Evaluating the Effect of an Educational Teaching Model on the Knowledge about Breast Cancer among Female University Students in Iraq

Nada A.S. Alwan[1*], Wafa' M. Al-Attar[2]

[1]Professor of Pathology (MD, PhD), Director, National Cancer Research Center/ Baghdad University, Executive Director, Iraqi National Cancer Research Program

[2]Professor of Nursing (PhD), National Cancer Research Center/Bag University

*Corresponding author: Nada A.S. Alwan, Professor of Pathology (MD, PhD), Director, National Cancer Research Center/ Baghdad University, Executive Director, Iraqi National Cancer Research Program, Email: nadalwan@yahoo.com ; nada.alalwan5@gmail.com

Abstract

Aims: To determine the effects of peer education on the level of knowledge about breast cancer among female universities students in Baghdad city.

Materials and Methods: A pre-test and post-test design was implemented to evaluate the effectiveness of a Breast Cancer educational model among 144 female university students (72 from the College of Nursing/ Baghdad University (Group I) and 72 from the College of Education/English Department /Al-Mystansireya University (Group II). Before introducing the health education model, each participant was asked to complete pre-coded standardized questionnaire which were redistributed after the intervention to evaluate the level of the gained knowledge. Data were analyzed using descriptive statistics, Chi-square, independent Student's t test, and paired Student's t test.

Results: The mean knowledge scores increased significantly from 54.375 ± 13.372 to 79.375 ± 10.875 among the first group and from 38.888 ± 15.749 to 69.097 ± 13.277 among the second ($p < 0.001$).

Conclusions: There was a significant rise in the standard of knowledge about breast cancer after these interventions. Nurses and other health professionals are urged to gain adequate perception about breast cancer and to contribute effectively in promoting the primary health care system and cancer control planning programs.

Keywords: Breast Cancer; Risk Factors; Peer Education; Female; University; Students

Introduction

Globally, breast cancer is the most commonly diagnosed malignancy among women. It is also the leading cause of cancer-related deaths, case fatality rates being highest in low resource countries [1,2]. In Iraq, it ranked the first cancer among the Iraqi population since the last two decades [3]. Features that justify increasing efforts for breast cancer control in developing countries in general and Iraq in particular include the younger ages and advanced stages at the time of presentation [3-8] and the likely prevalence of more aggressive tumours resulting in greater fatality rates [1,2,4,5].

Studies from Iraq obviously illustrate significant knowledge gaps about the relative importance of breast cancer in the community; suggesting a potential to take practical policy decisions that aim at increasing early detection through elevating the level of awareness among Iraqi women [4,5,11-14]. Local surveys to explore the knowledge, attitude and practice towards breast cancer among samples of educated

Iraqi women, revealed that approximately half of the participants had low knowledge scores and that awareness on the means of early detection and risk factors for breast cancer were significantly associated with practicing BSE [11,12]. Several studies in the literature have assessed the effect of applying different educational approaches on raising the standard of public health awareness on breast cancer [15-19].

The aim of the present study was to evaluate the effectiveness of a peer educational teaching model on the health belief and knowledge on breast cancer among female universities students in Baghdad City.

Materials and Methods

A pre and post-test design was used to compare the level of knowledge on breast cancer among two academic groups. Data were collected from female students participating in two separate symposiums, organized by the National Cancer Research Center of Baghdad University, with the objective of promoting public education on breast cancer as part of the activities of the Iraqi National Breast Cancer Awareness and Research Program. The total number of participants recruited for the study was 144; including 72 students from the College of Nursing/ Baghdad University (Group I: mean age = 22.02 ± 2.94) and 72 students from the College of Education (English Department) / Al-Mystansireya University (Group II: mean age= 22.17 ± 2.25).

Before introducing the health education model, each participant was asked to complete a pre-coded standardized questionnaire designed by the researchers (Table 1) aiming at:

- Eliciting the socio-demographic data pertaining to the respondents (i.e., age, marital status and occupation)

- Evaluating their knowledge, attitudes and practice towards breast cancer and BSE (i.e., rank of breast cancer in the world and in Iraq, means of early detection, best time and frequency to perform BSE in premenopausal and postmenopausal women)

- Assessing their information on the common risk factors for the disease (i.e., growing older, parity, early menarche, late menopause, oophrectomy, consumption of oral contraceptives, alcohol and exposure to radiation), and

- The possible means for its prevention and the recommended screening methods.

