Breast Cancer Screening Awareness in Educated Pakistani Women.

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Abstract:

Introduction: Breast cancer is the abnormal accumulation of breast cells, and the first symptom is typically a painless breast lump, though other symptoms, such as a change in size or shape, dimpling, redness, pitting, and the appearance of the nipple, or a change in the discharge from the nipple, may also be present.

Objective: To assess women's familiarity with breast screening practices and disseminate information about impact of early detection with favourable outcome.

Methodology: An online cross-sectional study was conducted and non-probability convenient sampling was used. Among 471 participants, complete data of 408 participants was available and used for the purpose of the study. Ethical considerations were followed and study approved by the ethical research committee of Bahria University Karachi. SPSS version 26 was used for the data analysis.

Results: The findings showed that participants had inadequate understanding about breast cancer screening. Women with advanced degrees fared no better in terms of knowledge than their less educated counterparts. Women with a strong family history of breast cancer found to have high levels of awareness about the disease.

Conclusion: The early diagnosis and treatment are key to reducing the risk of breast cancer progressing to a more advance stage. On the other hand, women at risk have limited knowledge about breast cancer that surely has detrimental effects on the diagnosis and management and adding increased mortality.

Keywords: Breast cancer, KAP, educated women, Breast Screening.

Introduction:

Breast cancer is the abnormal accumulation of breast cells, and the first symptom is typically a painless breast lump, though other symptoms, such as a change in size or shape, dimpling, redness, pitting, and the appearance of the nipple, or a change in the discharge from the nipple, may also be present.

For women worldwide, breast cancer is the most often diagnosed form of the disease and a major source of both death and disability.[1-3] Screening for breast cancer can save lives by diagnosing the illness early and allowing for prompt treatment, which dramatically decreases the risk of complications.[4] High mortality rate is primarily because of delayed diagnosis of breast cancer which is a result of inadequate awareness and education about the disease particularly among women in developing nations.[2] According to the Dow Cancer Registry; among prevalence of various types of cancers reported at Karachi during last 09 years, the highest reported were cases of breast cancer. This emphasizes the impact of the problem.[5] Breast cancer screening serve the purpose of finding the problem at very early stage, when curative management is possible. It is therefore vital to educate the vulnerable population about different options that includes breast self-examination, clinical breast examination and mammography. Breast self-examination without any cost, can be perform by women themselves; while clinical breast examination and mammography requires hospital visits, advanced machinery and technical expertise.

In regards to breast cancer screening knowledge amongst Pakistani women, standards of information about the topic were subpar and of inadequate standards amongst women.[6] Early identification of breast cancer improves treatment effectiveness resulting in a better outcome. The purpose of current study is to determine the depth of knowledge about breast screening among women and at the same time to provide awareness for advantages of early detection of the problem. the prevention of disease exacerbation.

Objectives:

To assess women's familiarity with screening practices and disseminate information about impact of early detection with favorable outcome.

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Methodology:

This cross-sectional study after approval from Institutional review board of Bahria University Karachi Campus was conducted between February 2022 to September 2022. Non-probability convenient sampling was used to recruit patients via an online survey that was self-administered through Google forms.

Response from 380 participants was recorded using structured questionnaire. We included women with age ranging from 20 - 60 years of age who can read and understand English\Urdu. Female having breast cancer and or receiving treatment for breast cancer were excluded. We also excluded females under investigation (mammography, FNAC) for breast lesions suspicious of cancer.

The sample size was calculated using the Epi-info version 7.2.5, considering prevalence of breast cancer in women of 53.2%[7] with margin of error at 5%. To provide a 95% confidence level, a sample size of 380 was determined. In order to compensate for dropouts and/or missing data, an additional 5- 10% of respondents were added to the final tally.

Data Collection Procedure:

Information was gathered using an English and Urdu closed-ended online survey. The poll started out with an "informed consent" portion. There were a total of 33 questions; 14 were designed to test actual knowledge while the rest gathered information on demographics and other variables that are expected to have impact on the results. The purpose of the study was to determine how well educated and screened for breast cancer women currently are. The questionnaire is based on research in the relevant literature. [8-15]

Data Analysis was as performed using SPSS version 26. The Chi-square test was used to analyse the relationship between individual characteristics and background information such as age, gender, and level of education. This association's direction, i.e. whether it was positive or negative, was determined using Spearman's rank order correlation. The extent of that connection was calculated using multiple regression. When all else failed, an independent T test was used to evaluate the disparity between the average test results of various demographics.

