The Effect of a Training Program on Female Breast Self-Examination Knowledge and Practice among Al- Azhar University Students, Gaza Strip, Palestine

Samira S. Abo Al-Shiekh ^{*1}, Mohamed A. Ibrahim ², Bothyna B. Etewa ¹ and Yasser S Alajerami ³

¹ University of Al- Butana , Al- Khortome state, Sudan.

² Mohamed A. Ibrahim, Albaha University, Albaha, Saudi Arabia.

³ Al-Azhar University, Gaza, Palestine, email: yasser_ajr@hotmail.com.

E-mail: Samira.alshiekh.1980@gmail.com

Abstract

BSE is a good screening method for early detection of breast cancer. This study aimed to evaluate the effectiveness of a training program on female university students' knowledge and practicing BSE. A Quasi-Experimental design was used, interviewed questionnaire, and observation checklist were used to collect the data in the pre and post-tests. Five sessions including various teaching methods were used during program implementation. Forty-three students studying at the nutrition department (41.9%) or nursing department (58.1%) participated in the study. After applying the program, the percentages of students' knowledge and practice BSE were increased. Also, the frequency of practicing was increased from 23.3% in the pre-test to 69.8% in the post-test. Paired t- test showed significant differences between the students' knowledge and practice pre and post-tests. The results confirm the effectiveness of the education program to increase knowledge and practicing BSE. There is a need to apply education programs in other female communities to empower them towards practicing BSE.

Keywords: Breast cancer, training program, Breast Self-Examination, Knowledge, practice, Breast simulator

1. Introduction

Breast cancer is the most commonly diagnosed cancer among women in the vast majority (140 of 184) of countries in the world (Ferlay et al. 2015). In addition to being most common, breast cancer is also a leading cause of cancer deaths among women (Ferlay et al. 2015, Torre et al. 2016). In Palestine, breast cancer is the most commonly diagnosed cancer among females constituting 20.5% and 17.2% of all cancer cases in the Gaza Strip and west bank respectively (MOH 2016 , MOH 2018). The top leading cause of cancer deaths in the Gaza Strip are lung (16.9%), colon cancer (11%), and breast (10%) during the year 2016 (MOH 2016). In a study conducted in the Gaza Strip reported that the most affected age groups with breast cancer are women in the age group (40–49) years constitutes 29.5%, (50- 59) years among 27% and noticeably women (< 40 years) had a rate 15.6% (Abo Al-Shiekh et al. 2019). This figure should alarm the authorities and decision makers to focus on promoting awareness about breast cancer prevention and early detection especially in young women to decrease morbidity and mortality.

Also, it was reported that the age-standardized incidence rate of breast cancer was 29.1/100,000 in Asia, 67.6/100,000 in the USA and 71.1/ 100,000 in Europe (Ferlay et al. 2015). However, the mortality to incidence ratio is much higher 0.35 in Asia in comparison to 0.21 for United States of America and 0.23 for Europe (Ferlay et al. 2015).

The mortality rates vary more widely than incidence, with breast cancer survival being significantly lower in low and middle-income countries compared to high-income countries (Ginsburg et al. 2017). A study reported 5- years of survival rates for women with breast cancer in countries with highly developed health services to be 90% and 75% for localized disease and regional disease respectively, Whereas, the 5- years survival rates for women with breast cancer in countries with low developed health services were reported to be 76%, and 47% for localized disease and regional disease respectively (Sankaranarayanan et al. 2010). A study conducted in the Gaza Strip including women diagnosed with breast cancer during the year (2005- 2006) revealed

that the survival rates are as follows: 92.7% after 1 year, 76.1% after 3 years, 65.1% after 5 years, 51.9% after 10 years (Panato et al. 2018).

Mammography, clinical breast examination (CBE) and breast self-examination (BSE) are screening methods used for early detection of breast cancer (Baig et al. 2011, Shrivastava et al. 2013). Breast cancer associated morbidity and mortality can be reduced through speedy disclosure and diagnosis by BSE (Shrivastava et al. 2013). It was proposed that every woman should perform BSE beginning from 20 years of age (CO, C. 2008). However, in a cross-sectional study conducted during the year 2017 to assess breast cancer awareness and attitudes among adolescent and adult women in the Gaza Strip. The study showed that only 35.8% of the participants have BSE performance. Their performance was different and classified into three groups; perform BSE at least once every 6 months, perform it at least once a month, and perform it at least once a week in percentages 11.6%, 14.7%, and 9.5% respectively (Elshami et al. 2018).

