The effect of Health Education on Knowledge and Attitude of Female Students in Sohag University about Breast Self-Examination

[1]Hebatullah Ali, [2]Nesreen Ali Mohammed, [2]Fouad M.A Yousef
[1]Family Medicine Department, [2]Public Health and Community Medicine Department, Faculty of Medicine, Sohag, Egypt

Abstract

Objectives: To evaluate the effect of health education on the knowledge and attitude of breast self-examination (BSE) among fourth-grade non-medical female students in Sohag University. **Method**: A quasi-experimental pre-test/post-test study design was used. Students were recruited from four faculties in Sohag University; faculties of Arts, Education, Law, and Commerce. Female students were randomly selected, and they were given a pre-test. They were divided into two groups; group A (had a health education session) and group B (no health education session). After one month, all students had a post-test. Scores and levels of knowledge & attitude were compared between the two groups before and after the health education session. **Results:** The study included 370 female students. The baseline socio-demographic data, knowledge, and attitude scores were comparable between the two groups before the educational session. In group (A), knowledge scores improved after the educational session in most of the questions and the total knowledge scores, and this improvement was statistically significant. In group (B), there were minimal changes in the post- educational session scores which were not statistically significant. Post-test attitude scores improved in most of the questions for the group (A). For group (B) attitude scores and levels showed little difference in the post-test. **Conclusion**: Health education sessions improved the knowledge and attitude for BSE.

Keywords: *Breast cancer, Breast self-examination, Health education.*

Correspondence: Hebatullah Ali   Email: Hoobaessayed@gmail.com

Introduction

Breast cancer is a major worldwide health problem as it is the most commonly diagnosed cancer in women.[1] The best method to increase the rate of early diagnosis of breast carcinoma is to enhance awareness and positive attitudes towards breast cancer and its screening methods.[2]

The commonest screening methods for the early detection of mammary cancer are Breast Self - Examination (BSE), Clinical Breast Examination (CBE), and Screening Mammography. Breast self-examination is the most significant screening method in third world countries.[3] Although the standard for breast cancer screening in developed countries is mammography, it is unaffordable in most middle income and all low-income countries as it costs high because of equipment, personnel, and training. Therefore, in countries with a rising rate of breast cancer (like Egypt), other cheap choices must be given due consideration such as training of lay health care in raising the awareness of the community.[4] [5] [6] [7] Studies that detect breast cancer awareness and BSE practice among Arab women were

Table 1: Score for knowledge questions before and after the educational session (Group A; No. = 195).

Knowledge questions	Pre-test score	Post-test score	P-value
1-BSE should be done every 2 months			
Mean ± SD	**1.4 ± 0.76**	**1.2 ± 0.95**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
2-BSE must be done between day 7 until day 10 after menses			
Mean ± SD	**1.2 ± 0.59**	**1.8 ± 0.47**	**<0.001**
Median(range)	**1(0 – 2)**	**2(0 – 2)**	
3-BSE should be done in front of the mirror			
Mean ± SD	**1.4 ± 0.72**	**1.8 ± 0.52**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
4-Undress until the waist when doing the BSE			
Mean ± SD	**1.3 ± 0.7**	**1.8 ± 0.57**	**<0.001**
Median(range)	**1(0 – 2)**	**2(0 – 2)**	
5-Hands should be raised up alternately above the head when doing the BSE in front of the mirror			
Mean ± SD	**1.5 ± 0.55**	**1.9 ± 0.25**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
6-BSE should be done from the front view only			
Mean ± SD	**1.02 ± 0.87**	**1.02 ± 0.91**	0.9
Median(range)	**1(0 – 2)**	**1(0 – 2)**	
7-BSE can be done in a supine position			
Mean ± SD	**1.1 ± 0.66**	**1.7 ± 0.58**	**<0.001**
Median(range)	**1(0 – 2)**	**2(0 – 2)**	
8-Palpate in the right breast while left-sided lying when doing the BSE			
Mean ± SD	**1.2 ± 0.64**	**1.5 ± 0.74**	**<0.001**
Median(range)	**1(0 – 2)**	**2(0 – 2)**	
9-Use finger pulps to examine any lumps or thickening of the skin			
Mean ± SD	**1.7 ± 0.54**	**1.9 ± 0.31**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
10-BSE can be done using the vertical strip and circular technique			
Mean ± SD	**1.2 ± 0.67**	**1.4 ± 0.66**	**0.011**
Median(range)	**1(0 – 2)**	**1(0 – 2)**	
11-Need to press on the nipple to check any unusual discharge			
Mean ± SD	**1.6 ± 0.62**	**1.7 ± 0.62**	0.231
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
12-BSE includes arm-pit examination to check for any lump			
Mean ± SD	**1.7 ± 0.56**	**1.9 ± 0.34**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
13-Need to observe any unusual change in the shape and size of breast			
Mean ± SD	**1.8 ± 0.42**	**1.9 ± 0.44**	0.286
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
14-Retraction of the nipple is a warning sign that should be observed			
Mean ± SD	**1.4 ± 0.63**	**1.7± 0.52**	**<0.001**
Median(range)	**2(0 – 2)**	**2(0 – 2)**	
15-Lump is the early sign for cancer			
Mean ± SD	**1.4 ± 0.70**	**1.3 ± 0.87**	0.268
Median(range)	**2(0 – 2)**	**2(0 – 2)**	

