Effect of health education on awareness and practices of breast self-examination among females attending a charitable hospital at North Karachi

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Abstract

Objective: To assess the effectiveness of health education as an intervention to promote breast self-examination in a low-resource setting.

Method: The quasi-experimental study was conducted from January to August 2018 in Karachi after approval by the Jinnah Sindh Medical University, and comprised women from a low-resource locality and dividing them into intervention group A and control group B. Demographic data was collected using a pretested questionnaire filled through interviews. Subsequently, group A received health education regarding carcinoma of breast, importance of breast self-examination and monthly motivation through cell phone to perform self-examination. The questionnaire was again filled after 6 months of intervention. Data was analysed using SPSS 20. Group B was given the same health education sessions after the completion of the study.

Results: Of the 172 subjects, there were 86(50%) in each of the two groups. In terms of demographic data, the groups were similar (p>0.05). After the intervention, group A showed significant (p<0.001) improvement in knowledge and practice of breast self-examination. There was no change in group B (p>0.05). Being in the intervention group (p=0.001) and level of education (p=0.018) showed positive and negative associations with self-examination practice. Upon adjusting for age, marital status, family history and education, group A (p=0.001) remained significant, while the level of education (p=0.116) became non-significant.

Conclusion: Designed health promotion programmes with monthly reminders through cell phone improved knowledge and practice of breast self-examination.

Keywords: Breast self-examination, Knowledge, Attitude, Health education, Mobile phone. (JPMA 71: 2156; 2021)

Introduction

Cancer is the second most important cause of death worldwide.[1] According to the International Agency for Research on Cancer (IARC), there were 14.1 million cancer cases reported in 2012 worldwide. The mortality account due to cancer in 2012 was 8.2 million, and of them, 5.3 million deaths by cancer were accounted in developing countries, of which 521,000 deaths were as a result of carcinoma (Ca) breast.[2] Globally, almost 1 out of 6 deaths are due to cancer. Roughly 70% of deaths occur in low- and middle-income countries (LMICs).[3] Cancer accounted for 8.7 million deaths in 2015.[1]

Ca breast is the most common cancer in Asian women in 2012, with 39% cases and 44% fatalities reported in Asian women and. Asian population dominates the global population as it constitutes 59% of the total world population.[2]

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Ca breast presents early in women of Asian ethnicity compared to western women.[3,4] Inearly stages, Ca breast is asymptomatic, but it produces symptoms as the tumour enlarges.[5] Early detection of Ca breast has an important role in reducing the mortality rate and improving the prognosis of the disease.[6] Early diagnosis and timely treatment of Ca breast increases the chance of survival.[7] The survival rate of women who had an early diagnosis is reported to be 90% compared to 60% among those who were diagnosed with Ca breast at later stages.[8]

The commonly detecting techniques are monthly breast self-examination (BSE), clinical breast examination (CBE) and mammography.[9] At present, digital mammography is the most effective technique for early detection of Ca breast.[10] Mammography can diagnose Ca breast 1-3 years before a mass can be felt by the patient. It can detect a tumour in women aged >35 years.[9] The American Cancer Society (ACS 2010) recommends both CBE and mammography for Ca breast screening. It also encourages that women should start BSE in their 20s, and report to their care-providers in case of any noticeable changes in their breasts.[11,12] BSE may decrease mortality by as much as 18% and this number may increase with women who are competent in the performance of BSE.

Even though BSE is a suitable tool for reducing Ca breast mortality in LMICs by early detection of disease, and takes only five minutes to perform[11] in real life its application remains low.[8]

Women who correctly perform BSE monthly are more likely to detect a lump pretty early. The early diagnosis of Ca breast has been known to influence early treatment and in yielding a better survival rate.[13] The sensitivity, specificity and predictive value of BSE to detect Ca breast were 58.3%, 87.4% and 29.2%, respectively.[14] Pakistan is a developing country with limited resources, and the incidence of Ca breast is on the rise, with one in every nine females getting affected during the lifespan.[15-17] Mammography is not suggested as the first-line screening tool for the detection of Ca breast in Pakistan. BSE is the best-suited method to detect Ca breast at its initial stage in a developing country like Pakistan.[16] Several studies have been conducted to investigate the knowledge, attitude and practices (KAP) of BSE among Pakistani women. The results of these studies revealed that a small percentage of women performed BSE ranging from 23% to 57%.[15-19]

The current study was planned to assess the effectiveness of health education as an intervention to promote BSE in a low-resource urban setting in the country.

