

Awareness, knowledge and attitude towards breast cancer, breast screening and early detection techniques among women in Pakistan

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Abstract

Objective: To document the knowledge and attitudes of women towards breast cancer, breast screening and early detection techniques.

Methods: This cross-sectional survey was conducted from December 2015 to May 2016 in Karachi and Islamabad, Pakistan, and comprised women aged above 18 years. The survey used breast cancer inventory as a research instrument after piloting and validation. SPSS 20 was used for data analysis.

Results: Of the 1,304 respondents, 948(72.7%) were single, 1,082(83%) belonged to the 18-30 age group, 800(61.3%) had Urdu-speaking ethnicity and 794(60.9%) were educated. The prevalence of breast cancer in family was 226(17.33%). Besides, 446(34.2%) had low knowledge regarding the subject, 646(49.5%) appeared welcoming to the idea of breast screening, 1,008(77.3%) indicated their discomfort in discussing the topic, whereas 1,080(82.8%) preferred a female physician.

Conclusion: There was a dearth of knowledge regarding breast cancer among the participants.

Keywords: Breast cancer, Pakistan, Women, Awareness, Knowledge, Attitudes. (JPMA 68: 576; 2018)

Introduction

Breast cancer (BC) is the most commonly occurring cancer in women and has second-highest mortality rate in the United States.¹ It has second-highest rate in the global cancer incidence.² In Africa, breast cancer in Nigeria has second-highest mortality rate.³ Similarly in Asia, Oman has the second-highest mortality rate of breast cancer and accounts for 32% of the total cancers in women with an incidence rate of 45 per 100,000 of population mostly in later stages, i.e. III and IV. In the same way, breast cancer in Iran accounts for 25% of total cancers in women.^{2,4} Hence, it is highly prevalent in both the developed and developing countries. Low knowledge and cultural barriers are considered as major contributors to its presentation in later stages.²

Pakistan also bears a huge disease burden of cancer. It has the highest rate of breast cancer in Asia. Most commonly occurring cancer in women is breast cancer. Figures from the World Health Organisation (WHO) reported a death rate of 26.76% from breast cancer in Pakistan. It is ranked

as the 10th major cause of death in the country with an estimate of 16,000 deaths per year.⁵ Moreover, Pakistan lacks a national healthcare agency to collect figures and keep track of cancer cases.⁶ Hence, the Karachi Cancer Registry (KCR), which was the only recognised population-based registry before the establishment of Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH & RC), was responsible for registering cancer cases in the district south of the Karachi division that encompasses only 1% of Pakistan's total population. The KCR reported 34.6% of the total cancers occurring in women to be breast cancer. The timeline of the data reported by the KCR was 1995 to 1997. Furthermore, the incidence of breast cancer in Karachi was reported at 69.1% per 100,000 people.⁷ A report published recently by SKMCH & RC highlighted almost half (45.9%) of the total cancer among females to be of breast origin. The report published data from December 1995 to December 2009. Furthermore, it reported that 1 in 9 women in Pakistan will develop breast cancer later in her life.^{8,9} Hence, in light of the two credible sources, it can be said that the incidence of breast cancer is quite high in Pakistan.

Another predicament that results in high mortality related to breast cancer in Pakistan is the fact that presentation of breast cancer to a physician is quite late. In a study conducted by Ahmed et al.,¹⁰ it was observed that along with high incidence rate, breast cancer presentation and diagnosis was in stage III and IV, i.e. almost 50% of total

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cases, which laments the fact that late stage presentation of breast cancers in women is quite frequent.¹⁰ This occurrence can be attributed to women's lack of knowledge regarding the disease as well as self-screening methods to diagnose breast cancer at home. Moreover, a poor health care system devoid of facilities and funds renders patients to consult traditional healers instead of healthcare professionals for treatment. Hence, a lot of valuable time is wasted in due course and the cancer transcends from an initially treatable condition to an incurable life threatening disease for the patient.⁶

There have been a number of studies conducted in different parts of Pakistan, assessing the level of women's knowledge regarding breast cancer. Almost all studies reported that the knowledge is not adequate and most of the females never had breast screening or self-exam. Moreover, females appeared unable to interpret the finding of a lump in breast. However, the attitude of Pakistani women at times appeared positive and they asked for more awareness regarding the subject.^{11,12} Some of the factors that add to this knowledge debacle are cultural norms. Conservative societal and religious beliefs do not allow people to talk about breast cancer publicly.¹³ The topic is considered a taboo in the society and this has resulted in increased mortality among Pakistani women. The society is not welcoming to discuss breast cancer openly. According to a WHO official in Pakistan, it is not easy to use the word 'breast' in public sometimes, and the coy term 'cancer of woman' is the best way to refer to breast cancer.¹⁴ Furthermore, the issue of gender is also a cause of concern for Pakistani women as they are reluctant to go to the male consultant for an opinion.^{10,15}