Results:

A total of 471 responses were collected. Taking the exclusion criteria into account, 35 (7.4%) respondents were less than 20 years of age. 30 (6.4%) respondents were found to be undergoing Breast screening; while 2 (0.4%) participants mentioned that they are under treatment or had undergone treatment for breast cancer. This left us with a total of 408 responses. Among these, 365 (89.5%) participants were between the age of 20-30 years. 341 (83.6%) women were unmarried, while 365 (89.5%) had no children. Among all more than 50% (60.5%, n=247) had studied\were studying at undergraduate level. Regarding the occupation of the participants, 269 (65.9%) were students. In majority of the participants (76%, n=310) there was no family history of breast cancer. Demographic information is shown in table no 1.

Table No 1: Demographic Characteristics of the Population under Study. (n= 408)

		Number (N)	Percent %)
Age (years)	20-30	365	89.5
	31-40	24	5.9
	41-50	13	3.2
	51-60	6	1.5
Marital status	Unmarried	341	83.6
	Married	64	15.7
	Widowed \ Divorced	3	0.7
Children	none	365	89.5
	1 child	11	2.7
	2	10	2.5
	3	14	3.4
	4	5	1.2
	5	2	0.5
	> 5 children	1	0.2
Education	Intermediate	39	9.6
	Undergraduate	247	60.5
	Graduate	87	21.3
	Postgraduate	35	8.6
Occupation	Housewife	26	6.4
	Teacher	41	10
	Student	269	65.9
	Business	9	2.2
	Out of work	32	7.8
	Other	31	7.6
Previous Screening	Yes	0	0
	No	408	100
Previous treatment	Yes	0	0
	No	408	100
Family history	Yes	81	19.9
	No	310	76
	Not Sure	17	4.2

Analysis:

The data was analysed using SPSS version 26. Participants' knowledge was evaluated using a questionnaire consisting of 14 questions. These questions probed respondents' familiarity with breast cancer as a disease and with breast screening by self-examination, clinical breast examination, and mammography. Overall score of knowledge was 28, where ≤22 was considered "inadequate", 23≤25 was considered "satisfactory", 26≤28 was considered "excellent". The 6 other questions were to assess the attitudes of participants towards breast cancer as a disease and their desire to learn more about its screening practices. Participants were also scored in this category. Overall score for attitude towards breast cancer screening practices was 15, where ≤9 was considered "poor", 10≤12 was considered "satisfactory", 13≤15 was considered "good". The chi-square test was used to determine corelation between breast cancer awareness, education, and family history. 132 participants (32.4%) who were at ≤undergraduate level i.e., those who had only completed matric and O/A Level, had "inadequate" knowledge scores, (30.9%,n= 126 had) "satisfactory" knowledge scores & (6.9%, n=28) had "excellent" knowledge scores.

Participants who were >undergraduate level (18.1%, n=74) i.e., those who had completed undergraduate, graduate and post graduate education, had "inadequate" knowledge scores, (10.3%, n=42) had "satisfactory" knowledge scores, (1.5%, n=6) had "excellent" knowledge scores. After computation we found an association between screening.

knowledge and education level (p=0.019); (7.4%, n=30) those cases who had a previous history of CA breast showed "inadequate" knowledge scores, (10.5%, n=43) had "satisfactory" knowledge scores and (2%, n=8) of the same group had "excellent knowledge scores.

Participants who did not have family history of breast cancer (43.1%, n=176) had "inadequate" knowledge scores, (30.6%, n=125) had "satisfactory" knowledge scores and (6.4%, n=26) of the same group had "excellent" knowledge scores. After computation and analysed we reported a significant association of screening knowledge and previous history of breast cancer (p=0.025). 94 (23%) participants who had poor attitude towards learning about breast cancer screening awareness had "inadequate" knowledge scores, (26.2%,n=107) had "satisfactory" knowledge scores and (1.2%,n=5) had "excellent knowledge scores.

Participants who had satisfactory attitude towards learning (10.3%,n=42) had "inadequate" knowledge scores, (24.8%, n=101) had "satisfactory" knowledge scores and (6.1%, n=25) had "excellent" knowledge scores. Participants who had good attitude towards learning (1.2%, n=5) had "inadequate" knowledge scores, (5.4%, n=22) had "satisfactory" knowledge scores and (1.7%, n=7) had "excellent" knowledge scores. After computation we also found an association between screening knowledge and previous history of breast cancer (p=0.001) * (*1 cell had expected count <5 (3.08). Results of chi square test of independence are shown in table 2.

Table No 2: Frequencies and chi square results for knowledge of breast cancer screening with education, family history and attitude towards learning.