few and indicated a lack in these areas of information among females. [8] [9] [10]

The purpose of our study is to estimate the impact of health education on BSE knowledge and attitude among the fourth-grade non-medical female students at Sohag University.

Method

A quasi-experimental pre-test/post-test research design was used in the present study. The study was organized at four faculties of Sohag University which were

Table 2: Scores for knowledge questions before and after the educational session (Group B; No. = 175).

Knowledge questions	Pre-test score	Post-test score	P-value
1-BSE should be done every 2 months			
Mean ± SD	1.3 ± 0.73	1.2 ± 0.75	0.84
Median(range)	1(0 – 2)	1(0 – 2)	
2-BSE must be done between day 7 until day 10 after menses			
Mean ± SD	1.4 ± 0.53	1.4 ± 0.59	0.23
Median(range)	1(0 – 2)	1(0 – 2)	
3-BSE should be done in front of the mirror			
Mean ± SD	1.5 ± 0.57	1.5 ± 0.74	0.51
Median(range)	2(0 – 2)	2(0 – 2)	
4-Undress until the waist when doing the BSE			
Mean ± SD	1.4 ± 0.67	1.5 ± 0.67	0.38
Median(range)	2(0 – 2)	2(0 – 2)	
5-Hands should be raised up alternately above the head when doing the BSE in front of the mirror			0.09
Mean ± SD	1.6 ± 0.60	1.7 ± 0.56	
Median(range)	2(0 – 2)	2(0 – 2)	
6-BSE should be done from the front view only			
Mean ± SD	1.1 ± 0.89	1.1 ± 0.80	0.76
Median(range)	1(0 – 2)	1(0 – 2)	
7-BSE can be done in a supine position			
Mean ± SD	1.2 ± 0.59	1.4 ± 0.69	**0.04**
Median(range)	1(0 – 2)	1(0 – 2)	
8-Palpate in the right breast while left-sided lying when doing the BSE			
Mean ± SD	1.2 ± 0.61	1.2 ± 0.68	0.68
Median(range)	1(0 – 2)	1(0 – 2)	
9-Use finger pulps to examine any lumps or thickening of the skin			
Mean ± SD	1.6 ± 0.56	1.6 ± 0.61	0.73
Median(range)	2(0 – 2)	2(0 – 2)	
10-BSE can be done using the vertical strip and circular technique			
Mean ± SD	1.2 ± 0.56	1.2 ± 0.55	0.49
Median(range)	1(0 – 2)	1(0 – 2)	
11-Need to press on the nipple to check any unusual discharge			
Mean ± SD	1.6 ± 0.58	1.8 ± 0.44	**0.02**
Median(range)	2(0 – 2)	2(0 – 2)	
12-BSE includes arm-pit examination to check for any lump			
Mean ± SD	1.7 ± 0.57	1.7 ± 0.61	0.35
Median(range)	2(0 – 2)	2(0 – 2)	
13-Need to observe any unusual change in the shape and size of breast			
Mean ± SD	1.9 ± 0.36	1.9 ± 0.29	0.58
Median(range)	2(0 – 2)	2(0 – 2)	
14-Retraction of the nipple is a warning sign that should be observed			
Mean ± SD	1.6 ± 0.53	1.6 ± 0.50	0.36
Median(range)	2(0 – 2)	2(0 – 2)	
15-Lump is the early sign for cancer			
Mean ± SD	1.4 ± 0.64	1.3 ± 0.86	0.02
Median(range)	2(0 – 2)	2(0 – 2)	

