

Breast Cancer Knowledge among Bahraini Women Attending Primary Health Care Centers

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Objective: To evaluate breast cancer knowledge among Bahraini women aged 20 years and more attending primary health care centers.

Setting: Primary health care.

Design: Cross sectional descriptive study.

Method: Three hundred Bahraini women attending the primary health care clinics were interviewed from 1st February to 31st May 2005. A multistage sample was selected with a cluster sampling technique for the selection of one health center from each region; five health centers were selected. The sample was stratified according to the percentage of females residing in each region. A semi-structured questionnaire was used for interviewing the study participants.

Result: Seventeen (5.6%) women knew more than half of the correct answers, and the mean “Percent Knowledge Index” was 32.1% ± 12.7%. Newspapers, television, radio, were identified as the main source of knowledge of breast cancer. Highly educated women were more knowledgeable about breast cancer ($p=0.002$), diagnostic modalities ($p=0.008$), and risk factors ($p<0.0001$). Women with positive family history of breast cancer knew more about treatment modalities than those without a history ($p=0.017$). Moreover, no significant differences were found between the general knowledge and its subtypes among women with positive or negative personal history of breast complaints.

Conclusion: Breast cancer knowledge was deficient among Bahraini women. Efforts to improve women’s education should be encouraged. Breast cancer should be included as a subject in the high school curricula, with emphasis on modifiable risk factors. The maximum use of media should be encouraged in breast cancer campaigns.

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Breast cancer is a global public health problem. It is the commonest cancer among women in the world; 1.4 million new cases are seen yearly, a prevalence of 4.4 million and

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458,367 deaths annually. In 2008, the world's age standardized incidence rate (ASIR) was 39 per 10⁵ and the world's age standardized mortality rate (ASMR) was 12.5 per 10⁵ for breast cancer indicating a high survival rate for this type of cancer¹.

In the Gulf Cooperation Council (GCC) countries, breast cancer is the commonest cancer among females and the highest incidence is in Bahrain²⁻⁴. The gulf center for cancer registration reported 1,206 female breast cancer cases during 2003 among the GCC female nationals, accounting to 24.7% of cancers among females and 12.5% in both sexes. The ASIR figures in GCC countries were as follow: Bahrain 56.3 per 10⁵, Kuwait 49.0 per 10⁵, Qatar 46.4 per 10⁵, Oman 26.8 per 10⁵, UAE 24.3 per 10⁵, and Saudi Arabia 15.6 per 10⁵⁽²⁾.

Breast cancer has been the leading cause of cancer among female nationals in Bahrain since the start of cancer registration in 1998. It has shown a marked increase with time, attributed partly to the implementation of mammography screening program in 2005. The ASIR has increased from 46.8 per 10⁵ in 1998-2002 to 56.3 per 10⁵ in 2003-2007³. Data indicate that ASIR (49.8 per 10⁵) in Bahrain is higher than less developed countries and higher than most countries in the WHO Eastern Mediterranean Region¹.

Breast cancer studies in Bahrain have shown that Bahraini women present usually late at diagnosis⁵⁻⁶. Fakhro et al found that 93% of the patients are seen for the first time when they attend a physician at the Salmaniya Medical Complex (SMC); the patients had a disease progression beyond clinical stage I, of which 21.4% were in clinical stage III and 11.1% in clinical stage IV, half of them having auxiliary lymph node involvement and a lump size of 2-5 cm on presentation⁵.

A recent study revealed that half of the women diagnosed with breast cancer at the SMC were stage II, an average tumor size at presentation of 5.5 cm and that over half were between 41 to 60 years old⁶. The study by Al-Saad et al confirmed that women in Bahrain appear to develop breast cancer at an early age, 70% were younger than 56 years old at presentation⁷.

Although there are several private clinics and hospitals in the country, cancer management is centralized at Salmaniya Medical Complex, which receives referrals from all over the country⁸.

The aim of the study is to evaluate the knowledge of breast cancer among Bahraini women attending the primary healthcare centers (PHC).