In Palestine, breast screening methods such as CBE and mammography focus on women older than 40 years or women over 35 years with family history. Hence, female under this year should focus on another screening method such as BSE. The only way for the female to know what is normal about her breast tissue is to start doing BSE to be familiar in her breasts, and thus any change will be considered. Therefore, this study aimed to evaluate the effectiveness of a breast cancer education program in promoting female university students' knowledge towards breast cancer and practices of BSE at Al- Azhar university- Gaza. A timely provision of educational program regarding breast health and breast screening measures to female university students can promote female students' knowledge and increase their practice of BSE.

2. Methods and Material

Study design

This study designed as Quasi-Experimental design

Study setting

This study was conducted at the Faculty of Applied Medical Sciences, Al-Azhar University in Gaza Strip (AUG).

Study period

The study was started in March ,2019 and finished by June, 2020.

Inclusion and exclusion criteria**Inclusion criteria**

Female students studying at level IV in tow departments (nutrition and nursing departments) of Faculty of Applied Medical Sciences of any age and any place of residency were included in the study.

Exclusion criteria

Students did not attend at least four lectures of the training program and withdrawals were excluded from the study.

Students did not attend the post-test-2 months after the intervention were also excluded from the study

Phases of intervention.

Pre- intervention phase

Pre-test to assess students' knowledge, using a pre-assessments sheet, and an observational checklist to assess students' performance and practicing BSE. During the application of the BSE, we used a breast simulator technique. Simulation-based education is a rapidly developing method of enhancing the clinical education of medical students. Also, creating opportunities for deliberate practice of new skills without involving real patients (Weller et al. 2012).

Program implementation

The program was designed to train the students with essential information about breast cancer disease, methods of early detection and practicing BSE. All the participants attended the sessions and participated actively in practical sessions. The period of the training program is five sessions.

Teaching methods:

- Lectures
- Practice BSE using a breast simulator
- Videos
- modeling using breast simulator technique
- Questions and group discussion
- Students were following up by a group in the social media, all the students had the opportunity to discuss, ask, and answer the proposed questions.

Post intervention program test

A post-test was conducted using a questionnaire to evaluate the effect of the program on students' knowledge regarding breast cancer disease. During their performance, all the students were observed during applying BSE on a simulator using an observation checklist.

Tools of data collection:

Two tools were used to collect the data, first is the interviewed questionnaire, and the second is the observation checklist

Data analysis

Statistical package for social science (SPSS) program version 23 was used to analyze the data. The first stage of data entry was through constructing the entry base and coding of variables, followed by actual data entry. Descriptive analysis including figures, and frequency tables were demonstrated. Paired t- test was used to examine the differences between knowledge and practices score pre and post-tests. The confidence interval is considered at 95% and p- value is statistically significant at < 0.05 .

Ethical Consideration

Permissions from Helsinki committee (No. PHRC/HC/510/19) and the dean of faculty of Applied Medical Sciences through official letters and verbal acceptance were obtained. All participants have been informed about the study aim, its benefits and their acceptance and agreement were obtained, Every participant was provided with a

full explanatory form attached to the questionnaire including the purpose of the study, assurance about the confidentiality of the information, a statement indicating that participation is voluntary and the researcher Acknowledged works of other authors using an APA referencing system.

3. Results

Table 1: Sociodemographic characteristics of study participants (Categorical variables, N= 43)

Variable	Mean $\pm$ SD	(Min- Max)
Age	20.7 $\pm$ 0.8	(19- 22)
Income	1711.9 $\pm$ 1218.1	(200-6000)
Number of household members	7.2 $\pm$ 2.8	(2- 13)

NIS: new Israeli shekel

In the table (1), the mean age of students is 20.7 (19- 22) years old. Regarding their income, the mean of their household income is 1711.9 NIS. Which is below the deep poverty line (1974 NIS) stated by the Palestinian Central Bureau of Statistics ⁶. The mean of number household members is 7.2 (min-max: 2- 13) members.

Table 2 :Sociodemographic characteristics of study participants (quantitative variables, N= 43)

Variable	N	(%)
Specialty		
Nutrition	18	(41.9)
Nursing	25	(58.1)
Marital status		
Single	37	(86)
married	6	(14)
Residency		
North Gaza	5	(11.6)
Gaza	25	(58.1)
Middle zone	8	(18.6)
Khan Younis	3	(7)
Rafah	2	(4.7)
Working status		
Yes		3 (7)
No	40	(93)
Having a special room		
Yes	29	(67.4)
No	14	(32.6)

Table (2) demonstrates the sociodemographic characteristics, forty- three students were enrolled, they are studying at the nutrition department (41.9%) or nursing department (58.1%). The majority of them (86%) are single, resident at the

Gaza city (58.1%) reflecting the highest population density of Gaza city 15 and this is because of the location of the Al- Azhar university. Regarding working status, the majority of participants are not working (93%) and 67.4% have a special room.