randomly selected, namely: faculties of Arts, Education, Law and Commerce.

Using a sample size determination table for a survey study developed by James et al, [11] and assuming alpha levels of 0.05, the

required sample size was calculated as 370 female students. Considering the drop-out rate, we randomly recruited 400 students, 100 from each faculty. After the exclusion of incomplete questionnaires, 370 female students were included in the final analysis.

After organizing with lecturers and assistant lecturers in each faculty, the researcher entered lectures and sections of the fourth

Table 3: Scores for attitude questions before and after the educational session (Group A; No. = 195).

Attitude questions	Pre-test score	Post-test score	P-value
1-Doing BSE makes me feel so funny			
Mean ± SD	2.5 ± 0.57	2.7 ± 0.77	0.018
Median(range)	3 (1- 4)	3 (1 -4)	
2-BSE will be embarrassing to me			
Mean ± SD	1.8 ± 0.98	2.2 ± 1.1	<0.001
Median(range)	1 (0- 4)	3 (0- 4)	
3-Doing BSE is wasting time			
Mean ± SD	3.0 ± 0.46	3.2 ± 0.58	0.009
Median(range)	3 (2- 4)	3 (1- 4)	
4-Doing BSE makes me feel unpleasant			
Mean ± SD	2.5 ± 0.87	2.8 ± 0.87	0.001
Median(range)	3 (0- 4)	3 (0- 4)	
5-If there is a lump, I prefer to get treatment from a traditional healer			
Mean ± SD	2.5 ± 0.87	2.7 ± 1.0	**0.056**
Median(range)	3 (0- 4)	3 (0- 4)	
6-Feel uncomfortable, can't do BSE once in a month			
Mean ± SD	1.9 ± 0.77	1.7 ± 0.92	0.007
Median(range)	2 (0- 4)	2 (0- 3)	
7-All women should do BSE			
Mean ± SD	3.0 ± 0.47	3.01 ± 0.59	**0.201**
Median(range)	3 (1- 4)	3 (0- 4)	
8-I really care about my breasts			
Mean ± SD	2.2 ± 0.92	2.3 ± 0.89	0.091
Median(range)	2 (0- 3)	3 (0- 4)	
9-I am not afraid to think about the breast cancer			
Mean ± SD	1.9 ± 0.92	1.9 ± 1.1	**0.345**
Median(range)	2 (0- 4)	2 (0- 4)	
10-Avoid BSE because I worry about having breast cancer			
Mean ± SD	2.3 ± 0.97	2.4 ± 1.1	**0.474**
Median(range)	3 (0- 4)	3 (0- 4)	
11-Interested in doing BSE			
Mean ± SD	2.3 ± 0.77	2.4 ± 0.87	**0.284**
Median(range)	3 (0- 4)	3 (0- 4)	
12-Always search for information regarding BSE from the internet, magazines, and newspaper			
Mean ± SD	1.9 ± 0.94	1.9 ± 0.92	**0.154**
Median(range)	2 (0- 4)	2 (0- 4)	
13-Discuss with my friends about BSE			
Mean ± SD	1.6 ± 0.88	1.8 ± 0.97	0.001
Median(range)	1 (0- 3)	2 (0- 4)	

grade, explained the nature and aim of the research to the faculty students. Sections were chosen by cluster random sampling, while students were chosen by simple random sampling.The selected students

were given the pre-test. Each one was asked to leave her name and phone number.