Knowledge of Breast Cancer Screening								
		Poor		Satisfactory		Good		χ^2
		n	%	n	%	n	%	
Education	≤ undergraduate	132	32.40	126	30.90	28	6.90	7.924*
	> undergraduate	74	18.10	42	10.30	6	1.50	
Family History	no	176	43.10	125	30.60	26	6.40	7.393**
	yes	30	7.40	43	10.50	8	2.00	
Attitude towards learning	poor	94	23.00	42	10.30	5	1.20	38.435***
	satisfactory	107	26.20	101	24.80	22	5.40	
	good	5	1.20	25	6.10	7	1.70	
(*p = 0.019 sig /2 df) (**p = 0.025 sig /2 df) (***p = 0.001 sig /4 df)								

Note: There is a strong correlation between education and awareness of breast cancer screening, as shown in Table 2 of the article. The chi-square test of independence yielded a value of 2 (2, N = 408) = 7.924, p = 0.019. The phi-coefficient value of 0.139 suggested a negligible impact size. The number of family members who have had breast cancer was significantly correlated with how much the participants knew about breast cancer screening (2 (2, N = 408) = 7.393, p = 0.025). With a phi- coefficient of 0.135, the size of the effect was quite minor. 2 (4, N = 408) = 38.435, p = 0.000, indicating a highly significant relationship between breast cancer screening knowledge and a willingness to learn. A minor effect size was suggested by a phi-coefficient value of 0.307.

Secondly to see whether direction of association was positive or negative, Spearman's rank order correlation was used between knowledge scores with education level, family history and attitude towards learning. After computation we observed that knowledge scores negatively correlate with education level (-0.139, p=0.005) and positively correlate with family history (0.126, p=0.011) and attitude towards learning (0.294, p=0.001) as shown in table 3.

Table No 3: Spearman rank order correlations of knowledge of breast cancer screening with education, family history and attitude towards learning.

	Knowledge	Education	Family history	Attitude towards learning
Knowledge	-	-.139 *	.126**	.294***
Education	-.139 *	-	-	-
Family history	.126**	-	-	-
Attitude towards learning	.294***	-	-	-

*Correlation is significant at 0.005 (2-tailed),
** Correlation is significant at 0.011 (2-tailed),
*** Correlation is significant at 0.001 (2-tailed).

Note: In Table 3, we see how the spearman rank order correlation is applied to investigate how exposure to breast cancer runs in families, how much schooling one has had, and how one feels about learning. A favorable and statistically significant relationship was found between education and ancestry (rs = 0.126, n = 408, p = 0.011). Attitudes towards learning were positively correlated with both levels of expertise (rs = 0.294, n = 408, p 0.001). Knowledge and level of schooling were significantly inversely related (rs = -0.139, n = 408, p 0.005).

Thirdly to determine the predictive effect of education level, family history of breast cancer and attitude towards learning about breast cancer screening on knowledge scores multiple regression was used. All three variables added were statistically significant to the prediction, p<0.05. For knowledge score R2 value of 0.172 explains that the predictors account for 17.2% of the variance outcome with F (3,404) = 27.957, p < 0.0001 as shown in table 4.

Table No 4: Regression coefficients of education, family history of breast cancer and attitude towards learning on knowledge scores regrading breast cancer screening.

	B	SE	t	p	95% CI
Constant	19.528	0.653	29.901	0.000	[18.244, 20.811]
Education	-1.014	0.275	-3.683	0.000	[-1.555, -0.473]
Family history	1.031	0.316	3.266	0.001	[0.41, 1.651]
Attitude towards learning	1.544	0.207	7.463	0.000	[1.137, 1.95]

Table 4 shows the impact of education, family history of breast cancer and attitude towards learning on knowledge scores regarding breast cancer screening. The R^2 value of .172 revealed that the predictors explained 17.2% of the variance in the outcome variable with F (3,404) = 27.957, p<.0001. The findings revealed that education negatively predicted knowledge scores (β = -.167, p<.0001), family history of breast cancer positively predicted knowledge scores (β = .148, p< .001) and good attitude toward learning positively predicted knowledge scores (β = .338, p< .0001).

To conclude, we compared the average differences in knowledge scores between the two groups based on age, education, and history of breast cancer in the family using an independent sample T test. Findings showed that participants who were ≤undergraduate had significantly (p = 0.000) higher knowledge scores (M=22.48, SD=2.691) compared to participants who were >undergraduate (M=21.35, SD=2.849).

Participants' mean knowledge scores varied significantly (p = 0.000) by profession. Knowledge scores (M=22.52, SD=2.651) were higher for students than for those who were employed (M=21.41, SD=2.896). Significant (p = 0.002) mean differences in knowledge scores were noticed in the participants with family history of breast cancer as they scored higher (M=23, SD=2.382) than those participants who did not have any family history (M=21.93, SD=2.837).Finally, a mean difference in knowledge scores was noticed in the participants on the base of age. Participants who were ≤30 years old had higher knowledge scores (M=22.2, SD=2.772) compared to participants who were >30 years old (M=21.65, SD=2.861). But this mean difference was proven insignificant (p = 0.224).

