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PUBLIC HEALTH | RESEARCH ARTICLE

A quantitative study to assess breast cancer awareness among females in Bahawalpur Pakistan

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Abstract: The study was aimed to assess breast cancer awareness among females in Bahawalpur, Pakistan. We performed a quantitative cross sectional study from January to April 2015. We enrolled adult women over the age of 18. Trained researchers conducted the interviews in-person. We used SPSS (Statistical Package for the Social Sciences) version 15 to perform the data analysis. In total, 423 females participated in the study and the mean age of the respondents was 35.15 ± 12.66 year, of which, the majority were married (66.0%), and 45.4% had graduate level education. The participants had a severe lack of awareness regarding breast cancer risk factors. We found that the breast cancer awareness scores were significantly associated with old age ($p = 0.012$), personal history of cancer ($p = 0.005$), and occupation ($p = 0.040$) of respondents. We found no associations with marital status, level of education, residence area, and family history of breast cancer. In conclusion, we observed a severe lack awareness of in the study population of breast cancer risk. To raise breast cancer awareness in this population, there is a great need of culturally appropriate, socially-acceptable and effective breast cancer awareness educational programs.

Subjects: Community Health; Health Education and Promotion; Population Health; Preventative Medicine; Public Health Policy and Practice; Women

Keywords: awareness; breast cancer; cancer; knowledge; females; Pakistan

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PUBLIC INTEREST STATEMENT

Breast cancer is a common and a serious illness. Every year thousands of females are being diagnosed with this disease. Unfortunately, the majority of cases are being diagnosed in later stages due to poor health literacy of females regarding breast cancer. If women have sufficient knowledge about breast cancer symptoms, risk factors and breast self-examination, they can prevent and suspect this disease through breast self-examination and inform health practitioners about their symptoms timely. Keeping in view the importance of health literacy, we conducted a study to assess breast cancer awareness among females in Bahawalpur, Pakistan. We observed that the majority of females had poor breast cancer awareness. We hope, our study findings will inform relevant authorities and help them in developing community based breast cancer awareness programs.

1. Introduction

Breast cancer (BC) is a serious disease and a leading cause of deaths among females worldwide (Gilani et al., 2010). The World Health Organization (WHO) reported that nearly 1.15 million new BC cases are being diagnosed every year and nearly half a million deaths are occurring annually due to this lethal disease (World Health Organization, 2008).

Despite the importance and seriousness of BC disease, a severe lack of awareness has been observed all over the world. A study conducted in the United States of America showed that the majority of people were lacking basic knowledge regarding cancer risk factors (Breslow, Sorkin, Frey, & Kessler, 1997). Another study showed that the majority of people in the United Kingdom had lack of awareness of established breast cancer prevention methods (Wardle, Waller, Brunswick, & Jarvis, 2001). Similarly, a multinational study reported a severe lack of awareness in respondents who were citizens of several European countries (Peacey, Steptoe, Davídsdóttir, Baban, & Wardle, 2006).

In Pakistan, the prevalence of BC disease is considerably high. Researchers from the Shaukat Khanum Memorial Cancer Hospital and Research Center reported 5,521 newly diagnosed cancer cases in their 2014 report “Punjab Cancer Registry Report”, of which, 57% were females and 44.3% had breast cancer (Shaukat Khanum Memorial Cancer Hospital & Research Center, 2014). An epidemiological study has reported that the incidence of BC is alarmingly high in younger females in Pakistan (Shaukat, Ismail, & Mehmood, 2013). Every one in nine women in Pakistan has a risk of developing breast cancer at some stage during her life (Siddiqui, 2014). There is a severe lack of breast cancer awareness in addition to a higher prevalence among people living in large cities in Pakistan (Khokher, Qureshi, Mahmood, Saleem, & Mahmud, 2011; Noreen, Murad, Furqan, Sultan, & Bloodsworth, 2015). These findings indicate the need of timely diagnosis and assessment of BC disease and awareness in the younger women in Pakistan.