METHOD

Bahraini women aged twenty years and older who attended the selected PHC, either for treatment or accompanying patients from 1 February to 31 May 2005 were included in the study. A cross sectional descriptive study was performed. Five health centers were selected, one health centre from each region in Bahrain. The sample size was calculated according to the Number Cruncher Statistical System. An anonymous, semi-structured Arabic questionnaire, mostly closed ended questions was used for the interview. It included questions on personal data, the knowledge of the signs and symptoms and risk factors of breast cancer. The overall reliability of the questionnaire was 0.7 based on Cronbach's Alpha. Informed consent was taken from all participants.

The study was approved by the Academic Committee for the Master Program at AGU and the "Research Technical Support Team" of the Ministry of Health.

Education level was classified into four: uneducated (illiterate), low (primary and intermediate), middle (secondary and diploma) and high (bachelor and above). Women were classified into professionals, skilled workers, semi skilled and unskilled workers⁹. Breast cancer knowledge was assessed based on four components: symptoms, diagnosis, treatment and risk of breast cancer. Assessment was done by scoring and the breast cancer knowledge score (BCKS) was computed by giving "1" to the correct answer, and "0" for the false and do not know answers. Twenty-six points were considered as the maximum BCKS. Furthermore, a percent knowledge index (PKI) was calculated for each woman by summing the number of correct answers for all the 26 items and calculating the percentage of the correct answers. The data were analyzed using SPSS version 13. A P-value less than 0.05 was considered statistically significant.

RESULT

The mean age of the 300 women included in the study was 36.8 ± 9.1 years, a range of 21-61 years. Two hundred sixty-nine (90%) women were married, divorced or widowed. Hundred and sixty-six (55.3%) had a middle level of education (secondary education or diploma) and 99 (33%) were employed, of whom 58 (58.6%) had professional occupations. The differences between means of age across the educational level was highly significant ($p < 0.0005$), whereby older women had lower educational levels (primary and less) than the younger women, see table 1.

Table 1: Selected Personal Characteristics

Personal Characteristics	Number and Percentage
Age Group (years)	
20-29	82 (27.3%)
30-39	94 (31.3%)
40-49	95 (31.7%)
≥ 50	29 (9.7%)
Marital Status	
Single	31 (10.3%)
Married	257 (85.7%)
Divorced	5 (1.7%)
Widowed	7 (2.3%)
Level of Education	
Uneducated	20 (6.7%)
Low Education	61 (20.3%)
Middle Education	166 (55.3%)
High Education	53 (17.7%)
Employment	
Employed	99 (33%)
Not Employed	201 (67%)
Profession	
Professional Workers	58 (58.6%)
Skilled Workers	29 (29.3%)
Semi Skilled Workers	10 (10.1%)
Unskilled Workers	2 (2%)

Two hundred eighty-six (95.3%) responded positively for the question 'have you ever heard or read any information about breast cancer?'. The sources of information were as follows:

television and radio, 187 (65.4%), followed by newspapers and journals, 149 (52.1%) and health care providers, 85 (29.7%). Although 18 (6.3%) of the women gave a positive history of breast complaints, none was due to breast cancer. However, 52 (17.3%) women reported a positive family history of breast cancer, of which 10 (19.2%) were among mothers or sisters.

Identified risk factors were as follows: smoking 206 (68.7%), short periods of breast-feeding 178 (59.3%), advanced age 104 (34.7%), age at delivery of first child 69 (23.0%), early menarche 26 (8.7 %), and late menopause 19 (6.3%), see table 2. None of the woman had attained the maximum 26 possible BCKS. The mean BCKS was 8.3 ± 3.3 with a median of 8 and a range from 0 to 18. The mean PKI was $32.1 \pm 12.7\%$, with a minimum score of 0% and a maximum of 69.2%. Furthermore, only 17 (5.6%) women knew more than half of the correct answers.

Table 2: Breast Cancer Risk Factors Identified by the Study Participants

Risk Factor	Number and Percentage
Advancing age	104 (34.7%)
First degree relative with breast cancer	145 (48.3%)
Early menarche	26 (8.7%)
Late menopause	19 (6.3%)
High fat diet	124 (41.3%)
Delivery of first child after 30 years of age	69 (23%)
Obesity	120 (40%)
Short periods of breast feeding	178 (59.3%)
Smoking	206 (68.7%)
Previous benign breast disease	146 (48.7%)

Highly (university) educated ($p=0.002$) and employed women ($p=0.002$) were more knowledgeable about breast cancer. Furthermore, the educated women were more knowledgeable about the diagnostic modalities ($p=0.008$), and risk factors ($p<0.0001$). However, breast cancer knowledge was not associated with age, marital status and geographical regions, see table 3. Women with positive family history of breast cancer knew more about breast cancer treatment modalities than those without a history ($p=0.017$). No significant differences between general breast cancer knowledge or knowledge of breast cancer symptoms, diagnosis, treatment and risk factors among women with positive or negative personal history of breast complaints, see table 4.