To sum up, lack of national data on breast cancer, an incompetent health care system and societal taboos are major issues to tackle when dealing with breast cancer in Pakistan. It is believed that knowledge about the subject can not only provide early diagnosis and treatment but also facilitate as well as empower women regarding self-screening. This will help in early treatment of disease with more chance of success.¹⁰

Karachi has people from all ethnicities in a single urban setting. Islamabad is also composed of highly educated individuals from all ethnicities of Pakistan. The literacy rate of Karachi is relatively high (79%) and second highest after Islamabad (82%).¹⁶ Till date, only a sole preliminary study by Subani et al.¹⁷ has been conducted in Karachi to document the knowledge, attitude and practice regarding breast cancer in urban women. The study was on a very small scale and was conducted on a very small stratum of population which was not representative. The questionnaire was not comprehensible for whole

population and their response was excluded. The questionnaire used for the study had limitations of suggestive nature of questions. Though the study reported low knowledge among urban population, the investigators believed more comprehensive study was needed.¹⁷

The current study was planned to document the knowledge and attitudes of Pakistani women towards breast cancer, breast screening and early detection techniques. Unlike the previous study, our study used a specially developed pretested and validated research instrument, i.e. breast cancer inventory (BCI), to extract information from presumably conservative respondents and graded knowledge in terms of scores.¹⁸

Subjects and Methods

This cross-sectional study was carried out from December 2015 to May 2016 in Islamabad and Karachi, and comprised women aged above 18 years. Both cities are inhabited by all ethnicities of the country's population, making them ideal for conducting a study whose findings can be generalised.¹⁹ Probability sampling technique was applied to the study. Participants were approached on social networking websites, homes, community centres, shopping malls and corporate organisations. Males, females aged below 18 years and foreign nationals were excluded from the study.

The sample size was calculated using the official provisional data of the 2017 population and housing census released by the Pakistan Bureau of Statistics (PBS). The report documented a figure of 7,610,365 in Karachi and 950,727 in Islamabad for female population.²⁰ This figure was identified as total female population of Karachi and Islamabad. The sample size was calculated at 95% confidence interval (CI) using Raosoft® online sample size calculator.²¹

Stratified sampling procedure was employed. The female population was divided in to three strata, i.e. students, employed or working, and unemployed or household. After the distribution, students were approached in universities and higher secondary colleges. In addition, they were also accessed via social networking websites. The employed females were accessed via professional networking websites and employee directory displayed in website of various firms. The unemployed or household females were approached by the help of volunteers. Moreover, the students and employed females were also encouraged to seek responses from the women in their close proximity such as family, friends, etc.

Table-1: Component Matrix.

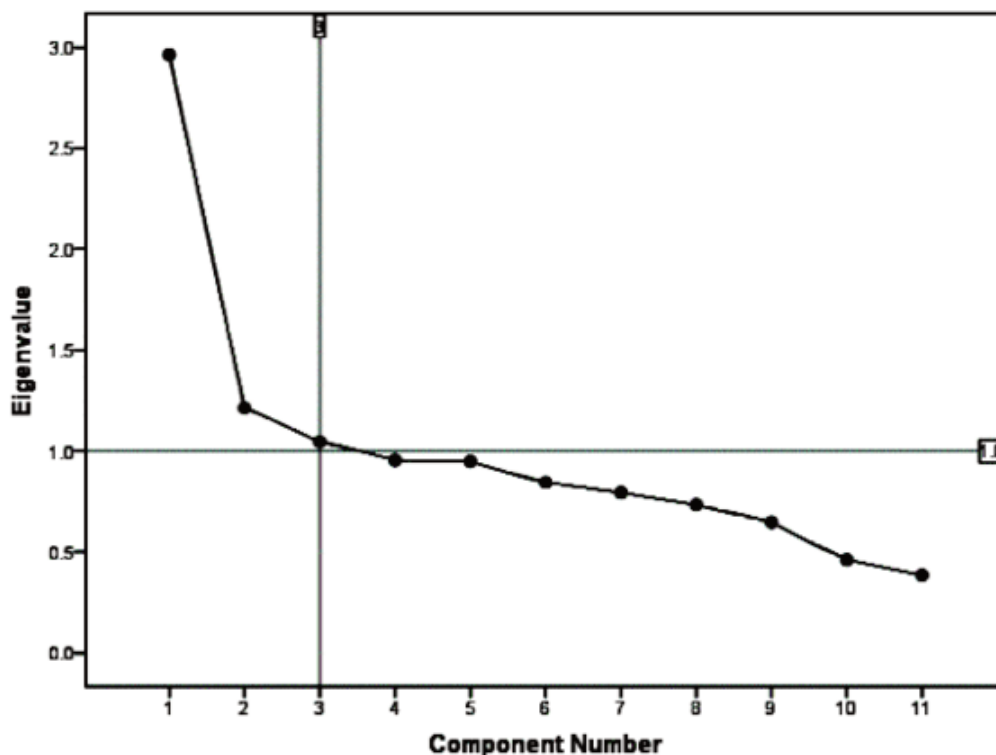
Variables	Component		
	1	2	3
Did you ever hear about the breast cancer?	0.344		
Are you aware of- screening programme for breast cancer?	0.664		
Have you heard about breast self examination?	0.725		
Did you ever perform breast self examination at home?	0.667		
Are you aware of treatment of breast cancer?	0.654		
Have you heard about mammography?	0.778		
Did you ever undergo breast screening at hospital or clinic?		0.587	
Can breast cancer spread to other parts of body?		0.405	
Does overweight and obesity increase risk?		0.590	
Most common symptom of breast cancer			0.554
Most common risk factors of breast cancer			0.473