The trainers were then offered a three hour educational program that comprised a theoretical session focusing on the epidemiology of breast cancer, its risk factors, the clinical aspects of the disease and its possible control measures including means for early detection. That was followed by introducing a video film on the technique of BSE and an open discussion;

while distributing the relevant pamphlets and educational material. Participants were then practically instructed on the procedure of BSE using silicon breast models and were urged to actively practice the maneuver. At the end of that session, the questionnaires were redistributed among the participants to evaluate the level of the gained knowledge.

The results were calculated as figures and frequencies of the correct answers. A positive answer was assigned 1 point, whereas a wrong answer was given zero. Data were analyzed by using the SPSS, version 14. Frequencies, means and standard deviations were tabulated and the associations between variables were measured with relevant descriptive statistics; Chi-square test, independent Student's t, and paired Student's t tests.

Results

Table (1) summarizes the frequencies of the correct answers for each question. There was a significant difference between the Pre and Post assessment findings among the students of the College of Nursing (Group I) regarding their elicited knowledge for questions 3, 10, 14, and 19. The same observations were noted among Group II students, i.e., from the College of Education, who exhibited a significant elevation as well in the level of awareness in the Post assessment test regarding their answers for questions 1,5,9,12,15 and 17. The total of mean for the Pre Test questions of Group I was (38.95) versus (55.85) for the Post Test, while the corresponding figures for Group II were (26.15) and (49.3) respectively.

Table 2 displays that the knowledge scores for the correct answers regarding breast cancer increased significantly in the Post assessment tests among participants in both groups (P>0.001). Among the Nursing group, 25% had poor scores (under 50%) during the Pre assessment test; while only 11.1% answered more than 70% of the questions correctly. The situation was significantly reversed after the peer education; where 64% had relatively high scores ranging between very good and excellent scores and no one failed. Regarding students from the College of Education, 73.6% failed to answer 50% of the questions before the Group education; while after the sessions about 95% of those students passed; of the latter approximately 60% answered more than 70% of the questions confidently.

Likewise Table (3) shows that the knowledge scores about breast cancer increased significantly between the two groups in the Pre and Post Assessment Tests (P >0.001).

The Mean knowledge scores increased from 54.375 ± 13.372 to 79.375 ± 10.875 among students in Group I (P <0.001); the Differences of Mean being -25. Among Group II, the Mean knowledge scores increased from 38.888 ± 15.749to 69.097± 13.277(P <0.001); the Differences of Mean being -30.2 (Table 4).

Table 1. Knowledge on the Risk Factors for Breast Cancer and the Recommended Measures for its Control: Pre- and Post-Assessment Findings among the two Studied Academic Groups.

Q. Statements on Breast Cancer Risk Factors and its Control Measures	Group (I) College of Nursing Pre N=72	Group (II) College of Education Pre N=72	Relative Sufficiency	Group (I) College of Nursing Post N=72	Group (II) College of Education Post =72	Relative Sufficiency
1-Breast cancer (BC) ranks the first in Iraq.	20(27.7%)	9(12.7%)	(20%)	65(90.3%)	60(83.3%)	(86.5%)
2- BC is the commonest cancer among women worldwide.	23(31.91%)	27(37.5%)	(35%)	56(77.8%)	50(69.4%)	(73.5%)
3-Means for early detection include mammo-, Graphy, ultrasound, CBE and BSE	23(31.9%)	24(33.3%)	(32.5%)	45(62.5%)	32(44.4%)	(53%)
4-The best time and frequency to conduct BSE in premenopausal women	58(80.6%)	48(66.7%)	(75%)	69(95.8%)	70(97.2%)	(96.5%)
5-The best time and frequency to conduct BSE after menopause	31(43.1%)	15(20.8%)	(30%)	59(81.9%)	43(59.7%)	(70%)
6- Growing older increases the risk of BC	51(70.8%)	29(40.3%)	(55%)	68(94.4%)	66(91.7%)	(93%)
7-Nulliparity increases the risk of BC	38(52.8%)	24(33.31%)	(45%)	62(86.1%)	55(76.4%)	(81%)
8-Late menopause increases the risk of BC	50(69.4%)	24(33.3%)	(50%)	67(93.1%)	64(88.9%)	(90%)
9-Early menarche increases the risk of BC	32(44.4%)	7(9.7%)	(27%)	65(90.3%)	42(58.3%)	(74%)
10-Oopherectomy decreases the risk of BC	8(11.1%)	5(6.9%)	(10%)	24(33.3%)	9(12.5%)	(22.5%)
11-Postmenopausal obesity increases the risk	49(68.1%)	28(38.9%)	(53%)	72(100%)	67(93.1%)	(96.5%)
12-Oral contraceptive pills and hormone replacement therapy increase the risk of BC en used for 5 years or more.	41(56.9%)	23(31.9%)	(44%)	55(76.4%)	38(52.8%)	(65%)
13-Alcohol consumption increases the risk	62(86.1%)	40(55.6%)	1.4(70%)	71(98.6%)	69(95.8%)	(97%)
14-Exposure to radiation at a young age could ncrease the risk	24(33.3%)	21(29.1%)	(30%)	24(33.3%)	34(47.2%)	(40%)
15-Treatments for breast cancer include chemotherapy, radiotherapy & hormonal	54(75%)	33(45.8%)	(60%)	66(91.7%)	47(65.2%)	(78%)
16-The best approach to BC control could be through early detection.	57(79.2%)	34(47.2%)	(63%)	62(86.1%)	48(66.7%)	(75%)
17-The main reasons behind the increase in the Risk in postmenopausal obese women is elevation in the level of endogenous estrogens	36(50%)	22(30.5%)	(40%)	43(59.7%)	49(68.1%)	(63.5%)