Table 3: Breast Cancer Knowledge by Selected Personal Variables

	General Knowledge		Knowledge of Symptoms		Knowledge of Diagnosis		Knowledge of Treatment		Knowledge of Risk Factors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age										
20-29	32.0	12.5	21.1	13.1	28.2	17.1	57.7	29.1	38.5	20.2
30-39	32.6	12.9	20.2	13.1	24.8	17.0	62.4	27.7	40.4	22.9
40-49	31.2	12.3	22.3	16.1	29.4	17.4	58.9	28.1	34.1	18.5
≥ 50	33.1	14.5	20.2	12.6	28.2	23.0	63.2	27.2	40.3	23.9
<i>P value</i> ¹	0.83		0.74		0.34		0.63		0.18	
Marital status										
Never married	31.2	14.5	16.5	14.9	24.5	19.1	56.9	32.4	41.6	21.3
Ever married	32.1	14.5	21.7	13.9	27.9	17.7	60.4	27.6	37.4	21.0
<i>P value</i> ²	0.70		0.053		0.311		0.515		0.30	

Educational level										
Uneducated	24.6	10.7	20.0	12.4	16.0	13.9	68.3	25.3	23.5	16.3
Low	28.4	12.7	19.0	11.9	25.9	19.0	55.7	26.3	32.1	20.0
Middle	33.4	12.0	21.4	16.1	29.2	17.8	59.0	28.5	40.0	20.6
High	34.9	14.0	21.1	14.0	28.6	16.4	65.4	29.2	43.3	21.9
<i>P value</i> ³	0.002		0.668		0.008		0.147		0.0001	
Employment										
Not employed	30.5	12.5	20.8	14.3	26.8	18.8	59.3	28.5	34.7	19.9
Employed	35.3	12.7	21.8	13.6	29.0	15.7	61.6	27.5	44.2	21.9
<i>P value</i> ²	0.002		0.560		0.31		0.517		0.0001	
Health Center Region										
Region 1	31.2	12.0	20.2	12.5	30.1	15.5	53.4	26.4	37.1	21.0
Region 2	33.2	14.2	20.5	12.8	27.1	15.8	67.4	29.8	38.5	23.5
Region 3	31.6	13.1	20.6	16.6	27.1	19.8	58.0	30.7	38.4	20.4
Region 4	32.5	12.4	22.4	13.2	20.9	18.7	62.4	25.8	37.6	20.8
Region 5	31.3	11.3	20.1	12.0	26.1	12.6	58.9	24.1	36.9	21.7
<i>P value</i> ^{1,3}	0.93		0.79		0.77		0.08		0.99	

¹ANOVA, ²T test, ³Kruskal Wallis Test

Table 4: Breast Cancer Knowledge among Women with Positive Personal History or Family History of Breast Cancer

	General Knowledge Mean	Knowledge of Symptoms Mean	Knowledge of Diagnosis Mean	Knowledge of Treatment Mean	Knowledge of Risk factors Mean
Women with positive personal history of breast complaint:					
Yes (n=18)	168.7	152.8	167.8	151.8	164.7
No (n=282)	149.3	150.3	149.4	150.4	149.5
<i>P value</i> ¹	0.35	0.90	0.35	0.94	0.46
Women with positive family history of breast cancer:					
Yes (n= 52)	34.7 11.2	22.3 16.2	30.7 19.5	68.5 24.1	39.6 18.5
No (n=248)	31.5 13.0	20.9 13.6	26.9 17.4	58.3 28.6	37.5 21.5
<i>P value</i> ²	0.098	0.50	0.16	0.017	0.52

¹Mann-Whitney test, ²T test

DISCUSSION

The level of education had a significant association with breast cancer knowledge; uneducated women were likely to have less knowledge than the educated¹⁰. The percentage of 17.3% of women who reported a positive family history of breast cancer in this study was lower than that reported from Saudi (21.5%) and American women (20%) but similar (17.9%) to the German¹¹⁻¹³. Positive family history of breast cancer could be a factor to increase the breast cancer knowledge, such association was found in the treatment modalities of the current study; no association was found in a study of public health nurses in Singapore¹⁴.