Table 3 :Previous information about BSE in the pre-test

Variable	N	(%)
Having previous information about BSE		
Yes	42	(97.67)
No	1	(2.33)
Source of information		
Mass media	10	(23.26)
Health professional	14	(32.56)
Friends	5	(11.63)
University studies	31	(72.09)
Family	8	(18.6)
Social media	17	(39.53)

Except for one student, all the students had a previous information about BSE. The most common sources of information are university studies among 72.09%, social media among 39.53%, health professionals among (32.56%). Other sources of information are mass media, family, and friends as illustrated in the table 3.

Table 4: Participants' knowledge about BSE pre and post-tests

Variable	Pre-test N	(%)	Post- test 2 months N	(%)
Who performs BSE	43	(100)	43	(100)
BSE is important in detecting breast cancer early	43	(100)	43	(100)
At what age should a girl begin BSE?	31	(72.09)	41	(95.35)
How often should BSE be done?	34	(79.07)	41	(95.35)
What is the best time to do BSE?	26	(60.46)	40	(93.02)
practicing BSE regularly (once a month)	10	(23.3)	30	(69.8)

Table (4) shows that participants' knowledge about BSE pre-test and post-test-2months. In the pre-test, the study showed that all the students answered two items correctly; "who performs BSE", and " BSE is important in detecting breast cancer early". And they also correctly answered them in the pos-test. Regarding the other

items, "at what age should a girl begin BSE, 72.09% of the participants answered it correctly in the pre-test and increased to 95.35% in the post-test. Regarding the item "How often BSE should be performed", 79.07% of the participants answered it correctly in the pre-test and increased to 95.35% in the post-test. And finally, for the item " what is the best time to do BSE", 60.47 % of the participants answered it correctly in the pre-test and this figure increased to 93.02% in the post-test.

Regarding the frequency of practicing BSE, 23.3% of the participants claimed that they practice BSE regularly in the pre-test and the figure increased to 69.8% in the post-test.

Figure 1: Practice scores among participants pre and post-tests

Figure (1) demonstrates the practices scores among participants during the two assessment phases. During the pre-test, only two participants (4.65%) practice BSE correctly, and the percentage of participating students who correctly apply the BSE increased to 55.81% in the post-test; which is more than half of the participants.

Table 5 :Differences between knowledge and practice BSE scores pre and post intervention program

Variable	Mean	SD	t	P- value
knowledge about BSE pre- intervention	64.57	12.00	7.2	< 0.001*
knowledge about BSE post- intervention	81.08	13.98		
Practicing BSE pre- intervention	52.97	21.16	12.412	< 0.001*
Practicing BSE post- intervention	95.4	8.10		

* Statistically significant, SD: standard deviation

Table (5) demonstrates the differences between knowledge and practice scores among the participants pre and post-tests. Paired t- test shows a statistically significant difference between knowledge and practice scores. Regarding knowledge about BSE, a statistically significant difference was shown between the students' knowledge pre and post-tests ($t= 7.2$, $p\text{- value} < 0.001$). Also, there is a statistically significant difference between the participants' practice scores pre and post-tests ($t= 12.41$, $p\text{- value} < 0.001$).

4. Discussion

Breast screening is an essential health maintenance activity, and it is very important in reducing morbidity and mortality, and helps to detect breast cancer at an earlier stage. Women who are familiar with their normal breast characteristics can easily discover any abnormalities early and can be effectively treated. The present study was implemented to evaluate the effect of a health education program on female BSE knowledge and practice.

Students enrolled in the study having approximately the same age. The majority of them are poor in that they live under the deep poverty line which was previously stated by Palestinian Central Bureau of Statistics (PCBS, 2018). The most common sources of information about breast cancer are university studies, social media, and health professionals. Inconsistent with this finding, previous studies found that mass media is the major source of information about BSE (Moustafa et al. 2015, Alomair et al. 2020). The participants showed good knowledge about BSE, this is due to their university studies as they learn at paramedical sciences. Consistent with this

result, a study showed that 52% of the participants have a good knowledge about BSE (Ahmed et al. 2020). However, the result is incongruent with another study which showed low satisfactory knowledge scores among its participants and this is due to their study in non-medical college (physical education department) (Alomair et al. 2020).