The research instrument consisted of a specially developed BCI questionnaire in English and Urdu language.¹⁸ It contained open and close-ended questions related to the demographics of the respondent, knowledge and awareness regarding breast cancer and early detection techniques, and assessed attitudes towards it. The knowledge component had scores for each of the 11 items. Responses were graded in terms of scores (0 or 1) and a cumulative score was obtained by adding all 11 individual scores. Scores were interpreted as: very low knowledge (0-7); low knowledge (8-13);

adequate knowledge (14-18); and excellent knowledge (19-22). In some cases, research volunteers helped respondents fill in questionnaires. The questionnaire was piloted on 40 respondents and was validated by experts. It took an average of 12 minutes to fill a response. The team of experts included clinical pharmacists, consultants, sociology students, university professors and health care professionals. The statistical validation of the BCI included Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy that reported a value of 0.719, and Bartlett's test of sphericity that was significant ($p < 0.05$). The exploratory factor analysis (EFA) was employed using Principle Component Analysis with Varimax rotation that extracted three components (Table-1). The three components extracted had eigen values more than 1.0 (Figure-1).

The EFA was followed by partial confirmatory factor analysis (PCFA) using maximum likelihood analysis with direct Oblimin rotation and the number of factors was fixed at 3. It reported a KMO value of 0.774 and significant Bartlett's test chi-square value of 2,116.25 (< 0.001). The goodness-of-fit chi-square test was significant (< 0.001) and the value was reported at 118.4 with 25 degrees of freedom. Using the values obtained, the incremental close fit indices were calculated to check the model fit. Normed fit index (NFI), comparative fit index (CFI) and

Tucker-Lewis index (TLI) were calculated. The values for NFI and CFI were 0.949 and 0.955. The value of TLI was reported at 0.944. The values indicated a good model fit. The root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR) were also calculated and reported at 0.053 and 0.028, respectively (< 0.06). The values indicated a good model fit for three-factor solution. The non-salient factor loadings were normally distributed with a mean (\bar{X}) value of 0.02 ± 0.1 . Hence, the factor analysis was confirmed and validated in Pakistani female population (Figure-2).