The participated students in each faculty then were randomly divided into two equal

Table 4: Scores for attitude questions before and after the educational session (Group B; No. = 175).

Attitude questions	Pre-test score	Post-test score	P-value
1-Doing BSE makes me feel so funny			
Mean ± SD	**2.5 ± 0.68**	**2.6 ± 0.72**	0.04
Median(range)	**2 (1 – 4)**	**3 (1 – 4)**	
2-BSE will be embarrassing to me			
Mean ± SD	**2.1 ± 1.02**	**2.2 ± 1.09**	**0.36**
Median(range)	**2 (1 – 4)**	**2 (0 – 4)**	
3-Doing BSE is wasting time			
Mean ± SD	**3.1 ± 0.47**	**3.2 ± 0.67**	0.03
Median(range)	**3 (0 – 4)**	**3 (1 – 4)**	
4-Doing BSE makes me feel unpleasant			
Mean ± SD	**2.6 ± 0.84**	**2.6 ± 0.95**	**1.00**
Median(range)	**3 (1 – 4)**	**3 (0 – 4)**	
5-If there is a lump, I prefer to get treatment from a traditional healer			
Mean ± SD	**2.5 ± 0.84**	**2.7 ± 0.98**	0.006
Median(range)	**3 (0 – 4)**	**3 (0 – 4)**	
6-Feel uncomfortable, can't do BSE once in a month			
Mean ± SD	**1.8 ± 0.80**	**1.8 ± 0.86**	**0.42**
Median(range)	**2 (0 – 3)**	**2 (0 – 4)**	
7-All women should do BSE			
Mean ± SD	**3.0 ± 0.46**	**3.04 ± 0.52**	**0.11**
Median(range)	**3 (1 – 4)**	**3 (1 – 4)**	
8-I really care about my breasts			
Mean ± SD	**2.5 ± 0.71**	**2.5 ± 0.87**	**0.91**
Median(range)	**3 (1 – 4)**	**3 (0 – 4)**	
9-I am not afraid to think about the breast cancer			
Mean ± SD	**1.9 ± 0.99**	**1.9 ± 0.99**	**0.75**
Median(range)	**2 (0 – 4)**	**2 (0 – 4)**	
10-Avoid BSE because I worry about having breast cancer			
Mean ± SD	**2.1 ± 0.96**	**2.2 ± 1.04**	**0.37**
Median(range)	**2 (0 – 4)**	**3 (0 – 4)**	
11-Interested in doing BSE			
Mean ± SD	**2.4 ± 0.90**	**2.3 ± 0.98**	**0.63**
Median(range)	**3 (0 – 4)**	**3 (0 – 4)**	
12-Always search for information regarding BSE from the internet, magazines, and newspaper			
Mean ± SD	**2.1 ± 0.92**	**2.3 ± 0.98**	0.11
Median(range)	**2 (0 – 4)**	**3 (0 – 4)**	
13-Discuss with my friends about BSE			
Mean ± SD	**1.7 ± 0.90**	**1.9 ± 1.05**	0.005
Median(range)	**1 (0 – 3)**	**2 (0 – 4)**	

groups: group (A) and group (B). The students in group (A), were contacted and told about the date of the educational setting and registration with the name was done before the beginning of the session, while group (B) students were not subjected to the educational session.

After one month of the educational session, with the cooperation of faculties' lecturers and assistant lecturers, all respondents in both groups who had done the pre-test were given the post-test in lectures and sections. The same questionnaire was given to the students as pre-test and post-test.

The health education session included a PowerPoint presentation, which was prepared and given by the researcher and revised by the supervisors. It includes information about breast cancer (risk factors, warning signs, and methods of early

Table (5): Comparison between the studied groups regarding total knowledge and attitude scores of before and after educational session.