The Breast Health Global Initiative (BHGI) proposed that if females are equipped with an adequate level of BC awareness and skills regarding BC self-examination, the disease can be diagnosed at an earlier stage (Anderson et al., 2006). However, developing countries, such as Pakistan, paid less attention to the awareness of breast cancer in female populations. A few studies focused specifically on people living in big cities rather than smaller, less developed cities. Therefore, we performed a study to assess the awareness in women regarding breast cancer, its symptoms and its associated risk factors in the city of Bahawalpur, Pakistan.

2. Methods

2.1. Ethics statement

The study was approved by the Pharmacy Research Ethics Committee (PREC) of The Islamia University of Bahawalpur, Pakistan.

2.2. Study design and sampling procedure

We performed a quantitative cross sectional study from January to April 2015 in the city of Bahawalpur. Bahawalpur is the 11th largest city in Pakistan. According to the Pakistan Bureau of Statistics, the total population of Bahawalpur is nearly 2,433,091 (2.4 million), of which, nearly 1,278,775 are males, and nearly 1,154,316 are females (Pakistan Bureau of Statistics, 2015). We specifically designed the study to target females. We calculated the sample size using an online calculator (<http://www.raosoft.com/samplesize.html>) with a confidence interval of 95% and margin of error 5% for the population of 1,154,316 females. Additional 20% sample was taken to handle the non-response error and the final sample size of 462 respondents was calculated. The inclusion criteria were the age ≥ 18 years, ability to understand Urdu (National language of Pakistan) or English language, soundness of mind, and voluntarily willingness for participation in the study. We excluded all respondents that did not fit this criteria. We used a convenient, non-probability sampling technique due to the unavailability of female population frame data. We trained three female PharmD students who collected data from respondents via conducting face-face interviews, due to some

cultural and moral obligations imposed on male researchers. The interviewers explained the study objectives to each participant, explained each participant will be doing in this study and informed consent was obtained prior to starting each interview.

2.3. Study instrument

A 32-itemed instrument was adapted and developed from previously published literatures (Gilani et al., 2010; Hadi, Hassali, Shafie, & Awaisu, 2010a, 2010b; Linsell et al., 2010; Wardle et al., 2001). First section of the instrument had seven items regarding the demographic characteristics of respondents (age, marital status, education, occupation, residence, personal history and family history of breast cancer). Second section contained four items regarding the general knowledge of breast cancer. The responses were measured as “Yes” or “No”. Third section contained nine questions regarding the symptoms of breast cancer, and the fourth section contained 12 questions regarding the risk factors of breast cancer. We used a three-point Likert scale [Yes/No/Don’t Know] to measure responses of participants regarding both sections. Study instrument was initially made in English, translated into Urdu (national language of Pakistan) and then back translated into English to ensure the preservation of the essential meaning of the questionnaire. Two senior researchers and one medical practitioner assessed the face and content validity test of the construct. The medical terminologies used in the questionnaires were explained to female respondents by interviewers during their face-face interviews. Every “Yes” response was scored 1 and every “No/don’t know” answer was scored 0. Scoring was performed only for section 2, 3 and 4, therefore, the maximum possible scores were 25. We performed reverse scoring for question 2 from section 2. We translated the measured breast cancer awareness from a total score to ranks. We adopted the rank criteria from Hadi et al. (2010a). The ranks are: very poor, poor, moderate, good and very good.

2.4. Data analysis

We analyzed the data using SPSS (Statistical Package for the Social Sciences) version 15.0. We applied descriptive statistics (frequency, percentage and mean \pm standard deviation) to summarize the demographical data and the responses of females to questionnaire. We applied non-parametric tests and performed scoring to measure the association of scores with demographic variables. We applied the Mann-Whitney U (MW) test upon variables containing only two sub variables, and the Kruskal-Wallis (KW) test where variables contained more than two sub variables. We considered a *p*-value of less than 0.05 for all statistical analysis significant.