Subjects and Methods

The quasi-experimental study was conducted from January to August 2018 at the Muslim Khatri Charitable Hospital, North Karachi, in a low-resource setting situated at 119/24, 11G North Karachi in the country's largest urban centre. After approval from the institutional ethics review board of Jinnah Sindh Medical University (JSMU), Karachi, the sample size was calculated using OpenEpi[20] software with 5% margin of error and 80% power, with a 1:1 ratio between intervention and control groups. Percentage of unexposed and exposed groups was on the basis of literature.[13] The required sample size was inflated by 10% to cover for missing data. The sample was raised using convenience sampling after permission of the hospital authorities.

Those included were women aged 20-60 years, in possession of a mobile phone, attending either obstetrics or gynaecology (OBGYN) or paediatrics departments. After taking oral consent, the subjects were divided into intervention group A and control group B on the basis of blue and yellow cards they picked. The subjects were interviewed while they waited for their turn to be consulted in a separate room. Participants who were mentally incapacitated and those unwilling to furnish informed consent were excluded.

The Intervention group was given health education sessions which comprised lecture of 05 minutes and video on how to perform BSE. Health Education regarding BSE refers to knowledge about Ca breast, its risk factors and signs, its severity and value of early diagnosis. Additionally, what is BSE, why is it important, how and when it should be performed and its steps were all included in line with literature.[13] BSE was referred to an examination of the breast by the study participants to identify any changes in their breasts. Knowledge referred to awareness of participants regarding BSE, as measured by a structured questionnaire which was used after getting face validity from a subject expert, It contained socio-demographic details of the patients and questions pertaining to items regarding the knowledge of Ca breast, its risk factors, knowledge about its prevention and treatment, the importance of BSE and its source of information, and also the attitude and BSE practices of the participants.

Information given on the signs of Ca breast included retraction of the nipple or bloody discharge from it, change of skin colour or thickening of skin over the breast, swelling of any part of the breast, or any lump in the breast. It was expected that the participant would be able to detect any changes in the breast by self-examination on a monthly basis. They were then advised that if any of the above-mentioned changes were found in the breast, they shall immediately contact a doctor for CBE. At the end of the educational session, pamphlets were provided to them along with the monthly reminder for performing BSE.

The principal investigator called the participants of the intervention group through the mobile phone in the first week of every month after the educational session for a total of 6 months. They were contacted through their mobile phones to ensure no losses to follow-up. The participants were asked about the BSE, its frequency, methods and place of BSE on each call. Each intervention group participant received 5 phone calls. After 6 months of the health education session, all participants were asked to complete the questionnaire for the second time, for which they were also contacted through mobile phone to avoid inconvenience. No losses to follow-up were observed due to strict reminders.

The control group did not receive any education about BSE. However, they received the educational session on Ca breast and BSE at the end of the study.

For statistical purposes, pre-testing on 10% of the similar sample was done in which data was collected, cleaned for missing variables and cross-validated by random checking.

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The final data of the main study was analysed using SPSS 20. Categorical variables were expressed as frequencies and percentages. Baseline socio-demographic characteristics, characteristics with regards to Ca breast and practices of BSE and post-intervention characteristics in the groups were compared using independent t-test for quantitative variables and chi-square test for categorical variables.

Multiple Cox regression was done to determine the unadjusted and adjusted relationship between intervention and outcome, and was expressed as hazard ratio (HR) with corresponding 95% confidence interval (CI). Univariate analysis was done using independent variables, including age, marital status, education and family history of Ca breast. The relationship was adjusted for age, marital status, education and family history. $P \leq 0.05$ indicated statistical significance.

Results

Of the 172 subjects, there were 86(50%) in each of the two

Table-1: Comparison of socio-demographic variables of intervention and control groups (n=172).