**Figure-1:** Scree plot.

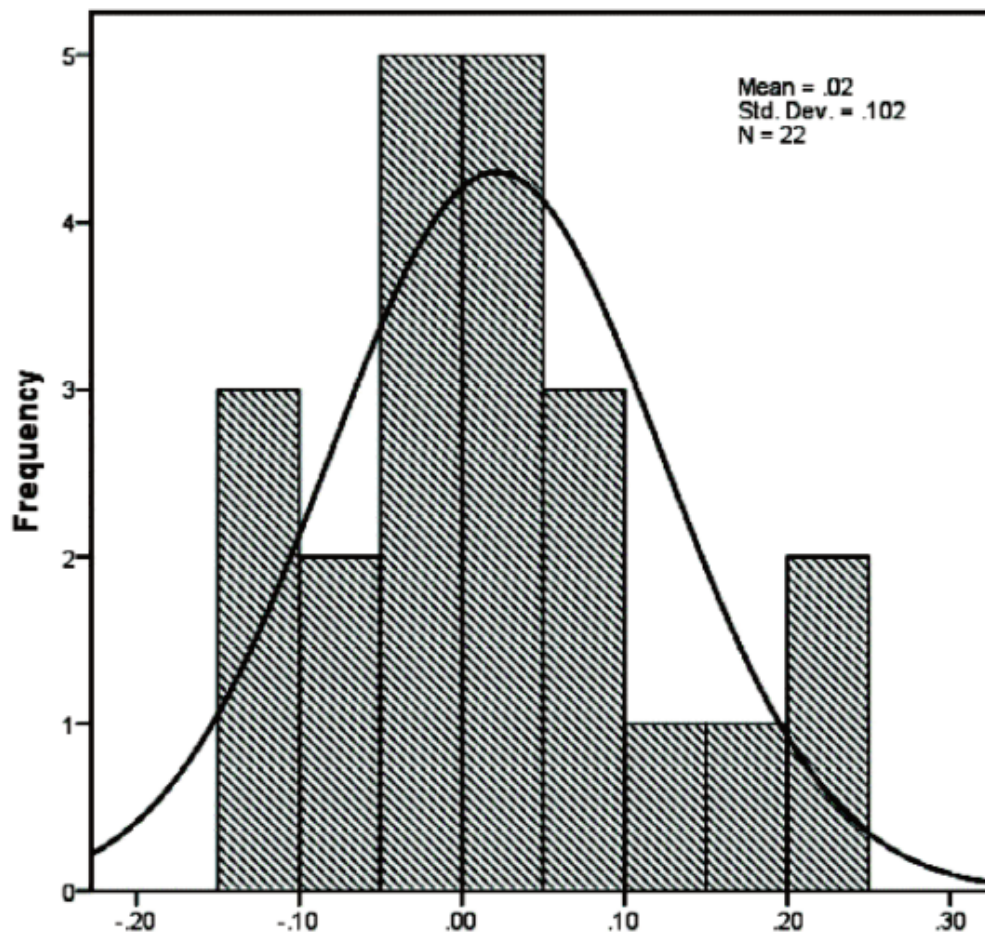


Figure-2: Histogram showing normal distribution of non-salient factor loadings.

Of them, 3(0.23%) were excluded, hence 1,304(99.77%) responses were analysed. Of these respondents, 915(70.2%) were from Karachi and 389(29.8%) from Islamabad (Figure-3).

Besides, 1,082(83%) were aged 18-30 years, 948(72.7%) were single, 334(25.6%) were married and 204(15.6%) married participants had 1-5 children. Moreover, 800(61.3%) respondents were Urdu-speaking. Also, 794(60.9%) respondents were graduates while 818(62.7%) identified themselves as students. Furthermore, 708(54.3%) participants had a monthly family income of more than 50,000 Pakistani rupees (PKR) per month, i.e. 476.99 US dollars (USD) (1 USD = 104.83 PKR) (Table-2).

The prevalence of breast cancer in the family was reported at 226(17.33%).

The data was analysed using SPSS 20. Central tendency, cross-tabulation and chi-square (X²) test was employed on the data. Epidemiological data was analysed by Medcalc[®].²² Continuous variables were expressed as means and standard deviation (SD) and categorical variables as frequency and percentages (%), with corresponding 'p'-values. A significance level (α) was determined at 0.05.

The patients were briefed about the study and its significance. Informed consent was obtained from the participants. Ethical approval was obtained by the Department of Oncology, Central Hospital and the institutional review committee of Clifton Hospital, Karachi.¹⁸

Results

Of the 1,311 subjects, 1,307(99.6%) responded.

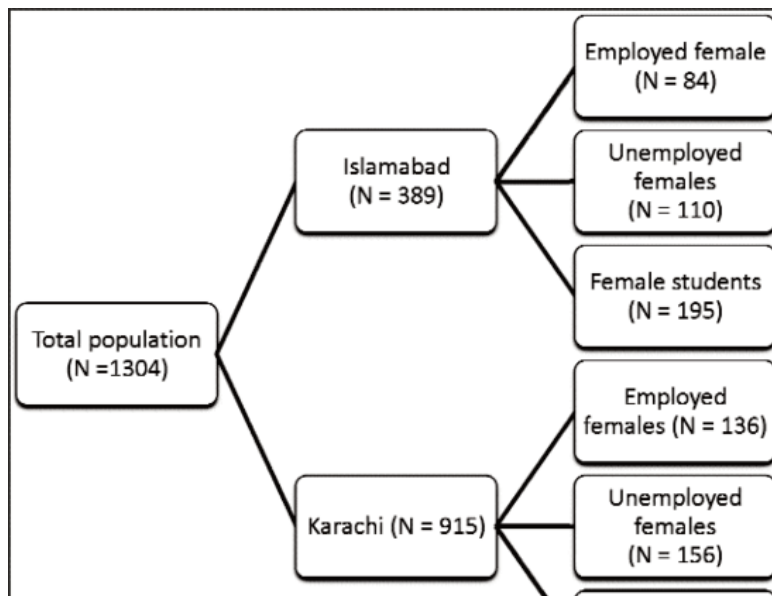


Figure-3: Sampling procedure.

Table-2: Demographic information.

Demographics (N = 1304)	Frequency (%)
Age	
Between 18-30 years	1082 (83)
Between 31-40 years	142 (10.9)
Between 41-50 years	66 (5.1)
Between 51-60 years	10 (0.8)
Above 60 years	4 (0.3)
Marital status	
Single	948 (72.7)
Married	334 (25.6)
Divorced	16 (1.2)
Widowed	6 (0.5)
Ethnicity	
Sindhi	100 (7.7)
Baloch	48 (3.7)
Punjabi	190 (14.6)
Pushtun	84 (6.4)
Urdu speakers	800 (61.3)
Saraiki	8 (0.6)
Kashmiri	22 (1.7)
Others	52 (4)
Number of children	
Not applicable (if single)	948 (72.7)
Between 1 to 5 children	204 (15.6)
More than 5 children	44 (3.4)
None	108 (8.3)
Education	
Uneducated (Less than primary education)	34 (2.6)
Matriculation (Secondary school)	68 (5.2)
Intermediate (Higher secondary school)	188 (14.4)
Graduation (Bachelor degree)	794 (60.9)
Post Graduation	220 (16.9)
Occupation	
Government employee	28 (2.1)
Student	818 (62.7)
House hold (no occupation)	194 (14.9)
Private sector	192 (14.7)
Others	72 (5.5)
Family income	
Less than 10,000 PKR per month	78 (6)
Between 10,000 to 25,000 PKR per month	174 (13.3)
More than 25,000 PKR per month	344 (26.4)
More than 50,000 PKR per month	708 (54.3)

PKR: Pakistani rupees.