In the pre-test, and despite the good participants' knowledge about BSE, they have inadequate background about the frequency of practicing BSE. In that, less than a third of the participants practice BSE monthly and regularly. The result is higher than that of other studies; one showed only 10% of the participants perform BSE monthly and regularly (Ahmed et al. 2020), and the other showed 11.3% of its participants practice BSE regularly²⁰. In another side, a correct practice of BSE is very weak at the pre-test. Which lead us to the conclusion that the students have good knowledge about BSE, however, they have inadequate background about the frequency of practicing BSE, and the way of practicing, these findings are in agreement with another study (Ahmed et al. 2020).

During the post-tests, and after applying the training program, knowledge and practicing BSE scores increased significantly. This could be attributed to the clarity, consistency of the program, and simple teaching methods used during the intervention. Also, using a simulator technique as a method to conduct the BSE. Further, the group discussion and follow up during the two months gap memory through the social media group significantly affect our results positively. The result is in a line with previous related studies which found that participants' knowledge significantly improved in the post-test due to the influence of programs (Herman et al. 2015, Mowla & Aziz 2018). Therefore, the teaching training program was effective for improving noticeably the knowledge and practicing BSE among the female paramedical students. Regarding the frequency of practicing BSE, only less than a quarter of students participated it in a regular basis and the result is better than the result of another study conducted in UAE which showed that only 3.3% of its participants practice BSE monthly (Al-Sharbatti et al. 2013). Also, locally in Jenin city, another study revealed that only 4% of the nursing students perform BSE regularly (Ayed et al. 2015).

Regarding students' practice of BSE, the current study findings demonstrated that only very few students were correctly performing the steps of the procedures before applying for the training program. Also, a low level of practice scores of BSE was reported in a study from Ajman in the United Arab Emirates (Al-Sharbatti et al. 2013). However, the post-test of the present study demonstrated significant improvements in students' performance of BSE, which is certainly attributed to the practical part of the program.

The program is effectiveness to improve of practicing BSE among the students and this is agreed with previous related studies in several countries as in China (Ouyang & Hu 2014), Ghana (Mena et al. 2014), and Egypt (Moustafa et al. 2015, Kharboush et al. 2011).

5. Conclusion and recommendations

Generally, the present study indicates that the knowledge about BSE is good, however, the practice of BSE among participants was poor before starting the educational program. The result of the pre-test confirmed the need to further improve knowledge and practice BSE among paramedical female university students. The proposed educational program provided more information about BSE to female students and encourage them to practice BSE. There is a need to update the curriculum and for regular updates of courses for paramedical students on health maintenance practices. Also, mass media should provide more information about BSE and how to practice it. Further, to apply for education programs in other female communities to educate them and empower them towards practicing BSE.

Acknowledgment

This paper is a part of a doctorate thesis presented for University of Albutana, Sudan. The study entitled "The effect of a design Training Program on Female Students' Knowledge and Practice Regarding Breast Self-Examination in Al-Azhar University in Gaza Strip, Palestine, 2019".

References

1. Abo Al-Shiekh, S. S., Alajerami, Y. S., Etewa, B. B., & Elsous, A. M. (2019). System Delay in Breast Cancer Diagnosis in Gaza Strip, Palestine. *Journal of oncology*, 2019.
2. Ahmed, M. S., Sayeed, A., Mallick, T., & Syfuddin, H. M. (2020). Knowledge and Practices on Breast Cancer among Bangladeshi Female University Students: A Cross-sectional Study. *Asian Pacific Journal of Cancer Care*, 5(1), 19-25.
3. Alomair, A. N., Felemban, D. G., Felemban, M. S., Awadain, J. A., Altowairqi, A. S., Alfawzan, N. F., & Almazayen, F. M. (2020). Knowledge, Attitude and Practice of Breast Self-Examination Toward Breast Cancer among Female Students at King Saud University in Riyadh, Saudi Arabia. *EC Gynaecology*, 9(1), 8-1.
4. Al-Sharbatti, S. S., Shaikh, R. B., Mathew, E., & Al-Biate, M. A. S. (2013). Breast self examination practice and breast cancer risk perception among female university students in Ajman. *Asian Pac J Cancer Prev*, 14(8), 4919-4923.
5. Ayed, A., Eqtait, F., Harazneh, L., Fashafsheh, I., Nazzal, S., Talahmeh, B., ... & Awawdeh, R. (2015). Breast Self-Examination in Terms of Knowledge, Attitude, and Practice among Nursing Students of Arab American University/Jenin. *Journal of Education and Practice*, 6(4), 37-47.
6. Baig, M. R., Subramaniam, V., Ch, A. A., & Khan, T. M. (2011). A population based survey on knowledge and awareness of breast cancer in the suburban females of Sungai Petani, Kedah, Malaysia. *International Journal of Collaborative Research on Internal Medicine & Public Health*, 3(9), 0-0.
7. CO, C. (2008). Cancer Prevention & Early Detection Facts & Figures 2008. *Atlanta, Georgia, USA: American Cancer Society*. Accessed on 12.1.2020 retrieved from: <http://www.cancer.org/research/cancerfactsfigures/cancerpreventionearlydetectionfactsfigure/s/cancer-prevention-early-detection-facts-figures-2013>.
8. Elshami, M., Abu Kmeil, H., Abu-Jazar, M., Mahfouz, I., Ashour, D., Aljamal, A., ... & Hasan, T. (2018). Breast cancer awareness and barriers to early presentation in the Gaza-Strip: A cross-sectional study. *Journal of global oncology*, 4, 1-13.
9. Ferlay, J., Soerjomataram, I., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., ... & Bray, F. (2015). Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *International journal of cancer*, 136(5), E359-E386.