18-Preventive measures against BC include physical activity, healthy diet, ideal weight, & avoiding hormonal therapy & alcohol.	56(77.8%)	43(59.7%)	(68.5%)	64(88.9%)	58(80.63%)	(85%)
19-Low levels of endogenous estrogen decrease the risk of BC in women	19(26.4%)	14(19.4%)	(22.5%)	29(40.3%)	30(41.7%)	(40%)
20-Factors that could decrease the incidence of early pregnancy, medical advice, physical activity, avoiding fat-rich diet and periodic BSE	47(65.3%)	35(48.6%)	(56.5%)	51(70.8%)	55(76.4%)	(73.5%)
Total of Mean	38.95	26.15		55.85	49.3	

Table 2. Comparison of the Knowledge Score Levels for the Correct Answers among the Two Studied Groups (Pre Versus Post Tests Findings).

Score Level	Group I College of Nursing		Group II College of Education	
	Pre	Post	Pre	Post
Poor (< 50%)	18(25%)	0(0%)	53(73.6%)	4(5.6%)
Just Passed (50-59%)	21(29.2%)	4(5.6%)	8(11.1%)	10(13.9%)
Fair (60-69%)	25(34.7%)	6(8.3%)	8(11.1%)	16(22.2%)
Good (70-79%)	6(8.3%)	16(22.2%)	3(4.2%)	18(25%)
Very Good (80-89%)	2(2.8%)	27(37.5%)	0(0%)	22(30.6%)
Excellent (90-100%)	0(0%)	19(26.4%)	0(0%)	2(2.8%)
Total	72	100%	72	100%
Chi- square	$X^2 =67.8 df=5 P<0.001$		$X^2 =67.72 df=5 P<0.001$	

Table 3. Comparison of the Knowledge Score Levels for the Correct Answers within the Pre Versus Post Assessment Sessions (Among the Two Studied Groups).

Score Level	Pre-Assessment		Post-Assessment	
	Group I **College of Nursing**	**Group II** **College of** **Education**	**Group I** **College of Nursing**	**Group II** **College of** **Education**
Poor (<50%)	18(25%)	53(73.6%)	0(0%)	4(5.6%)
Just **Passed** (50-59%)	21(29.2%)	8(11.1%)	4(5.6%)	10(13.9%)
Fair (60-69%)	25(34.7%)	8(11.1%)	6(8.3%)	16(22.2%)
Good (70-79%)	6(8.3%)	3(4.2%)	16(22.2%)	18(25%)
Very Good (80-89%)	2(2.8%)	0(0%)	27(37.5%)	22(30.6%)
Excellent (90-100%)	0(0%)	0(0%)	19(26.4%)	2(2.8%)
Total	72	100%	72	100%
Chi- square	X² =33.838 df=5P<0.001		X² =23.50 df=5P<0.001	

Table 4. Statistical Comparison between the Scores of Knowledge about Breast Cancer in the Pre Versus Post Assessment Sessions Among the Two Studied Groups.

Groups Score level	Statistical Tests	Group I College of Nursing	Group II College of Education
1- Pre	Mean	54.375	38.888
	Stander deviation	13.372	15.749
	Min	10	5
	Max	80	75
2- Post	Mean	79.375	69.097
	Stander deviation	10.875	13.277
	Minimum	50	25
	Maximum	95	90
Sig(2-tailed)		.001	.001
Differences of Mean pre &post		-25	-30.2

Discussion

Global cancer statistics indicate a rising incidence of breast cancer among women worldwide; the latter being the most frequent cause of death from female malignancies in both developing and developed regions [1]. The low survival rates in less developed countries reflects the lack of awareness among women and primary care practitioners, in addition to the limited capacity for early diagnosis and effective multimodality treatment resulting in a high proportion of women presenting with poor prognosis as a consequence of late-stage disease [9-13].