For the community, the prevalence was reported at 768(58.9%). Besides, 1,228(94.2%) respondents indicated their awareness about BC. However, only 654(50.2%) were aware of mammography. Moreover, 720(55.2%) participants were aware of screening techniques for BC while 688(52.8%) were aware of its treatment. The awareness regarding physical self-examination for BC was slightly higher, i.e. 808(62%). Also, 448(34.4%)

Table-3: Summary awareness regarding breast cancer and its early detection techniques.

Awareness of breast cancer (N = 1304)	Frequency (%)
Awareness regarding breast cancer	
Yes I am aware of it	1228 (94.2)
My awareness is not adequate / not aware	76 (5.8)
Awareness regarding mammography	
Yes I am aware of it	654 (50.2)
My awareness is not adequate	638 (48.9)
Not aware	12 (0.9)
Awareness regarding screening for breast cancer	
Yes I am aware of it	720 (55.2)
My awareness is not adequate / not aware	584 (44.8)
Awareness regarding physical self examination for breast cancer	
Yes I am aware of it	808 (62)
My awareness is not adequate / not aware	496 (38)
Awareness regarding breast cancer treatment	
Yes I am aware of it	688 (52.8)
My awareness is not adequate / not aware	616 (47.2)
Source of information regarding breast cancer	
Friends, acquaintances, colleagues and co-workers	146 (11.2)
Newspapers, literature	86 (6.6)
Internet and electronic media	448 (34.4)
Health care professionals	310 (23.8)
Family and relatives	184 (14.1)
Other sources	130 (10)

respondents banked upon internet and electronic media for seeking information, followed by 310(23.8%) participants seeking information from healthcare providers (Table-3).

Furthermore, 1,228(94.2%) respondents gave correct answer when they were asked about breast cancer. Besides, 488(37.4%) indicated 'breast lumps' as most the common symptom of BC, followed 274(21%) women who mentioned 'pain in breast'. Besides, 720(55.2%) women seemed to know about BC screening. Similarly, 808(62%) appeared to know about the physical self-screening and 654(50.2%) about mammography. And 246(18.9%) respondents highlighted familial history as a risk factor. However, 822(63%) participants did not know about risk factors for BC. Also, 688(52.8%) women knew about the treatment of BC and 890(68.3%) knew that BC can spread (metastasize) to other parts of body. Conversely, 712(54.6%) indicated obesity did not increase the risk of BC and 902(69.2%) believed physical self-screening for BC could not be done. However, 402(30.8%) women knew how to perform physical self-exam for BC at home (Table-4).

Scores were awarded to the respondents for their knowledge based on their responses. A mean score of 12.01 ± 5.56 was obtained out of the total score of 22 with

Table-4: Summary of knowledge regarding breast cancer and physical self-screening.

Knowledge regarding breast cancer (N = 1304)	Frequency (%)
Do you know what breast cancer is?	
Correct answer	1228 (94.2)
Wrong answer	76 (5.8)
Most common symptom of breast cancer	
Breast lumps	488 (37.4)
Pain in breast	274 (21)
Abnormal mass growth / cyst	36 (2.8)
Discharge from nipples	16 (1.2)
Swelling and redness around nipples	22 (1.7)
Axial lymph node enlargement	12 (0.9)
Irregularity in breast shape and symmetry/ alteration in skin colour of areola and nipple	18 (1.4)
More than one above stated symptoms	8 (0.6)
I do not know	430 (33)
Do you know what breast cancer screening is?	
Correct answer	720 (55.2)
Wrong answer	584 (44.8)
Do you know what physical self exam is?	
Correct answer	808 (62)
Wrong answer	496 (38)
Do you know what mammography is?	
Correct answer	654 (50.2)
Partial correct	638 (48.9)
Wrong answer	12 (0.9)
Risk factor for breast cancer	
Family history / Genetic predisposition	246 (18.9)
Age	100 (7.7)
Use of creams to augment breast size	40 (3.1)
Exposure to radiations / chemicals	24 (1.8)
Hormonal disturbances	24 (1.8)
Non breastfeeding mothers	26 (2)
Trauma to the breasts	8 (0.6)
Female gender	10 (0.8)
More than one above stated risk factor	4 (0.8)
I do not know	822 (63)
Do you have knowledge about breast cancer treatment?	
Yes I have some knowledge	688 (52.8)
My knowledge is not adequate / I have no knowledge	616 (47.2)
Can breast cancer spread (metastasize) to other parts of the body?	
Yes it can spread	890 (68.3)
No it cannot spread	414 (31.7)
Does overweight and obesity increase risk of BC?	
Yes it can increase the risk	592 (45.4)
No it cannot	712 (54.6)
Do you know how to perform physical self screening of breast cancer at home?	
Yes	402 (30.8)
No	902 (69.2)

BC: Breast cancer.

minimum score 0 and maximum of 22. It was found that 446(34.2%) women had low knowledge regarding breast cancer and its early detection techniques (Table-5).

