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RESEARCH ARTICLE

Assessment of Awareness and Knowledge of Breast Cancer in Pakistani Females: A Quantitative Study

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ABSTRACT

This study was designed to evaluate the general cognizance and knowledge about early detection of breast cancer and precautionary procedures among Pakistani females of Punjab and KPK. A quantitative approach was cast-off to accomplish the understanding of breast cancer's cognizance among females in the cross-sectional study conducted in Pakistan. Chi square and logistic regression statistical tools were elected for investigating the study of dependent variables and to gauge the intensity of association between different parameters. From both provinces, a total of 770 respondents were included in the study with the response rate of 96%, mainly covering age group of 25-45 years (47%). Mean knowledge score was below mark (46%). Students under 25 years of age (52%) have adequate breast cancer knowledge and its over-all awareness. A total of 523 respondents (68%) have heard about at least one of the breast screening methods. Friends and family (45%) were major source of knowledge following social media (40%). KPK province's females were 36% less likely to be familiar with breast cancer in comparison to females of Punjab showing significant association (P=0.004). Enlightening education will be the best tool for progression of the acquaintance and awareness of the targeted population of Pakistan. Likewise, interpolations and proper mediations of disease management would be of utmost importance towards the achievement of improved public health goals.

INTRODUCTION

Breast cancer is ranked second among cancers in relation to incidence and mortality (Al-Zalabani et al., 2018; Simonsen, 2013). Lack of public awareness and knowledge about the disease is considered the main reason for increased incidence as well as high fatality rate due to late detection followed by inappropriate therapeutic outcomes. Despite the availability of latest technologies, the most effective strategy is still to take preventive measure and encourage social awareness about breast health (Wilkes and Barton-Burke, 2018; Dittrich et al., 2016).

Diagnosis and treatment at early stages effectively cure breast cancer and enhances long term survival chances (Hasnain et al., 2014). Breast self-examination (BSE) is easiest method for early detection of any abnormality or illness regarding breast. The BSE is a specific ten steps examination technique but more than 60% of the women are unaware how to perform properly to detect the problem encountered at early stage (Jeyakeerthi et al., 2018). Now a days, studies have been conducted to assess the efficacy of programs involved in making awareness about the breast cancer. Feedback from these programs are not so encouraging and do not provide participants' enough knowledge about disease (Dagne et al., 2019; Azubuike and Okwuokei, 2013). Previously, mortality rate of breast cancer was much higher in United Kingdom and New York as compared to several other parts of the world. Now because of implementation of proper guidelines and adoption of secondary prevention methods along with early detection practices the incidence of mortality has been decreased dramatically (Farlay et al., 2015; Dandash and Al-Mohaimeed, 2007).

A study was conducted to evaluate knowledge of medical and non-medical students of specific area of Pakistan resulted in describing insufficient knowledge about breast health (Noreen et al., 2015). Pakistan as developing country is fighting against poverty and economic issues does not have enough resources to run a campaign on national level to produce awareness. Moreover, literacy rate is not so high to make an easy understanding of females especially from remote areas to make them aware about the disease and breast health due to social restriction. A comprehensive study is needed in order to take a broad view and assess the level of the knowledge about disease in remote areas of Pakistan. Moreover, this assessment not only give an accurate calculation about the situation but will also help the World Health Organization to realize the severity of problem and pressurizes the government to spend more money to avoid increased cases of cancers. In the present study, survey was conducted irrespective of the qualification and job nature of females as well as random females of two provinces to get the near most approximation regarding this disease's awareness.

MATERIALS AND METHODS

Study design and sampling

A descriptive cross-sectional study was conducted from the Pakistani females covering all age groups to assess the general knowledge and awareness regarding breast cancer. Team was organized to collect pre-tested questionnaire after training from different cities of the provinces. Sampling was done by using stratified random sampling technique.