Earlier studies revealed that behavior-based interventions could promote women knowledge, change their attitude and health belief about breast cancer and the means for its control [14-17]. In the current study, the difference in the mean scores of knowledge between the two groups studied obviously reflects their educational background. Nevertheless, among

both, our results indicated a significant increase in the knowledge about the risk factors for breast cancer and the means for its prevention and control following a peer educational teaching model.

In Iraq, breast cancer is the commonest type of malignancy among the Iraqi population in general. It accounts for more than one third of the registered female cancers according to the latest Iraqi Cancer Registry which shows a trend for the disease to affect younger age groups [3]. A study conducted in Iraq on 721 women presenting with palpable breast masses demonstrated that 14.3% were diagnosed with cancer. Although the lump was detected by the patient herself in 90.6% of cases, only 32% sought medical advice within the first month; accordingly classifying 47% of these patients in advanced stages III and IV [4].

Another recent survey was conducted to explore the knowledge, attitude and practice towards breast cancer among a

sample of educated women, revealed that approximately half of the participants had low knowledge score (under 50%). That study demonstrated that 90 % of the respondents had heard about Breast Self-Examination (BSE), however, only 43% did actually practice the technique [11]. In a similar study carried out in the North of Iraq, multiple logistic regressions displayed that age of the participants, knowledge on the means of early detection and factors that could decrease the incidence of the disease were significantly associated with practicing BSE [12]. Similar to other regional studies [18], it was demonstrated that health care providers were not the main source of information in the community, thereby posing a challenge for the health authorities to provide means for the dissemination of the basic required information about such diseases. The findings of these studies justify increasing efforts for establishing comprehensive breast cancer control programs in Iraq focusing on early detection and promoting public awareness.

It has been documented that early detection of breast cancer is the most important approach to control the disease and is the second major component of National Cancer Control Programs, the first being prevention [10]. It is part of a wider strategy that includes diagnosis, treatment and follow-up of the detected cases [9]. According to WHO [9,10], there are two principal components of early detection programs for cancer – early diagnosis and screening. Early diagnosis could be achieved through promoting awareness of both, the health care professionals and the public, on the early signs and symptoms of cancer and its risk factors through health education to improve prognosis.

Numerous studies have explored the usefulness of educational approaches such as peer and group educations, video films, and written documents [15-17,19,21]. The main objectives of such interventions are raising the levels of the knowledge and awareness about breast cancer and BSE practices, as well as improving the perceived health beliefs.

It was displayed in this study that the knowledge scores about breast cancer were increased significantly in the post assessment tests for participants in both groups ($p > 0.05$). It was obvious that there was a meaningful difference between those knowledge rates. Among the Nursing group, 25% had poor knowledge scores before the intervention; while after being subjected to the teaching model 64% had high scores ranging between very good and excellent. Among the second group (students from the College of Education) 73.6% failed to answer 50% of the questions before the education; after which about 95% of those students passed readily and 60% answered more than 70% of the questions confidently. The mean scores in knowledge about breast cancer increased from 54.375 ± 13.372 to 79.375 ± 10.875 in the first group and from 38.888± 15.749 to 69.097± 13.277 in the second.

Previous studies confirmed that perceived confidence and health motivation increased in accordance with BSE knowledge, while the perceived barrier were decreased; the perceived confidence affecting BSE performance positively [20].

In our study, after being subjected to the educational model, a significantly high percentage of female students in both groups readily demonstrated that they are aware of the best time and frequency to conduct BSE and that postmenopausal obesity and alcohol consumption could increase the probability of developing breast cancer. However, while a considerable proportion obviously revealed that they understood the relationship between endogenous estrogen excess and the risk of the disease, they failed to address that oopherectomy could decrease the risk of developing breast cancer. That was specifically true in the second group, perhaps indicating that one session was insufficient for those participants to perceive all the presented information.

Nevertheless, it was displayed that the educational intervention had a positive effect on the subjects' perceived threats about breast cancer. The scores of health motivation and benefits about the prevention and screening techniques for breast cancer were significantly improved after receiving the educational intervention. Other aims of such interventions when directed towards the teaching staff and young women include the support to familiarize with their breast tissues, to learn and teach how to detect abnormal changes at earlier stages and to start a lifetime habit of breast self-care and BSE.