Moreover, 1,124(86.2%) women said they had never

undergone breast screening at a hospital or clinic. The most common reason for undergoing breast screening was fear of having BC, i.e. 458(35.1%), followed by advice from healthcare provider, i.e. 262(20.1%). In addition, 646(49.5%) respondents felt positive about breast

Table-5: Score interpretation of BCI.

Score range	Score interpretation	Frequency (%)
Between 0 - 7	Very low knowledge	332 (25.5)
Between 8 - 13	Low knowledge	446 (34.2)
Between 14 - 18	Adequate knowledge	309 (23.7)
Between 19 - 22	Excellent knowledge	217 (16.6)

BCI: Breast cancer inventory.

Table-6: Attitudes of Pakistani women towards BC and early detection techniques.

Attitudes towards BC and early detection techniques (N =1304)	Frequency (%)
Did you ever undergo breast screening at hospital or clinic?	
Yes	180 (13.8)
No	1124 (86.2)
Reason for undergoing breast screening	
Fear of having the disease	458 (35.1)
Media awareness	218 (16.7)
Health care professional's advice	262 (20.1)
Breast pain	244 (18.7)
Advice of friend, husband, etc	10 (0.8)
Breast cancer in the family	112 (8.6)
How do you feel about undergoing breast screening?	
Yes it is better for early detection	646 (49.5)
Only when the need arise	474 (36.3)
It is culturally unacceptable	100 (7.7)
I have religious issues in doing so	84 (6.4)
Gender preference of health care provider if undergoing breast screening	
Male	36 (2.8)
Female	1080 (82.8)
Anyone / No preference	188 (14.4)
Comfort level during consultation about breast cancer with a physician	
Yes I am comfortable in discussing this with a physician	296 (22.7)
I am not comfortable in discussing this with a physician	1008 (77.3)
If you ever undergo breast screening what would be your trigger factor?	
Fear of the disease	520 (39.9)
Ruling out a possibility of having breast cancer	572 (43.9)
Confirming a diagnosis	212 (16.3)
Did you ever perform physical self examination for early detection of breast cancer at home?	
Yes	410 (31.4)
No	894 (68.6)
Do you feel embarrassed about talking about breast cancer in the society?	
Yes	394 (30.2)
No	910 (69.8)
In your opinion what is the main barrier in undergoing breast screening?	
Culture / traditions of the family	86 (6.6)
Shyness / Reluctance to discuss such issues	246 (18.9)
No facilities	178 (13.7)
No female doctor/ not to be examined by male doctor	216 (16.6)
Lack of knowledge regarding detection techniques	296 (22.7)
Conservative society	92 (7.1)
Fear of diagnosing the disease	190 (14.6)
Do you think breast cancer is becoming a major problem of Pakistan?	
Yes	786 (60.3)
No	144 (11)
I am not sure / May be	374 (28.7)
Advice to others regarding the breast cancer early detection	
Do not undergo breast screening and early detection	50 (3.8)
Must undergo breast screening and early detection	954 (73.2)
I cannot comment on it	300 (23)

BC: Breast cancer.

screening and supported the notion. Regarding gender preference of healthcare provider, 1,080(82.8%) participants said they preferred a female physician to supervise their breast screening.

Besides, 1008(77.3%) women indicated their discomfort in discussing about breast cancer with a physician. However, 910(69.8%) did not feel embarrassed talking about BC in the community. Moreover, 572(43.9%)

Table-7: Cross tabulation of variables.

Variable	Score interpretation Observed N (Expected N)				P value
	Very low knowledge	Low knowledge	Adequate knowledge	Excellent knowledge	
Education					<0.01
Illiterate	30 (8.7)	2 (11.6)	0 (8.1)	2 (5.7)	
Matriculation	10 (17.3)	50 (23.3)	8 (16.1)	0 (11.3)	
Intermediate	49 (47.9)	76 (64.3)	53 (44.5)	10 (31.3)	
Graduation	212 (202.2)	267 (271.6)	175 (188.1)	140 (132.1)	
Post Graduation	31 (56)	51 (75.2)	73 (52.1)	65 (36.6)	
Family income					<0.01
>10,000 PKR per month	34 (19.9)	32 (26.7)	12 (18.5)	0 (13)	
Between 10,000 to 25,000 PKR/ month	32 (44.3)	71 (59.5)	49 (41.2)	22 (29)	
Between 25,000 PKR/ month to 49,000 PKR/ month	80 (87.6)	127 (117.7)	74 (81.5)	63 (57.2)	
> 50,000 PKR/ month	186 (180.3)	216 (242.2)	174 (167.8)	132 (117.8)	
Breast cancer in the family					<0.01
Yes	34 (57.5)	62 (77.3)	81 (53.6)	49 (37.6)	
No	298 (274.5)	384 (368.7)	228 (255.4)	168 (179.4)	
Personal encounter with anyone (except family members) having breast cancer					<0.01
Yes	111 (197.1)	286 (264.7)	204 (183.4)	173 (128.8)	
No	221 (134.9)	160 (181.3)	105 (125.6)	44 (88.2)	