Ethical approval

The study received exemption status from research committee of COMSATS Abbottabad, Pakistan and by the Institutional Review Board of INOR, Abbottabad. Informed consents were signed by the participants about the nature of study. Participants were assured that they would not face any discrimination from health care services or any other public services for their involvement in this breast cancer study.

Survey instrument

A self-administered questionnaire was designed from Breast cancer awareness measures (CAM) to check the awareness of Pakistani females about breast cancer. Breast CAM is a validated survey instrument that was developed by University College London, Cancer Research UK, Kings College London and University of Oxford. The Breast CAM v2 was modified to fit the purpose and nature of the study. The modified Breast CAM comprises section 1 of basic demographics and socio-cultural status of respondents, section 2 contains assessment of general awareness regarding illness, knowledge of potential breast cancer risk factors and secondary prevention methods in next question following identification of knowledge of breast cancer warning signs, last portion was of awareness of breast screening methods (BSE, CBE, ultrasound and mammography).

Validity and reliability of study instrument

The Breast CAM has satisfactory internal reliability with Cronbach's alpha above 0.7 for all components. The modified measure was tested to ensure its validity and reliability while reliability was measured by cronbach's alpha i.e 0.81 (Kato, 2015). Face and content validity were assured by the experts of the institution and oncologists to assess the relevance and coverage of the topic and necessary modifications were done. Pilot study was conducted on first 80 Pakistani females (10% of sample size) to make necessary modifications in the questionnaire and indicated the questions were explicable and suitable for data collection.

Sample size and setting

Sample size was calculated by Rao soft calculator and it came out to be 385 for each province. For both provinces (KPK and Punjab) 770 questionnaires was collected and evaluated (Raosoft, 2004). Main cities of Punjab (Lahore, Rawalpindi, Islamabad, Bahawalpur, Faisalabad and Sialkot) and KPK (Mansehra, Peshawar, Abbottabad, Dera Ismail Khan and Haripur) were covered, so that the results could be generalized. Students, housewives and working females of more than 18years were included in the study.

Exclusion criteria

Females who cannot understand and respond to the questionnaire and males of any age were excluded.

Data collection

An oral consent was taken from the female respondents who were willing to participate in study. Data were collected by a self-administered pre-validated question-naire (Doshi et al., 2012).

Outcome variables

Study's predictor variables for questions regarding awareness of breast cancer, knowledge about risk factors, sign and symptoms and attitude towards breast cancer are categorical type in which knowledge and awareness items were Yes, No and Don't Know (Doshi et al., 2012). For every correct answer, code 1 is assigned in SPSS for scoring purpose while 0 for wrong one. Then a mean score was calculated for knowledge. High score predicted sufficient knowledge. On the other hand, any score lesser than cut off value was assigned as low score, labeled as insufficient knowledge (Wurjine et al., 2019).

Data analysis

Descriptive statistical analysis was used to determine frequency distribution and percentages of females' breast cancer awareness and demographic variables in SPSS version 20. Kolmogorov-Smirnov test was applied to determine nature of distribution i.e. parametric or non-parametric (Ghasemi and Zahediasl, 2012). Logistic regression analysis was used to predict the outcomes

from independent variables along with their association. Here dichotomous dependent variable (sufficient and insufficient knowledge) were predicted, so binary logistic regression was used.

RESULTS

From both provinces total of 770 female respondents were conscripted in the study with the response rate of 96%, covered mostly females from the age group 25-45 years (n=360, 46.8%) and single (n=494, 64.2%). Talking about the menopausal status, 645 (83.8%) females were premenopausal and 685 (89%) were regular in menstruation predicting better female reproductive hormonal status. Other socio demographic characters of the study population are shown in Table1.

Major source of information for the illness of respondents were friends / family members (n=347, 45%) while lowest one was peer group (n=55, 7%). Social media (n=312, 41%) was considered second major source of knowledge of breast as described in Table 2. Less number of health care facility as source option predicted their little assess to the community for awareness of this life-threatening disease.