Scores	Group A	Group B	P-value
Pre- test			
Total knowledge score			
Mean ± SD	21.1 ± 3.8	21.1 ± 3.8	0.07
Median (range)	21 (11-30)	22 (15 -29)	
Total attitude score			
Mean ± SD	29.8 ± 3.6	30.5 ± 4.4	0.12
Median (range)	30 (19 -41)	30 (16 -42)	
Post-test			
Total knowledge score			
Mean ± SD	24.6 ± 3	22 ± 3.2	**<0.001**
Median (range)	25 (15- 30)	22 (16 – 30)	
Total attitude score			
Mean ± SD	31.4 ± 5.3	31.4 ± 4.3	0.83
Median (range)	31 (11 -46)	32 (22 – 40)	

Table (6): Comparison between the pre- and post-educational session total knowledge and attitude scores

Scores	Pre-test	Post-test	P-value
Group A			
Total knowledge score			
Mean ± SD	21.1 ± 3.8	24.6 ± 3	**<0.001**
Median (Range)	21 (11-30)	25 (15- 30)	
Total attitude score			
Mean ± SD	29.8 ± 3.6	31.4 ± 5.3	**<0.001**
Median (Range)	30 (19 -41)	31 (11 -46)	
Group B			
Total knowledge score			
Mean ± SD	21.1 ± 3.8	22 ± 3.2	0.45
Median (Range)	22 (15 -29)	22 (16 – 30)	
Total attitude score			
Mean ± SD	30.5 ± 4.4	31.4 ± 4.3	**0.007**
Median (Range)	30 (16 -42)	32 (22 – 40)	

detection) and breast self-examination (meaning, purposes, the importance of practicing, accurate time for performing, frequency and detailed steps of BSE), and a video made by the breast cancer foundation of Egypt called the pink path (https://youtu.be/Lp6o3LQJ9mo).

Additionally, brochures were given to students explaining the steps of the BSE technique (positions, sites to be examined, inspection, and palpation technique and steps).

Study tools: A structured questionnaire was used and it consisted of two sections; Section 1: was designed to collect sociodemographic data. Section 2: a self-administered pretested structured close-ended questionnaire from previous studies,[12,13] was used for data collection about the knowledge and attitude of the participants about BSE. Due to the absence of an international standardized questionnaire for assessing knowledge and attitude of BSE, this questionnaire was used, and it was pretested in previous

studies with good reliability (Cronbach's (alpha) coefficient = 0.8). The knowledge of participants was assessed through 15 items covering the signs of mammary carcinoma and the method of performing BSE. The attitude of participants towards BSE was determined based on thirteen items.

Scoring system: (1) For knowledge items, the correct response was scored two points, don't know was scored one point, and the incorrect response was scored zero. (2) Regarding attitude questions, using a five-point Likert scale, the responses were assigned a numeric value or score. For a positively worded attitude item, scores of '4', '3', '2', '1' and '0' were assigned for 'strongly agree', 'agree', 'neutral', 'disagree' and 'strongly disagree' responses, respectively. This scoring was be reversed for the negatively worded attitude items. (3) The total scores were categorized into good and poor levels using a 70 % cut-off point out of the total expected score.

The study outcome measures were: Knowledge questions scores and levels before and after the educational session for both groups, Attitude questions scores and levels before and after the educational session for both groups, Total knowledge and attitude scores (summation of all questions' scores) before and after the educational session in both groups.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics for Windows version 26.0. Quantitative data were expressed as means ± standard deviation. Qualitative data were expressed as number and percentage. Quantitative data were tested for normality by the Shapiro–Wilk test. Paired T-test and Independent T-test were used for normally distributed data. Mann Whitney U and Wilcoxon t-test were used for data that were not normally distributed.   A 5% level was chosen as a level of significance in all statistical tests used in the study.

Ethical consideration

Ethical considerations were observed in each step of the study conducted including verbal consent of participants. Approval of the ethical committee of the Sohag faculty of Medicine was secured. Besides, the objectives and steps of the study were explained to participants. Written consent was obtained from the responsible administrative authorities.