PKR: Pakistani rupees.

women opined that if they ever have to undergo breast screening, the trigger would be to rule out a possibility of having breast cancer. Also, 894(68.6%) participants indicated that they had never performed physical self-exam at home. Besides, 296(22.7%) identified lack of knowledge and 246(18.9%) identified reluctance to discuss the issue as the main barriers to undergoing breast screening. Furthermore, 786(60.3%) respondents believed that breast cancer had become a major health issue in Pakistan. A mean score of 7.3±2.01 was obtained on a severity scale of 10 (Table-6).

The study found a significant association (p<0.01) between score interpretation and education level, family income, personal experience in dealing with breast cancer of any family member or person other than family (Table-7).

Discussion

In the current study, most of respondents (83%) belonged to the 18-30 age group and were unmarried (72.7%). This is worth mentioning because raising awareness amongst younger women can have a positive lifelong impact especially with regards to early diagnosis and survival. On the contrary, lack of awareness among younger women puts them at danger of being diagnosed in advanced stages of disease. We expect our results to be helpful for formulating awareness programmes that are tailored and targeted towards younger women. More than half of respondents (61.3%) belonged to the Urdu-speaking ethnicity while more than one-tenth (14.6%) of respondents were Punjabis. Knowledge and awareness

regarding the disease varies among different communities. Unique ethnic beliefs are likely to influence health seeking behaviour, especially with regards to breast cancer. These beliefs influence preventive behaviours such as routine breast screening or performing self-examinations.²³

Educational level is another significant determinant of attitudes and behaviours towards breast cancer awareness among women. In our study, most of respondents (62.7%) were students and more than half of them (60.9%) were graduates. Women with higher levels of education are likely to be much aware and informed regarding health issues as compared to an average person in the society. However, poor knowledge and inadequate level of awareness regarding the disease amongst educated young women in the urban centres of the country is quite concerning. Knowledge deficit among educated women suggests apparent lack of knowledge and awareness among the masses.²⁴

Half of the respondents (54.3%) reported monthly family income of more than PKR 50,000 per month (USD 477.12). Since our study focused on cities of Karachi and Islamabad, most of the respondents had a high monthly income. Women with higher family income and urban residence are likely to have more knowledge and awareness about the disease due to greater access to healthcare resources and awareness campaigns in urban areas. On the contrary, women with a family income of less than PKR 10,000 (USD 95.42) appeared to have

limited knowledge about breast cancer and its detection techniques. This implies that poor women are further at a greater risk of developing breast cancer due to limited detection and screening facilities as well as fewer opportunities to seek better medical treatment. Therefore, the income disparity must also be addressed by policy makers and it must be ensured that all women must have access to all services for breast cancer including prevention as well treatment.²⁵

The prevalence of breast cancer in family and community is quite high which interprets that every two of five families will have a breast cancer patient. From the results of prevalence in the community of respondents, it seemed as if one in two respondents encountered a breast cancer patient. The situation is quite alarming though it may be a crude estimate of prevalence but it does have a weightage. The results demonstrate that an overwhelming majority of respondents (94.2%) were aware of breast cancer as a disease, however, their knowledge regarding detection techniques seemed inadequate. This can be judged from the fact that only half of the respondents (50.2%) were aware of mammography as a way of detecting breast cancer. Similarly, slightly more than half of the respondents (55.2%) had awareness regarding screening methods for the disease. Although a slightly higher number of respondents (62%) were aware of breast self-examination (BSE), what seems to be a matter of concern is that only half of respondents practised it. Therefore, efforts must be made to publicise various screening methods and other preventable actions for breast cancer.²⁶

The findings highlight the importance of electronic and social media in creating awareness regarding breast cancer as only a third proportion of participants (34.4%) reported relying on internet and electronic media for information followed by few 310(23.8%) seeking information from their healthcare provider. Although this medium is extremely effective in conveying simple facts and awareness regarding breast cancer, it may not be able to change the negative perceptions attached to breast screening or provide comprehensive education regarding screening methods which could be done through face-to-face intervention/workshops. Hence, awareness campaigns through electronic and social media are more useful when used in conjunction with community-based programmes or any other interpersonal interaction.²⁷

Knowledge regarding breast cancer symptoms and risk factors was found to be fairly low in this study. Breast lump was reported the most common symptom of breast cancer by respondents, however, discharge from nipples,

swelling or changes in skin colour were not known to be alarming signals for the disease. This is a matter of grave concern because poor knowledge regarding symptoms adversely affects screening behaviour. Moreover, it is feared that with poor knowledge, women would fail to identify some major symptoms of the disease and would ignore them. This is likely to lead to delayed detection and consequently poor survival.²⁸