Table 1: Socio demographic characteristics of the study population of Pakistan. (n=770)

Variables		n (%)
Age	Less than 25years	324 (42.1)
	25-45years	360 (46.8)
	More than 45years	86 (11.2)
	Single	494 (64.2)
Marital Status	Married	263(34.2)
	Divorced	3 (0.4)
	Widow	10 (1.3)
Occupation	Employed	200 (26.0)
	Housewife	165 (21.4)
	Student	405 (52.6)
Education	Illiterate	19 (2.5)
	Undergraduate	233 (30.3)
	Graduate	318 (41.3)
	Post graduate	200 (26.0)
Monthly income in rupees	10,000 or less	130 (16.9)
	11,000- 50,000	377 (49.0)
	51,000 or more	263 (34.2)
Residence	Urban	665 (86.4)
	Rural	105 (13.6)
Country of birth	Pakistan	742 (96.4)
	Other	28 (3.6)
Ethnicity	Punjab	385 (50.0)
	KPK	385 (50.0)
Regularity of Menstruation	No	85 (11.0)
	Yes	685 (89.0)
Menopausal Status	Premenopausal	645 (83.8)
	Postmenopausal	125 (16.2)
Family history of breast cancer	Yes	96 (12.5)
	No	674 (87.5)
Any breast problem	Yes	43 (5.6)
	No	727 (94.4)

Participants' awareness and risk factors knowledge are summarized in Table 3. On evaluation of general awareness regarding risk factors, it is assessed that 57% (n=436) respondents among all know the incidence of breast cancer in Pakistan while 76% (n= 581) marked breast cancer as transmissible disease. On the other hand, 78% (n= 603) respondents found it a curable illness and 76% (n=582) respondents believe that its early diagnosis is possible.

More than 50% respondents have knowledge of positive family history 497 (64.5%), painless lump in breast 598 (77.7%) and radiation exposure 583 (76%) as breast cancer potential risk factors while for remaining all risk factors response was less than 50% as mentioned in Table 3.

Among all preventive measures described in Table 4, regular periodic breast examination was the response of 73% respondents (n=561) followed by avoiding tight bras 464 (60.3%) and then breast feeding 439 (57%) as preventive measure of Breast cancer. Likewise, among breast cancer warning signs, 677 (88%) respondents knew lump in breast as major sign of illness, 82.5% (n=635) reported pain or soreness in breast while

Table 2: Source of knowledge of respondents regarding Breast Cancer

Variables	n (%)
Friends/ Family	347 (45.1)
Peer group	55 (7.1)
Social Media	312 (40.5)
Newspaper	90 (11.7)
Health Care Facility	65 (8.4)
University/College	220 (28.6)

Table 3: Percentage of Participants having Awareness and Knowledge of Breast Cancer Risk Factors

Variables		Frequency N (%)
Awareness of breast cancer	Incidence of the breast cancer in Pakistan	436 (56.6)
	Transmittable disease	581(75.5)
	Curable illness	603 (78.3)
	Early diagnosis is possible	582 (75.6)
	Rare survival rate >5years	526 (68.3)
Potential risk factors	Increasing age	343 (44.5)
	Positive family history	497 (64.5)
	High fat diet	339 (44.0)
	Painless lump in breast	598 (77.7)
	Smoking	309 (40.1)
	Race/ethnicity	234 (30.4)
	Working class women	120 (15.6)
	First child at late age	222 (28.8)
	Early onset of menarche (start of mensis)	134 (17.4)
	Late menopause (stop of mensis)	229 (29.7)
	Stress	375 (48.7)
	Larger breast	229 (29.7)
	Feeding on packed foods	357 (46.4)
	Radiation Exposure	583 (75.7)

Table 4: Percentage of respondents having knowledge of preventive measures and breast cancer warning signs