3. Results

Overall, 423 females participated in the study, giving a response rate of 91.55%. Demographic characteristics are given in Table 1. The mean age of female respondents was 35.15 ± 12.66 years. The majority of respondents (66.0%) were married, 26.2% were single, and very few were divorced or widowed. We observed that 57% respondents were housewives and 24.6% were students. The majority of females had a graduate level education, 91.0% were urban residents and only 6% participants were illiterates. Of these respondents, 94.1% did not have any personal history of breast cancer and 83.5% did not have any family history of breast cancer.

When we assessed general knowledge of breast cancer in females, 93.6% participants reported that they had already heard of breast cancer. When we asked respondents about breast self-examination, 345 (81.6%) reported they did not know how to perform it. About 78.0% respondents never had heard of any breast cancer screening programs, and 41.4% respondents considered breast cancer as a rare disease. The responses of females regarding general knowledge of breast cancer are given in Table 2.

The symptoms and risk factors of breast cancer are represented in Table 3, which shows that 47.3% respondents reported change in nipple position, 41.6% reported pulling in nipple, 77.3% reported pain in one of the breast or armpit, 56.7% reported dimpling in nipple, 88.2% reported lump in breast, 50.8% reported redness in the breast, 72.8% reported lump under armpit, and 71.2% reported changes in size and shape of the breast as the symptoms of breast cancer disease. Similarly,

Table 1. Demographical characteristics of respondents

Variable	Frequency (%)
<i>Age</i>	
<20	35 (8.3)
20–29	125 (29.6)
30–39	117 (27.7)
40–49	73 (17.3)
50–59	47 (11.1)
>60	26 (6.1)
<i>Mean ± SD [range]</i>	35.15 ± 12.66 [18–79]
<i>Marital status</i>	
Married	279 (66.0)
Single	111 (26.2)
Widow	27 (6.4)
Divorced	6 (1.4)
<i>Occupation</i>	
House wife	244 (57.7)
Student	104 (24.6)
Working woman	75 (17.7)
<i>Education</i>	
Uneducated	25 (5.9)
Primary	36 (8.5)
Secondary	71 (16.8)
Higher secondary	99 (23.4)
Graduation or above	192 (45.4)
<i>Residence</i>	
Urban	385 (91.0)
Rural	38 (9.0)
<i>Personal history of breast cancer</i>	
Yes	25 (5.9)
No	398 (94.1)
<i>Family history of breast cancer</i>	
Yes	70 (16.5)
No	353 (83.5)

Table 2. General knowledge of respondents regarding breast cancer

Statements	Yes	No
Have you ever heard about breast cancer?	396 (93.6)	27 (6.4)
Is breast cancer a rare disease?	175 (41.4)	248 (58.6)
Do you know how to perform breast self-examination?	78 (18.4)	345 (81.6)
Have you heard about screening programs?	93 (22.0)	330 (78.0)

Table 3. Awareness in females about the symptoms and risk factors of breast cancer

Statements	Yes	No	Don't know
<i>Symptoms of breast cancer</i>			
Changed nipple position	200 (47.3)	92 (21.7)	131 (31.0)
Pulling in of nipple	176 (41.6)	107 (25.3)	140 (33.1)
Pain in one of breasts or armpit	327 (77.3)	56 (13.2)	40 (9.5)
Dimpling of breast skin	240 (56.7)	74 (17.5)	109 (25.8)
Discharge or bleeding from nipple	327 (77.3)	42 (9.9)	54 (12.8)
Lump or thickening in breast	373 (88.2)	23 (5.4)	27 (6.4)
Redness of breast skin	215 (50.8)	121 (28.6)	87 (20.6)
Lump or thickening under armpit	308 (72.8)	52 (12.3)	63 (14.9)
Changes in the size and shape	301 (71.2)	62 (14.7)	60 (14.2)
<i>Risk factors of breast cancer</i>			
Genetic makeup of individual	163 (38.5)	204 (48.2)	56 (13.2)
Advancing age	239 (56.5)	110 (26.0)	74 (17.5)
Avoiding breast feeding	328 (77.5)	43 (10.2)	52 (12.3)
Painless lump or thickening in breast	297 (70.2)	66 (15.6)	60 (14.2)
First childbirth at age above 30 years	118 (27.9)	101 (23.9)	204 (48.2)
Null parity	118 (27.9)	128 (30.3)	177 (41.8)
Menarche below 11 years	93 (22.0)	108 (25.5)	222 (52.5)
Frequent use of oral contraceptive pills	250 (59.1)	58 (13.7)	115 (27.2)
Trauma/breast injury	292 (69.0)	58 (13.7)	73 (17.3)
Late menopause	86 (20.3)	117 (27.7)	220 (52.0)
Hormone replacement therapy	180 (42.6)	60 (14.2)	183 (43.3)
High fats intake or obesity	172 (40.7)	133 (31.4)	118 (27.9)