The respondents also displayed a knowledge deficit about screening methods. Just over half of respondents knew what breast screening is and similarly a half (50.2%) knew about mammography. Media and healthcare professionals should highlight the significance of these early detection techniques while creating disease awareness. Moreover, more than half of respondents knew what physical examination of breasts is, however, only a third (30.8%) of the respondents knew how to perform a self-examination. This highlights the need to encourage and teach women how to perform a BSE. By bringing awareness programmes to colleges and universities, young women could be taught early detection habits that may have many benefits later in life.²⁹

One of the most alarming features of these results was poor understanding of breast cancer risk factors. Family history was correctly identified by a fifth of the respondents (18.9%). Awareness of other risk factors was poor amongst participants. This implies that these women do not perceive that they could be at risk and consequently discouraged to seek any medical care in a timely manner. Greater awareness must be created to improve the knowledge levels of women regarding risk factors, especially amongst women who are vulnerable such as older or overweight women. Being aware of risk factors may help women to adopt healthy and smart practices such as maintaining a healthy weight and being physically active or getting regular BSEs and screenings that might help in lowering the cancer risk.³⁰

The participants were also asked about their attitude towards breast cancer and its early detection techniques. Nearly half of the women (49.5%) believed that undergoing breast screening was good for early detection and fear of having the disease was found to be a common reason for undergoing a screening. This was further confirmed by responses of participants where nearly half of the women (43.9%) said that they would undergo a screening to rule out a possibility of having the disease. However, what needs to be highlighted here is that attitude towards early detection and disease is majorly influenced by knowledge of various methods. The

previous responses highlighted knowledge deficit amongst women with regards to disease. This can be judged from the fact that despite having positive perception of screening methods, only a small segment (13.8%) had undergone breast screening. Moreover, only a third of respondents (31.4%) had ever performed a self-examination of the breasts. Almost a quarter of the women (22.7%) attributed lack of knowledge regarding detection techniques as main barrier in undergoing breast screening.

The issue of shyness and feelings of discomfort towards discussion about breast and breast cancer is worth mentioning here. Although a majority of respondents (69.8%) negated the existence of feelings of embarrassments while talking about breast cancer in the society, a large number of respondents (77.3%) in another question highlighted that they did not feel comfortable in consultation about breast cancer with a physician. Also, reluctance to discuss such issues was cited as a barrier to undergo breast cancer screening by almost a fifth of the respondents (18.9%). Despite large awareness campaigns running in the country, cancer of the breasts is still shrouded in shame, secrecy and embarrassment. The word 'breast' itself is highly stigmatised in the society and cannot be spoken out loud. There is an urgent need to break this cultural stigma attached to the word and these social barriers for early detection must be addressed because shyness and reluctance can have adverse consequences.³¹

There is limited knowledge about breast cancer amongst Pakistani women, especially among younger women which is an alarming condition. Health care policy makers must ensure that younger women are made aware about risk factors of the disease and are encouraged to adopt self-care practices such as breast self-examination and regular examination of breasts. Efforts to increase breast cancer awareness amongst young women may have lifelong benefits through early detection and subsequently improves survival, decreased cost of care and lower morbidity. Programmes must be developed by health practitioners and policy makers for women belonging to all age groups, socio-economic status, ethnicities and educational levels. This study particularly discusses which risk factors are identified easily by women in Pakistan and those that are not understood. Mass media and internet could serve as an important tool to disseminate information regarding various other risk factors and detection techniques.³²

Furthermore, dissemination of information is not only important purpose of campaigns. They should also focus on fighting stigma and misconceptions

associated with cancer and especially detection and treatment of 'breast' cancer. Dealing with the disease openly and efforts to reduce stigma would encourage more women having breast cancer concerns to seek professional care. Hence, breast cancer awareness must be tailor made to our cultural setting. Community health workers and local volunteers can play a pivotal role in this regard and may help significantly in reducing women's discomfort and shyness in seeking breast health care.³³ Researches such as this that identify breast cancer awareness and knowledge amongst Pakistani women can help to improve the quality of existing awareness programmes. Educating women about the disease is a vital part of all early detection and prevention initiatives. Therefore, a collaborative effort is required. All health practitioners, members of the media, policy makers, advocacy groups, community workers and leaders as well as academicians and researchers must work together in this regard.²⁶

One of the strengths of the study was that it had a reasonable sample size which was higher than required. Moreover, the study employed a localised research tool known as BCI which extracted information with a high response rate. The instrument was validated in local population. On the flip side, one limitation of the study was its self-reporting nature which may pose a negligible risk of misclassification.

Conclusion

There was a dearth of knowledge regarding breast cancer among Pakistani women, especially younger ones, which is an alarming condition. Cancer of the breasts is still shrouded in shame, secrecy and embarrassment. Breast cancer awareness must be sensitive to Pakistani cultural setting. Our research can help improve the quality of existing awareness programmes.

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