Variables		n (%)
Preventive measures	Promoting physical activity	394 (51.2)
	Breast feeding	439 (57.0)
	Avoiding tight bras	464 (60.3)
	Weight reduction	253 (32.9)
	Avoiding non-prescribed hormonal therapy	377 (49.0)
	Performing periodic regular breast examinations	561 (72.9)
Signs And Symptoms	Lump in the breast	677 (87.9)
	Discharge	484 (62.9)
	Pain or soreness	635 (82.5)
	Change in the size and shape	574 (74.5)
	Discoloration /dimpling	440 (57.1)
	Ulceration of the breast	462 (60.0)
	Weight loss	244 (31.7)
	Inversion/pulling of nipple	356 (46.2)
	Swelling or enlargement	538 (69.9)
	Lump under armpit	500 (64.9)
	Scaling/dry skin in nipple region	298 (38.7)

Table 5: Respondents having knowledge of breast cancer screening methods

Variables	n (%)
Heard about Breast Screening Method	523 (67.9)
Breast Self-Examination (BSE)	352 (45.7)
Clinical Breast Examination (CBE)	313 (40.6)
Mammography	243 (31.6)
Breast Ultrasound	205 (26.6)

remaining frequently reported symptoms are change in size or shape of breast cancer 574 (74.5%), swelling or enlargement of breast 538 (70%) and lump under armpit 500 (64%).

It is evaluated that 68% (n=523) respondents have heard about breast cancer screening methods. About half of the respondents have listened about Breast Self-Examination (BSE) while only 26% (n=205) of the respondents of both provinces have knowledge about breast ultrasound as screening tool as shown in the Table 5.

According to Table 6, respondents have little knowledge about the age to start and frequency of BSE and proper technique to perform BSE while only 40% (n=311) females were aware of performing BSE in proper way. In the same way, little higher frequency 48% (n=372) respondents were aware of CBE while only 17 % (n=132) have knowledge of mammography screening recommended age regarding NCCN guidelines.

To evaluate the association between knowledge of breast cancer and independent variables, chi square and binary logistic regression test were employed. Marital status, occupation, monthly income and ethnicity showed statistically significant association with the knowledge scores of breast illness.

Table 6: Percentage of respondents having knowledge of breast cancer screening methods

Variables		n (%)
BSE	Started at the age At above age of 20 years	250 (32.5)
	Technique palpate with palm and minimum of 3 fingers	311 (40.4)
	Frequency monthly	279 (36.2)
CBE	Frequency once in a year	372 (48.3)
Mammography	Recommended age to start Screening at the age of 40	132 (17.1)

As the educational status increases, knowledge about breast cancer increases by 2.31 and widow were twice more likely to have knowledge sufficiency in comparison to single ones [OR 2.24, 95% CI (0.56-8.93)]. KPK females were 36% less likely to be knowledgeable regarding breast cancer in comparison to Punjab females showing significant association (p= 0.004) and respondents with no family history of breast cancer were 25% less likely to have knowledge sufficiency in comparison to those with family history [OR 0.75, 95% CI (0.47- 1.19)]. As monthly income of respondent's increases, knowledge score also increases 1.43 times with the significant association (Table 7).

DISCUSSION

Major purpose of this study was to investigate the general awareness of females of two highly prone communities of Pakistan towards breast cancer. As far as the prevalence of breast cancer in Pakistan is concerned, possible etiology is consistent to the Saudi studies including delay in detection, diagnosis and treatment (Harirchi et al., 2015). Even though breast cancer is highly prevalent in Pakistan among all Asian countries still no breast cancer screening program has been developed at national level while Sri Lanka had this facility since 2012 all around Asia (Rasool et al., 2019; Sama et al., 2017). General awareness about incidence of illness at the country level and its survival rate was not as high as the dreadful level of ignorance reported in a Malaysian study (Hadi et al., 2010). Overall enough knowledge score of the participants was 53.6% which is in consistent with the study conducted in Ethiopia (Wurjine et al., 2019).