Notes: The medical terminologies used in the questionnaire were explained to female respondents by the interviewers during their face-face interview sessions.

when we asked participants about breast cancer risk factors, breast feeding (77.5%), painless breast lump (70.2%), trauma to breast (69.0%), frequent use of oral contraceptives (59.1%), hormone replacement therapy (42.6%), and high fats intake or obesity (40.7%) were reported by respondents.

We computed breast cancer awareness scores and noted that the average score of participants were 13.11 ± 4.44 . None of the respondents showed complete breast cancer awareness, except four respondents. Overall, we found that the majority of females had poor to very poor breast cancer awareness. The gaps in knowledge of female respondents are explained in detail in Table 4.

Table 4. Status of breast cancer awareness in study population

Total score	Status of awareness	Frequency (%)
≤8	Very poor	65 (15.4)
9-13	Poor	204 (48.2)
14-18	Moderate	122 (28.8)
19-23	Good	32 (7.6)
>23	Very good	65 (15.4)

Lastly, the non-parametric tests revealed that females in age 40–59, divorced women, working women, and females with graduate level education showed significant breast cancer awareness as compared to others. In addition, participants having a personal or family history of breast cancer showed good awareness while no significant difference was observed in awareness of rural and urban participants. The non-parametric tests further showed that the knowledge was significantly associated with older age ($p = 0.012$), personal history of breast cancer ($p = 0.005$), and occupation ($p = 0.040$) of females. However, no association was found in marital status, level of education, residence and family history of breast cancer with breast cancer knowledge (Table 5).

Table 5. Association of breast cancer awareness with demographic variables of respondents

Variable	Mean	±SD	Mean rank	p-value
<i>Age^a</i>				
<20	12.31	4.97	188.90	0.012*
20–29	12.69	4.89	198.64	
30–39	12.97	3.96	206.97	
40–49	14.23	4.58	244.56	
50–59	14.19	3.27	247.63	
≥60	11.73	4.28	174.12	
<i>Marital status^a</i>				
Married	13.25	4.01	199.02	0.125
Single	12.67	5.33	215.34	
Widow	12.74	4.91	208.09	
Divorced	16.17	1.94	314.50	
<i>Occupation^a</i>				
House wife	12.95	4.12	207.68	0.040*
Student	12.64	5.33	199.42	
Working woman	14.25	3.93	243.51	
<i>Education^a</i>				
Uneducated	10.60	4.97	154.46	0.100
Primary	12.42	5.01	202.49	
Secondary	12.90	3.68	206.74	
Higher secondary	13.23	3.93	210.59	
Graduation or above	13.58	4.67	223.95	
<i>Residence^b</i>				
Urban	13.12	4.39	212.12	0.948
Rural	13.00	4.99	210.78	
<i>Personal history of breast cancer^b</i>				
Yes	15.44	3.01	278.98	0.005*
No	12.96	4.48	207.79	
<i>Family history of breast cancer^b</i>				
Yes	14.03	3.35	233.52	0.106
No	12.93	4.61	207.73	

^aKruskal-Wallis test.

^bMann-Whitney U test.