10. Ginsburg, O., Bray, F., Coleman, M. P., Vanderpuye, V., Eniu, A., Kotha, S. R., ... & Gralow, J. (2017). The global burden of women's cancers: a grand challenge in global health. *The Lancet*, 389(10071), 847-860.
11. Herman, H., Novriani, H., & Putri, Y. E. (2015). The effect of health promotion about breast self-examination for student's knowledge at the first senior high school of Enam Lingkung Padang Pariaman. *International Journal of Research in Medical Sciences*, 3(10), 2589-2593.
12. Kharboush, I. F., Ismail, H. M., Kandil, A. A., Mamdouh, H. M., Muhammad, Y. Y., El Sharkawy, O. G., & Sallam, H. N. (2011). Raising the breast health awareness amongst women in an urban slum area in Alexandria, Egypt. *Breast Care*, 6(5), 375-379.
13. Mena, M., Wiafe-Addai, B., Sauvaget, C., Ali, I. A., Wiafe, S. A., Dabis, F., ... & Sasco, A. J. (2014). Evaluation of the impact of a breast cancer awareness program in rural Ghana: a cross-sectional survey. *International journal of cancer*, 134(4), 913-924.
14. Ministry of Health (2016): Cancer incidence in the Gaza Strip Facts and Figures 2015-2016. Unpublished report, Gaza Strip, Palestine: MOH.
15. Ministry of Health (2018): Health annual report. Palestinian Health Information Center. Nablus, Palestine: MOH.
16. Moustafa, D. G., Abd-Allah, E. S., & Taha, N. M. (2015). Effect of a breast-self examination (BSE) educational intervention among female university students. *American Journal of Nursing*, 4(4), 159-65.
17. Mowla, H. A., & Aziz, E. A. (2018). The Effect of Breast Self-Examination Training Program on the Knowledge, Attitude and Practice among Female Nursing Students at Faculty of Nursing, Alexandria University, Egypt. *Journal of Nursing and Health Science*, 42-49.
18. Ouyang, Y. Q., & Hu, X. (2014). The effect of breast cancer health education on the knowledge, attitudes, and practice: a community health center catchment area. *Journal of cancer education*, 29(2), 375-381.
19. Palestinian Central Bureau of Statistics (2018): Expenditure and Consumption Survey: (October 2016- September 2017). Press Report on the Levels of Living in Palestine: Expenditure, Consumption and Poverty. Ramallah - Palestine.
20. Panato, C., Abusamaan, K., Bidoli, E., Hamdi-Cherif, M., Pierannunzio, D., Ferretti, S., ... & Serraino, D. (2018). Survival after the diagnosis of breast or colorectal cancer in the GAZA Strip from 2005 to 2014. *BMC cancer*, 18(1), 632.
21. Sankaranarayanan, R., Swaminathan, R., Brenner, H., Chen, K., Chia, K. S., Chen, J. G., ... & Shin, H. R. (2010). Cancer survival in Africa, Asia, and Central America: a population-based study. *The lancet oncology*, 11(2), 165-173.

22. Shrivastava, S. R., Shrivastava, P. S., & Ramasamy, J. (2013). Self breast examination: A tool for early diagnosis of breast cancer. *Am J Public Health Res*, 1(6), 135-139.
23. Torre, L. A., Siegel, R. L., Ward, E. M., & Jemal, A. (2016). Global cancer incidence and mortality rates and trends—an update. *Cancer Epidemiology and Prevention Biomarkers*, 25(1), 16-27.
24. Weller, J. M., Nestel, D., Marshall, S. D., Brooks, P. M., & Conn, J. J. (2012). Simulation in clinical teaching and learning. *Medical Journal of Australia*, 196(9), 594-594.