowledge and lack of knowledge regarding the conduct of BSE ***(Montazeri et al., 2008; Heidari et al.,, 2008; Isara and Ojedokun, 2011; Moodi et.al (2011).*** In the current study, there were significant statistically association between total knowledge score and performance of BSE pre. The majority of the students who did not perform BSE pre education were had poor total knowledge.

Additionally, regarding post peer education, the majority 93.7 % of the students who performed BSE, their total knowledge improved to fair. These findings agreed with ***Kressin et al, (2010) and Isara and Ojedokun (2011)*** who emphasized that the respondents who were informed about breast cancer were more likely to practice BSE. This result is also

supported by the researches done by ***Kiguli-Malwadde et al (2010), Guilford (2011) and Okolie (2012)*** which suggested a significant association between participants' overall knowledge about breast cancer and the frequency with which they engaged in breast self examination performance. To encourage women to do regular and accurate BSE, they should be provided with adequate knowledge and information about BSE.

Another cause of low rate of BSE among university students may be related to negative family history of breast cancer, which was an exclusion criterion in this study. This consistent with ***Heidari et al., (2008)*** and ***Tavafian (2009)*** who found that family history of breast cancer and previous history of breast problem also positively influence breast cancer knowledge level. Also ***Ergin et al (2012)*** suggested that married women and women with a family history of breast cancer were found to perform self-breast examination more frequently than single women and women without a family history of breast cancer. This is a logic explanation to because positive family history encourage the woman to seek information about the disease therefore using early detection method which simple, in expensive, non invasive, safe, painless and can be performed privately.

Breast cancer presents a very formidable health threat to all world populations. Educating and informing young women about this serious disease is both a challenge and important investment in the health of future generations of women. Young people prefer to spend time with their peers instead of their parents. Thus the peer groups become not only very important to most young people but they also exert a great impact on this age group ***(Beydağ & Karaoğlan, 2007; Gursoy et al.,, 2009b)***.

There are many studies demonstrating the success of peer education in different branches of health and recommend using peers for health education so as to reach larger groups of society ***(Gürsoy et al.,, 2009; Zangiabadizade, 2012).*** Every study included in ***Secomb (2008)*** review, reported that peer teaching increased development in learning outcomes and has implications for clinical practice. Since the efficacy of training breast self-examination by peers is higher than the education by health care personnel, peer education was used in this study.

The study pointed to that, the rates of performance of BSE increased significantly following education (from 8% to 52.7%). Similar improvements in rates of BSE have been reported in other studies ***Malak & Dicle (2007), Balkayaet al., (2007)*** and ***Gursoyet al.,, (2009b)***.

The findings of the current study revealed that, there was significant positive correlation between total knowledge score post education I and the age (p= 0.007). However there were no significant correlation between practice score in the three phases (pre, post I, post II) and age and academic year. This findings supported by ***Shalini et al.,(2011)*** and ***Aruna (2010)*** who reported that no significant association found between demographic variables and level of knowledge of breast cancer and BSE among students as well as working women respectively.

Conclusions and recommendations

Findings of the study concluded that:-

1. There was inadequate knowledge about breast cancer and BSE among Mansoura university female students before peer education approaches.
2. There was significant improvements in students' knowledge about breast cancer and BSE in post education I and improvement in post education I.
3. Practicing BSE was lacking before peer education, it improved significantly after peer education.

Recommendations

- Data from this study re-enforce the continuing need for more BC education programs that are intended to attract the attention of young women.
- More education-based programming targeting female university students should be a primary consideration among health education/health promotion practitioners.

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