Results

The study involved a cohort of 370 female students. Students were classified into two groups; group (A) included 195 female students (52.7%) while group (B) included 175 female students (47.3%). The age range of the study population was 20 – 28 years with a mean age of 22 ± 0.9 years. More than 90 % of our sample were single females of medium socioeconomic status. Only 13 % of them have a family history of breast cancer. The sample included more or less equal proportions representing the four non-medical faculties included in the study (Arts, Commerce, Education, and Law).

Regarding the difference in knowledge scores pre-and post- educational session, in group (A) knowledge scores improved after the educational session in most of the questions and this improvement was statistically significant. Despite the improvement in questions 11 and 13, it was not statistically significant. On the other hand, the score of question 6 showed no difference. Moreover, the score of the first question indicated statistically significant deterioration after the educational session (Table 1). In group (B), there were minimal changes in the post-test knowledge scores which were not statistically significant. Questions 7 and 11 showed statistically significant improvements. On the contrary,

question 15 showed a slight statistically significant deterioration in the post-test (Table 2). In terms of attitude towards BSE, in the group (A), post-educational session scores improved in all questions except questions
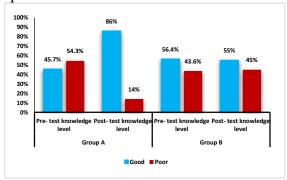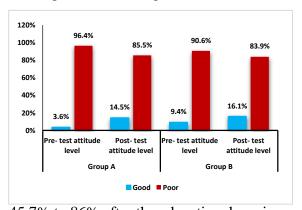

Figure 1: Comparison between the studied groups regarding knowledge levels pre- and post-educational session.

6 and 9, there was a deterioration in their scores. The improvement was statistically significant except for questions 7, 10, 11, and 12 (Table 3). Whereas in the group (B), attitude post-test scores minimally increased without being statistically significant except for questions 1, 3, 5, and 13. The score of question 4 did not change, while scores of questions 6 and 9 demonstrated little decrease (Table 4).

When the total knowledge and attitude scores were analyzed, both groups were statistically comparable at the baseline with no statistically significant difference. In group (A), the total knowledge and attitude scores improved significantly after the educational session (P value <0.001), while there was a minimal improvement in total knowledge and attitude score in the group (B) (p values = 0.45 and 0.007 respectively). The total knowledge and attitude scores were higher in the group (A) after the educational session (p values; <0.001 and 0.83 respectively) (Tables 5 and 6).

Students were classified into poor and good knowledge and attitude levels using the 70% cut-off value. In group (A), the percentage of students with poor knowledge dropped from 54.3% before the educational session to 14% after the educational session, while the percentage of students with good knowledge increased from

45.7% to 86% after the educational session.

Figure 2: Comparison between the studied groups regarding attitude levels pre- and post-educational session.

On the other hand, changes in knowledge level in the group (B) was minimal. The percentage of students with poor knowledge increased from 43.5% in the pre-test to 45% in the post-test, while the percentage of students with good knowledge decreased from 56.4% to 55% (Figure 1).

Regarding attitude, the percentage of students with poor attitude slightly decreased from 96.4% before the educational session to 85.5% after the educational session. Besides, the percentage of students with good attitudes improved from 3.6% to 14.5% in group A. Lower changes in attitude level in the group (B) were found, as the percentage of students with poor attitude slightly decreased from 90.6% in the pre-test to 83.9% in the post-test and the percentage of students with good attitudes improved from 9.4% to 16.1% (Figure 2).

Discussion

In the current study, we investigated the effect of health education on the knowledge and attitude of BSE. The knowledge of BSE improved significantly after the educational session, whereas attitude towards BSE minimally improved after the educational session. In contrast, there was a minimal change in the knowledge and attitude of BSE in the female students who had no health education educational session.

As the breast self-examination should begin at the age of 20,[14] we thought that this study should be directed to fourth-year female university students in non-medical faculties. Having no medical background would remove any factors that would affect the pre-test results and would show the effectiveness of the education session.