Table No 5: Mean comparison of knowledge scores between different groups of age, education, occupation, and family history.

Knowledge Score	Age						
	≤30 years		> 30 Years				
	M	SD	M	SD	*t (406)*	*p*	*Cohen's d*
	22.2	2.772	21.65	2.861	1.218	0.224	0.195
Knowledge Score	Education						
	≤ Undergraduate		> Undergraduate				
	22.48	2.691	2.849	21.35	3.792	0.000	0.407
Knowledge Score	Occupation						
	Student		Working				
	22.52	2.651	21.41	2.896	3.871	0.000	0.302
Knowledge Score	Family history of breast cancer						
	Yes		No				
	23	2.382	21.93	2.837	3.141	0.002	0.408

Table 5 shows that there are statistically significant variations in the mean knowledge scores across groups. Participants with degrees greater than an undergraduate degree (M=22.48, SD=2.691) fared better on the knowledge test than those with degrees equivalent to or higher than an undergraduate degree (M=21.35, SD=2.849). Cohen's d = 0.407, therefore the extent of the impact was rather modest. In terms of average knowledge scores, there were statistically significant differences (t (406) = 3.871, p = 0.000). Results indicated that students had higher knowledge scores (M=22.52, SD=2.651) than those in the working population (M=21.41, SD=2.896). Effect magnitude was modest, as measured by Cohen's d (0.302). T (406) = 3.141, p = 0.002 indicated that there were statistically significant variations in the mean scores for knowledge. Participants with a family history of breast cancer had higher mean knowledge scores (M=23, SD=2.382) than those without a family history (M=21.93, SD=2.837). Cohen's d Was 0.408, hence the impact magnitude was rather modest. Last but not least, the mean differences in test scores for knowledge were not statistically significant (t (406) = 1.218, p = 0.244). Results indicated that respondents younger than 30 years old scored better on the knowledge test than those older than 30 years old did (M=22.2, SD=2.772 vs. M=21.65, SD=2.861). With a Cohen's d of only 0.195, the size of the effect was rather modest.

Discussion:

The purpose of this study was to investigate the levels of knowledge regarding breast cancer screening held by Pakistani women. We found that women with higher levels of education, such as post-graduate and graduate degrees, had lower knowledge scores when compared to women with lesser levels of education, such as FSC and O/A levels, and therefore women with younger ages (less than 30 years old).

It could be thought of as common knowledge that attaining higher education may help people be better aware of their health and the risk factors for common diseases like breast cancer however this can't be seen in our study. This means that women who have higher education levels and subsequently higher ages a higher chance of developing breast cancer. This is in agreement with published research[16, 17] that also showed the same comparisons among highly educated Asian American women and those who hadn't completed high school. However, we didn't take into account possible confounding factors e.g. hormone replacement therapies, BMI, or even perhaps perceptions of health in the different groups that may play a role in the development of breast cancer.[18] An early understanding of risk factors is imperative for catching breast cancer earlier than when it's too late.

One of the most significant risk factors for getting breast cancer is a family history of the disease. [19] In agreement with the following study [20],which found that patients with a first-degree family history of breast cancer had a higher number of performed mammograms, our findings suggest that people with a family history of breast cancer have a higher level of knowledge about the disease than those without a family history. Another study [21] found the same thing: a positive family history of breast cancer in either the mother or the sister influenced the participant's decision to have repeat mammography. The similar associations between family history and fear of breast cancer are shown in a study by Subramanian P et al. [22]

Lack of awareness regarding breast cancer screening results in ineffective measures.[23,24] Breast cancer education programmes that reach large numbers of people can assist women make better screening decisions; for instance, we can explain that incorrect methods for BSE can lead to missed opportunities to detect breast cancer

at an early stage.[25]

Conclusion:

The early diagnosis and treatment are key to reducing the risk of breast cancer progressing to a more advance stage. On the other hand, women at risk have limited knowledge about breast cancer that surely has detrimental effects on the diagnosis and management and adding increased mortality.

Recommendations:

A larger sample size is much recommended for future studies. There needs to be educational intervention at the primary education level and at higher education levels as well as evident by the study that higher education groups didn't have adequate knowledge regarding breast cancer screening. This can be since the older generations are not much privy with social media. Higher knowledge scores in people of lower education level can be attributed to social media implying its importance in disseminating important information of BSE, CBE and mammography, more research needs to be done on this however. There should be targeted media campaigns in TV channels towards older generations of women who are much more at risk to the development of breast cancer.

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