In conclusion, there was a significant rise in the standard of knowledge about breast cancer after these interventions; proposing its significance in yielding preventive health behaviors depending on the level of perceived confidence and motivations. Nurses and other health professionals are urged to gain adequate perception about breast cancer and to contribute effectively in promoting the primary health care system.

The findings of such studies can be used to guide the planning programs, designed for continuous education of nurses and female students, on public awareness regarding the potential harms of cancer; directing the attention to its risk factors and the possible means for its control.

References

1. International Agency for Research on Cancer. Globocan 2008. World Cancer Statistics. Lyon, IARC Press. 2010.

2. Anderson BO. Guideline implementation for breast healthcare in low-income and middle-income countries: overview of the Breast Health Global Initiative Global Summit 2007. Can-

cer. 2008, 113 (8): 2221-2243.

3. Iraqi Cancer Board. Results of the Iraqi Cancer Registry 2010. Baghdad, Iraqi Cancer Registry Center, Ministry of Health. 2013.

4. Alwan NAS. Breast Cancer: Demographic Characteristics and Clinico-pathological Presentation of Patients in Iraq. East Mediterr Health J. 2010, 16(11): 1073-1078.

5. Alwan NAS. DNA proliferative index as a marker in Iraqi aneuploid mammary carcinoma. Eastern Mediterranean Health Journal. 2000, 6: 1062-1072.

6. Fakhro AE. Breast cancer: patient characteristics and survival analysis at Salmaniya medical complex, Bahrain. East Mediterr Health J. 1999, 5: 430-439.

7. Mousavi SM. Breast cancer in Iran: an epidemiological review. Breast Journal. 2009, 13: 383-391.

8. Omar S. Breast cancer in Egypt: a review of disease presentation and detection strategies. East Mediterr Health J. 2003, 9: 448-463.

9. WHO/EMRO. Towards a Strategy for Cancer Control in the Eastern Mediterranean Region, 1st ed. Cairo, World Health Organization Regional Office for the Eastern Mediterranean. 2010.

10. WHO. Guide for Effective Programmes. Cancer Control. Knowledge into Action: Early Detection. Geneva, World Health Organization, 2007.

11. Alwan NA, Al-Attar WM, Eliessa RA, Madfaie ZA, Tawfeeq FN. Knowledge, attitude and practice regarding breast cancer and breast self-examination among a sample of the educated population in Iraq. East Mediterr Health J. 2012, 18(4): 337-345.

12. Alwan NAS, Al-Diwan J, Al-Attar WM, Eliessa et al. Knowledge, Attitudes and Practice towards Breast Cancer and BSE in Kirkuk University, Iraq. Asian Pacific Journal of Reproduction, Elsevier. 2012, 1(4): 308-311.

13. Sankar R, Alwan N, Lynn D. How Can We Improve Survival from Breast Cancer in Developing Countries?. Future Medicine, Breast Cancer Management. 2013, 2(3): 179-183.

14. Al Alwan NAS and Mualla FHM. Promoting Clinical Breast Examination as a Screening Tool forBreast Cancer in Iraq. Iraqi National Journal for Nursing Specialities. 2014, 27(1): 76-82.

15. Karayurt O, Dicle A, Malak AT. Effects of Peer and Group Education on Knowledge, Beliefs and Breast Self-Examination Practice among University Students in Turkey. Turk J Med Sci. 2009, 39(1): 59-66.

16. Attia AK, Abdel Rahman DAM and Kamel LI. Effect of an educational film on the Health Belief Model and breast self-examination practice. Eastern Mediterranean Health Journal. 1997, 3(3): 435-443.

17. Malak AT, Dicle A. Assessing the efficacy of a peer education model in teaching breast self-examination to university students. Asian Pac J Cancer Prev. 2007, 8(4): 481-484.

18. Habib F, Salman S, Safwat M and Shalabi H. Awareness and Knowledge of Breast Cancer Among University Students in Al Madina Al Munawara Region. Middle East Journal of Cancer. 2010, 1(14): 159-166.

19. Lu ZJ. Effectiveness of breast self-examination nursing interventions for Taiwanese community target groups. J Adv Nurs. 2001, 34: 163-170.

20. Aydin I, Gozum S. The effect on teacher's beliefs and behaviour at breast cancer screening of two different educational methods intention of early detection of breast cancer. Eur J Cancer. 2005, 3: 452.

21. Gürsoy AA, Yiğitbaş C, Yılmaz F. The effect of Peer Education on University Students Knowledge of BSE and Health Beliefs. J Breast Healt. 2009, 5(3): 135-140.