Concerning the knowledge of BSE before the educational session, this study showed that around 54%, 44% of the students in groups A and B respectively, had poor knowledge level. Lower knowledge levels of BSE were reported at the baseline among women in Kuwait,[15] among school girls in Sri Lanka,[16] among university female students in Malaysia,[17] India,[13] Egypt,[18-20] Saudi Arabia,[21] and in school teachers in Iraq.[22] All these countries are developing countries, and this may reflect the lack of health education provided. On the contrary, other studies that were done in Iran, Turkey, Nigeria, Sudan, and India showed that between 50-95% of the respondents were aware of BSE and had sufficient information about breast cancer early detection measures. This distinction in baseline values could be due to countries' education and health policy focus on preventive behaviors or maybe a difference in the sample population.[23-27]

Educational measures about BSE are found to be effective ways of increasing the knowledge and practical competence of BSE. There are different measures used in this literature. The current study used a PowerPoint presentation, a video by the breast cancer foundation of Egypt called the pink path, and informative pamphlets.

In group A, the knowledge questions about the right steps, positions, and technique of BSE showed statistically significant improvement except questions eleven (Need to press on the nipple to check any unusual discharge) and thirteen (Need to observe any unusual change in the shape and size of breast), the difference between pre-and post- health education session knowledge scores was statistically significant for most of the knowledge questions and the total knowledge scores. This proves the effectiveness of the health education session in making the students have the right information and details about BSE. Similar improvement was reported in other studies which were done among college students in different countries. [18,19,28-32]

In group B, there were minimal changes in the post-test knowledge questions' scores and total knowledge scores, which were statistically insignificant. Question fifteen (lump is the early sign for cancer) showed a slight statistically significant deterioration in the post-test. This can be because this group had not been exposed to any educational measures that would make a change to their knowledge about BSE. However, scores of knowledge questions five (Hands should be raised alternately above the head when doing the BSE in front of the mirror), seven (BSE can be done in a supine position) and eleven (Need to press on the nipple to check any unusual discharge) showed statistically significant improvements. This can be explained that the students became more interested in the BSE after the pre-test and they may have searched for information about BSE by themselves. Using a cut-off value of 70%,

post-educational session scores were categorized into poor and good levels. There was a marked improvement in the knowledge levels in the group (A) compared to group (B) who had minimal improvement. This improvement in tandem with the improvement in knowledge scores highlights the value of health education on the practice of BSE.

Regarding post-educational session attitude scores, total attitude scores indicated little increase, and this was statistically significant. Additionally, scores improved in all questions in the group (A) except question six (Feel uncomfortable, can't do BSE once in a month) and nine (I am not afraid to think about breast cancer), there was a deterioration in their scores. This shows that participants are more accepting to do BSE regularly monthly although they still have fear of cancer detection. In group B, only questions one (Doing BSE makes me feel so funny), three (Doing BSE is wasting time), five (If there is a lump, I prefer to get treatment from a traditional healer), and thirteen (Discuss with my friends about BSE) showed little statistically significant improvement post-test. This improvement was reflected in the total attitude scores which statistically increased in the second test. Although these students did not have the educational session, the one-month gap might allow them to think, read and possibly discuss with their friends about BSE after the pre-test. Attitude levels indicated little improvement in both groups after the educational session. Other studies conducted by Moodi, Moussa, and Shalaby, Mostafa, and Rezaeian documented the effectiveness of an educational intervention in improving the attitudes of university students towards BSE. [18,33-35]

The advantages of this study are the large sample size and its prospective controlled design. Besides, we compared the pre-and post-educational session results. However, no study goes without limitation. We believe that the narrow age limits between students could be considered a limitation. Additionally, more health educational sessions may be required to bring about greater and more obvious changes in students' attitudes. Thus, it is recommended to develop an educational program at the first year of university about BSE. Also, utilize efficiently all channels of the national mass media (such as television, magazine, newspaper) to raise the community awareness about breast cancer.

Conclusion

Implementing health education sessions resulted in statistically significant improvement in the knowledge and attitude measures in the group who received the educational session compared to those who had not. Health education is an important tool for improving knowledge and attitudes towards BSE, hence early detection of breast cancer.

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