Variable	Intervention (n=86) % (n)	Control (n=86) % (n)	p-value*
Age groups (years)			
20 – 30	66.3% (57)	54.7% (47)	
31 -40	20.9% (18)	29.1% (25)	0.292
41-60	12.8% (11)	16.3% (14)	
Marital status			
Married	90.7% (78)	89.5% (77)	0.798
Widow	9.3% (8)	10.5% (9)	
Education			
No Education	26.7% (23)	39.5% (34)	0.75
Educated	73.3% (63)	60.5% (52)	
Family size			
1-4	43.0% (37)	41.9% (36)	
5 – 7	51.2% (44)	46.5% (40)	0.392
>8	5.8% (5)	11.6% (10)	
Employment status			
House wife	89.5% (77)	95.3% (82)	0.149
Working woman	10.5% (9)	4.7% (4)	

*Chi- square as test of significance, $p \leq 0.05$.

Table-2: Comparison of baseline and post-intervention knowledge and practices of breast self-examination (BSE) in intervention and control groups (n=172).

Variable	Baseline			Post-intervention		
	Intervention (n = 86) % (n)	Control (n = 86) % (n)	p-value*	Intervention (n = 86) % (n)	Control (n = 86) % (n)	p-value*
Can do BSE						
Yes	44.2% (38)	32.6% (28)	0.117	88.4% (76)	32.6% (28)	0.001
No	55.8% (48)	67.4% (58)		11.6% (10)	67.4% (58)	
Frequency of BSE						
Weekly	26.7% (23)	20.9% (18)		8.1% (7)	19.8% (17)	
Monthly	8.1% (7)	7.0% (6)	0.2	79.1% (68)	11.6% (10)	0.001
Yearly	9.3% (8)	4.7% (4)		1.2% (1)	1.2% (1)	
None	55.8% (48)	67.4% (58)		11.6% (10)	67.4% (58)	
Time of BSE						
A week before Menses	1.2%(1)	3.5%(3)		18.6% (16)	4.7% (4)	
During Menses	1.2%(1)	2.3%(2)		11.6% (10)	0% (0)	0.001
A week after Menses	2.3%(2)	1.2%(1)	0.269	31.4%(27)	0% (0)	
Any Time	39.5%(34)	25.6%(22)		26.7% (23)	27.9% (24)	
Do not perform	55.8%(48)	67.4%(58)		11.6%(10)	67.4%(58)	
Place of BSE^						
In front of mirror						
Yes	2.6% (1)	0% (0)	0.387	3.9% (3)	3.6% (1)	0.93
No	97.4% (37)	100% (28)		96.1% (73)	96.4% (27)	
While Bathing						
Yes	81.6% (31)	64.3% (18)		86.8% (66)	75.0% (21)	0.147
No	18.4% (7)	35.7% (10)	0.112	13.2% (10)	25.0% (7)	
On Bed						
Yes	7.9% (3)	17.9% (5)		13.2% (10)	17.9% (5)	0.545
No	92.1% (35)	82.1% (23)	0.22	86.8% (66)	82.1% (23)	
Any Where						
Yes	15.8% (6)	17.9% (5)		2.6% (2)	6.9% (2)	0.307
No	84.2% (32)	82.1% (23)	0.824	97.4% (74)	93.1% (27)	
How is it done						
Finger Tips	25.6% (22)	24.4% (21)		9.3% (8)	23.3% (20)	
Finger Pads	3.5% (3)	2.3%(2)	0.22	52.3% (45)	5.8% (5)	0.001
Palm	12.8% (11)	3.5% (3)		26.7%(23)	2.3% (2)	
Any How	2.3% (2)	2.3% (2)		0% (0)	1.2% (1)	
Do not perform	55.8%(48)	67.4%(58)		11.6%(10)	67.4%(58)	
Impression on BSE						
Yes	84.9% (73)	70.9% (61)		95.3% (82)	72.1% (62)	0.001
No	10.5% (9)	20.9% (18)	0.087	3.5% (3)	26.7% (23)	
Don't know	4.7% (4)	8.1% (7)		1.2% (1)	1.2% (1)	

* Chi- square as test of significance, p?0.05. ^Multiple responses apply.

Table-3: Comparison of baseline and post-intervention outcome variables in the study groups (n=172).