The unsatisfactory level of knowledge among Bahraini women is lower than that reported by Dolan et al, where the mean knowledge scores of US women of different ethnic groups aged 30 to 70 years old was 66% - 67%¹⁵. However, a lower mean knowledge index (22.9%) was

reported among secondary school female Saudi students¹⁶. Similarly, school teachers in Nigeria had a low mean knowledge, attitude and practice score of 12.2 ± 5.1 out of a maximum of 32 points; only a quarter obtained a satisfactory grade of 50% or more¹⁷. A study of educated Appalachian US women had an average knowledge score of 13 correct responses out of a maximum of 19¹⁸. Studies among health professionals showed that only 11% of the women in the medical and nursing faculties in Ain Shams University, Egypt, had a satisfactory knowledge of breast cancer and 79% of the Nigerian nurses had more than 50% of the Breast Cancer Knowledge Score^{19,20}. In Singapore, Public health nurses had a median breast cancer knowledge score of 9, of whom 58% scored more than or equal to 9 out of 17¹⁴.

The highly educated women in this study had better knowledge of breast cancer ($p=0.002$), diagnostic modalities ($p=0.008$), and risk factors ($p<0.0001$), it is similar to other studies on Saudi women and African American women^{11,21}.

In a study, the size of the tumor in Bahraini breast cancer patients was smaller among the highly educated⁶. Breast cancer knowledge was not associated with age, marital status and regions but with employment where the confounding effect of education cannot be excluded. Other studies have shown that television and/or radio were the main sources of information and emphasized the low rate for information from doctors and nurses²²⁻²³.

Breast lump was recognized by 86.6% of the women as a symptom of breast cancer. Other studies have found that 74% of women in Ireland, 93.6% of the nurses in Nigeria, 57% of female health care workers in Iran, and 53.2% of schoolteachers in Nigeria identified breast mass as a symptom of breast cancer^{17,20,22,24}. Forty-six percent identified breast pain as a symptom of breast cancer, despite the fact that it is considered a rather rare symptom²⁵. In our study, only 8.8% mentioned that a painless breast condition is a symptom of breast cancer. That point needs to be stress upon while planning for educational programs because breast cancer usually presents with a painless mass especially in its early stages²⁶⁻²⁷.

In our study, advancing age was identified as a risk factor for breast cancer by about one third of the women compared to 14% in Saudi Arabia, and 45% of female health care workers in Iran^{11,24}. In addition, this study showed that 41% of the women thought that advancing age has no relation with breast cancer risk. Small percentage of women in this study identified other risk factors such as early menarche (8.7%) and late menopause (6.3%). Likewise, the delivery of the first child after 30 years of age was identified as a risk factor by only 23% of women which is similar to a study from Iran, where 28% of the women knew that age at first full term pregnancy was a risk factor²⁴. About half of the women identified family history as a risk factor, which is similar to that reported by Nigerian nurses²⁰. The rate (50%) was significantly higher than that found among Australian women (4.5%), United Arab Emirate women (30%) and school teachers in Nigeria (30.9%)^{17,28,29}. However, a better knowledge of positive family history as a risk factor were seen among health care workers in Iran (63%), nurses in Saudi Arabia (80%), and Irish women (92%)^{22,24,30}.

CONCLUSION

This study shows that the overall breast cancer knowledge was deficient among Bahraini women, which could partly explain the late presentation of breast cancer patients to the health care providers as reported in the earlier studies. The finding that the highly educated women were more knowledgeable about breast cancer implies that efforts to improve women's education should be encouraged. Breast cancer should be

included as a subject in the high school curricula, with emphasis on modifiable risk factors. Moreover, the maximum use of media as a vital source of knowledge of breast cancer should be encouraged in breast cancer campaigns.

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