Our mean knowledge score result was in contrast with the results of studies conducted in Iraqi females 2011, Saudi females 2013 along with Nigerian and Ghana studies (Azubuike and Okwuokei, 2013, Donnelly and Al-Meer, 2013, Radi, 2013; Doshi et al ., 2012; Alwan et al., 2012; Ravichandran et al., 2011; Hadi et al., 2010 and Akhigbe and Omuemu, 2009) might be due to difference in study population and respondents literacy level but were contrary with the recent studies assessed

Table 7: Association of overall Knowledge Score with independent variables

Variables	Mean Knowledge (N)		OR (95% CI)	P value
	Insufficient	Sufficient		
Age				
Less than 25 years	133	191	1	
25-45 years	179	181	1.03 (0.67- 1.15)	0.901
More than 45 years	45	41	1.65 (0.83- 3.30)	0.154
Marital status				
Single	203	291	1	
Married	148	115	0.97 (0.59- 1.60)	0.001
Divorced	2	1	0.78 (0.06- 10.37)	0.850
Widow	4	6	2.24 (0.56- 8.93)	0.254
Occupation				
Employed	112	88	1	
Housewife	95	70	0.98 (0.59- 1.64)	0.947
Student	150	255	2.31 (1.40- 3.66)	0.000
Education				
Illiterate	14	5	1	
Undergraduate	105	128	1.78 (0.57- 5.55)	0.324
Graduate	145	173	2.40 (0.79- 7.34)	0.124
Postgraduate	93	107	2.31 (0.74- 7.23)	0.152
Monthly Income				
<10,000	68	62	1	
10,000-50,000	185	192	1.18 (0.76- 1.82)	0.019
>50,000	104	159	1.43 (0.89- 2.28)	0.137
Residence				
Urban	306	359	1	
Rural	51	54	0.96 (0.62- 1.49)	0.869
Ethnicity				
Punjab	159	226	1	
KPK	198	187	0.64 (0.47- 0.86)	0.004
Family History				
Yes	39	57	1	
No	318	356	0.75 (0.47- 1.19)	0.229

Note: Overall predictive accuracy of the model is 62.3 %; Omnibus tests of model coefficients: Chi-square value = 56.64, P<0.001; -2 Log Likelihood=1006.730, Nagelkerke R square=0.095.

in females of Ethiopia, Asian females including Iran, Malaysia and Turkey (Wurjine et al., 2019; Jadhav and Keerti, 2017; Sama et al., 2017; Erdem and Toktas, 2016; Hadi et al., 2010). Study findings advocated the preceding results (Jadhav and Keerti, 2017; Al-Dubai et al., 2012; Ghanem et al., 2011) which were in favor of deficiency in breast cancer potential risk factors knowledge except painless lump in breast and radiation exposure and ultimately the prominent reason of delayed detection of illness. Moreover, media is considered as provoking source of knowledge for breast cancer in the previous studies (Legesse and Gedif, 2014; Alwan et al., 2012) which is in contrast to our findings, where friends or family member as emerging source, pretending inappropriate media role in our community. As far as awareness of breast cancer screening methods are concerned, Pakistani females were not much aware of these early detection techniques like BSE, CBE, Mammography and Breast Ultrasound showed significant consistency with the reported studies of Iran 2008 and Jedda (Radi, 2013) while differ with turkey, Ethiopia, India and Asian study (Wurjine et al., 2019; Sama et al., 2017; Erdem and Toktas., 2016, Doshi et al., 2012) in screening methods knowledge among respondents.

About knowledge on the frequency of BSE, respondent's correct knowledge reported in this study showed that monthly BSE was significantly lower than similar studies conducted in Saudi Arabia (Radi, 2013). Among occupational status, student's association with sufficient knowledge were statistically significant as compared to housewives and employed females. Study implicit that graduated respondents were well informed about breast cancer awareness, these results are in line with other Asian countries findings (Sama et al., 2017; Dagne et al., 2019). Educational program would be the best reservoir for upgrading the knowledge and awareness of the targeted community of the Pakistan. So that this country may also run parallel with the developed countries in combating such fatal and highly prevalent diseases.

Authors' contribution

All authors contributed equally in this study. All authors read and approved the final manuscript before publication.

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