Variable	Intervention			Control		
	Baseline (n=86)	Post-intervention (n=86)	Percentage change	Baseline (n=86)	Post-intervention (n=86)	Percentage change
Can do BSE						
Yes	44.2%(38)	88.4%(76)	44.20%	32.6%(28)	32.6%(28)	0%
No	55.8%(48)	11.6%(10)	44.20%	67.4%(58)	67.4%(58)	0%
Frequency of BSE						
Weekly	26.7%(23)	8.1%(7)	18.60%	20.9%(18)	19.8%(17)	1.10%
Monthly	8.1%(7)	79.1%(68)	71%	7.0%(6)	11.6%(10)	4.60%
Yearly	9.3%(8)	1.2%(1)	8.10%	4.7%(4)	1.2%(1)	3.50%
Do not perform	55.8%(48)	11.6%(10)	44.20%	67.4%(58)	67.4%(58)	0%
Time of BSE						
A week before menses	1.2%(1)	18.6%(16)	17.40%	3.5%(3)	4.7%(4)	1.20%
During menses	1.2%(1)	11.6%(10)	10.40%	2.3%(2)	0%(0)	2.30%
A week after menses	2.3%(2)	31.4%(27)	29.10%	1.2%(1)	0%(0)	1.20%
Any time	39.5%(34)	26.7%(23)	12.80%	25.6%(22)	27.9%(24)	2.30%
Don't do	55.8%(48)	11.6%(10)	44.20%	67.4%(58)	67.4%(58)	0%
Performing BSE	(n=38)	(n=76)		(n=28)	(n=28)	
In front of mirror						
Yes	2.6%(1)	3.9% (3)	1.30%	0%(0)	3.6% (1)	3.60%
No	97.4%(37)	96.1%(73)	1.30%	100%(28)	96.4%(27)	3.60%
While bathing						
Yes	81.6%(31)	86.8%(66)	5.20%	64.3%(18)	75.0%(21)	10.70%
No	18.4%(7)	13.2%(10)	5.20%	35.7%(10)	25.0%(7)	10.70%
On bed						
Yes	7.9%(3)	13.2%(10)	5.30%	17.9%(5)	17.9%(5)	0%
No	92.1%(35)	86.8%(66)	5.30%	82.1%(23)	82.1%(23)	0%
Any where						
Yes	15.8%(6)	2.6%(2)	13.20%	17.9%(5)	6.9%(2)	11%
No	85.2%(32)	97.4%(74)	17.80%	82.1%(23)	93.1%(27)	11%
How is it done						
Finger tips	25.6%(22)	9.3%(8)	16.30%	24.4%(21)	23.3%(20)	1.10%
Finger pads	3.5%(3)	52.3%(45)	48.80%	2.3%(2)	5.8%(5)	3.50%
Palm	12.8%(11)	26.7%(23)	13.90%	3.5%(3)	2.3%(2)	1.20%
Any how	2.3%(2)	0%(0)	2.30%	2.3%(2)	1.2%(1)	1.10%
Don't do	55.8%(48)	11.6%(10)	44.20%	67.4%(58)	67.4%(58)	0%
BSE important for breast health						
Yes	84.9%(73)	95.3%(82)	10.40%	70.9%(61)	72.1%(62)	1.20%
No	10.5%(9)	3.5%(3)	7%	20.9%(18)	26.7%(23)	5.80%
Don't know	4.6%(4)	1.2%(1)	3.50%	8.1%(7)	1.2%(1)	6.90%

BSE: Breast self-examination.

groups. In terms of demographic data, the groups were similar (p>0.05) (Table-1).

At baseline, there were no significant differences between the groups regarding knowledge and practice related to BSE, but post-intervention, group A showed significant (p<0.001) improvement, while there was no change in group B (p>0.05). Differences between the groups were significant in all the recorded variables (Table-2).

Comparison between baseline and post-intervention characteristics and BSE practices was done in both the groups, indicating, among other things, that more women agreed that BSE was important for breast care in the intervention group compared to the control group (Table-3).

Being in the intervention group (p=0.001) and level of education (p=0.018) showed positive and negative associations with self-examination practice. Upon adjusting for age, marital status, family history and education, group A (p=0.001) remained significant, while the level of education (p=0.116) became non-significant (Table-4).

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Table-4: Association of demographic characteristics with the practice of breast self-examination in study participants (n=172).