* $p < 0.05$ was considered significant.

4. Discussion

The present study was conducted to assess the breast cancer awareness among females in Bahawalpur, Pakistan. Despite the fact that the majority of females stated they were aware of breast cancer, only four females showed very good awareness. The average score was borderline (13.11 ± 4.44), which showed that females were lacking adequate awareness regarding breast cancer. These findings are consistent with the previous studies performed in Pakistan and Iran (Gilani et al., 2010; Montazeri et al., 2008). This reflects that no preventive measure have been taken even to date in Pakistan to raise breast cancer awareness. Secondly, we found limited knowledge regarding breast self-examination. A similar situation exists in Turkey (Karayurt, Özmen, & Çetinkaya, 2008) however, a better situation is observed in United Arab Emirates, where about 53.8% females were aware of breast self-examination (Al-Sharbatti, shaikh, Mathew, & Al-Biate, 2014).

To get some more insight, scoring and non-parametric test were performed which showed that there is a significant association of breast cancer awareness with age ($p = 0.012$), personal history of breast cancer ($p = 0.005$), and occupation ($p = 0.040$) (Table 4). These findings are consistent with some previous studies that were performed in Pakistan, Turkey and Nigeria (Karayurt et al., 2008; Khokher et al., 2011; Okobia, Bunker, Okonofua, & Osime, 2006). However, in contrast with some other studies from Pakistan and Jordan that showed a significant association of many study variables with breast cancer knowledge (Gilani et al., 2010; Madanat & Merrill, 2002). The reason behind this variation could be due to the differences in study designs and selected population groups.

Furthermore, women with an older age (40–60 years), divorced women, married women, working women, women with graduate level education, and women with personal or family history of breast cancer had a comparatively high awareness. Better awareness in these females could be due to their higher education and more life experience; as the majority of participants were aged above 40 years, and could be due to their extended social network that possibly made them able to discuss breast cancer with their friends and colleagues. There is another possibility that the perception of married women might have been shaped by their partner's attitudes and beliefs towards breast cancer. In contrast to older women, the students and younger females showed severe lack of awareness. This could be due to their lack of interest in breast cancer due to a common social norm that breast cancer affects only married and aged women and could be due to the obtained knowledge from unreliable sources such as social media (Masood et al., 2016; Peacey et al., 2006).

Evidence based knowledge provided by healthcare professionals, especially, doctors, pharmacists and allied health professional can play a significant role in raising breast cancer awareness through community awareness programs. The role of awareness about breast self-examination in detecting breast cancer at an early stage is controversial and the American Cancer Society (ACS) does not recommend it because it increases anxiety and does not improve survival in females (Knutson & Steiner, 2007). Conversely, the same practice is recommended for people living in developing countries where mammography based screening program are not well performed (Okobia et al., 2006). Therefore, it is suggested that population specific breast cancer awareness and breast self-examination programs should be designed to promote the level of knowledge in high risk populations, keeping in view the occurrence of disease and available resources of the country.

Despite these interesting findings, our study has several limitations. First, the study did not receive any source of funding, which limited us to collect data from only one city. Therefore these findings are not generalizable to all over the Pakistan. Second, we did not apply any intervention nor we measured that specifically designed programs improve breast cancer awareness or not, therefore, further research can be performed to answer this question. Third, due to the lack of sampling frame, convenience sampling method was used to approach female respondents which could cause unequal enrollment from different demographic groups. Therefore, this study is not a representative of breast cancer awareness in whole Pakistani population.

5. Conclusion

We concluded that the majority of female respondents had inadequate awareness regarding breast cancer. We noted that the breast cancer awareness was significantly associated with old age ($p = 0.012$), personal history of cancer ($p = 0.005$), and occupation ($p = 0.040$) of female respondents. These findings suggest the need of culturally appropriate, socially-acceptable and effective disease awareness programs in Pakistani settings to improve the awareness of female population regarding this life threatening malignancy.

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Competing Interests

The authors declare no competing interest.

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