Variables	Unadjusted HR (95% CI)	p-value*	Adjusted HR (95% CI)	p-value**
Group				
Non-intervention	1		1	
Intervention	2.714(1.760-4.186)	0.001	2.570(1.654-3.992)	0.001
Age				
20-30 years	1		1	
31-40years	1.294(0.716-2.340)	0.393	0.821(0.499-1.349)	0.436
40-60years	0.939(0.470-1.876)	0.859	1.021(0.477-2.186)	0.956
Education				
No-education	1		1	
Educated	0,573(0.361-0.910)	0.018	1.466(0.910-2.363)	0.116
Marital status				
Married	1		1	
Widow	1.520(0.706-3.273)	0.285	0.738(0.271-2.009)	0.552
Family history of Ca breast				
Positive	1		1	
Negative	1.102(0.670-1.812)	0.701	1.175(0.709-1.948)	0.532

*Unadjusted Cox Regression as test of significance.
** Adjusted Cox Regression as test of significance.
HR: Hazard ratio; CI: Confidence interval.

Discussion

Ca Breast is a global health problem with increasing incidence in Pakistan.[21] The current study was planned to evaluate the effects of health education intervention based on knowledge and attitude of participants regarding Ca breast and BSE and by monthly motivation through cell phone. The study revealed that after health education intervention, more participants performed BSE. This might have been an effect of enlightening intervention, educating participants about BSE and also reinforcing good healthy behaviours by contact via cell phone. Additionally, comparative analysis between the two groups demonstrated the efficiency of intervention in the intervention group by ameliorating the practices of BSE. The results were supported by the fact that participants in the intervention group performed BSE much more efficiently and regularly. The results are congruent with a study done in Iran which demonstrated that it is better to educate women via text messages in comparison to lectures and academic sessions. The participants of the text message group showed higher frequency of performing BSE than the lecture group.[22] Other studies have shown that mobile phone intervention has a significant impact on BSE practices.[23,24]

The current study focussed on educating women aged 20-60 years. Ca breast affecting pregnant or lactating women carries a dreadful prognosis.[1] Majority of our study participants were aged 20-30 years and were at a higher risk for developing Ca breast. The study population was chosen keeping this in mind. Similar target population were selected by earlier studies.[8-11,13-16]

Before the health education session, the practice of BSE was low in both the groups. Prior evidence shows that the performance of BSE was disappointing in Pakistan. A study in Karachi reported that only 26% of students performed BSE.[4] Another study in Lahore revealed unsatisfactory performance of BSE, with 87.9% participants not having practiced BSE ever.[25] In general, taking into account this available evidence, at the commencement of the study it was expected that the subjects would be unaware regarding Ca breast and BSE, and, hence. A study in Lahore showed that only19.3% women had BSE awareness.[26]

The current study showed that post-intervention BSE performance improved compared to the control group. This was primarily because they were not part of any health education intervention. The findings are consistent with a study in Nigeria which showed that after health education intervention, the knowledge and practice of BSE increased in the intervention group and stayed unaffected in the control group.[27] Similar finding was also found in a study done in Iran.[28]

In the current study, awareness amplified self-confidence of the participants and made them more aware about BSE practice in the intervention group.

Univariate analysis showed a significant negative association between BSE practice and education, which might be because most of the participants had received

education till primary level. Our results are comparable with earlier findings in Chinese women.[29] In contrast, some studies done in Pakistan and India revealed a significant positive association between education and BSE practices.[17,30] This might be due to our sample size which was small and comprised women from a single community.

The current study showed a non-significant negative relationship of BSE with age and marital status, which might be because majority of the participants in both groups were married and aged 20-30 years, with only a small proportion aged >30 years. This is similar to a study in Iran.[28] Previous health promotion intervention studies reported women having family history of Ca breast doing BSE more than those having no history of Ca breast in close relatives.[31,32] In the current study, the percentage of participants having a family history of Ca breast were low and showed non-significant positive association with the practice of BSE on unadjusted as well as adjusted analysis.

The current study has some limitations. Despite the monthly reminders and no losses to follow-up, time-varying information on exposure, outcome and covariate relationship was not considered through advanced statistical modelling. Furthermore, as it was conducted on a small scale due to limited resources, and more variations could have been seen with data collected from multiple hospitals with a longer follow-up time period. The data would also be more pronounced if comparison was done between public and private tertiary care hospitals across Karachi.

Conclusion

At baseline, the participants had poor knowledge, negative attitude towards BSE and poor performance. Reasons for not practising BSE were lack of knowledge about how to self-examine a breast. Health promotion intervention proved to be effective and upgraded the knowledge and self-confidence of the participants and enabled them to do BSE monthly.

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