

Ethics consideration

The research was approved by the Ethics committee in RCSI Bahrain and Ministry of health in the kingdom of Bahrain. Oral and written information sheet was provided to participants and consent was obtained.

Statistical analysis

Descriptive analysis was presented in frequency tables for each item in the four sections of the questionnaire. Chi square tests were used to test the association between sociodemographics and each item in the risk factor, screening and treatment sections of the questionnaire. P value ≤ 0.05 is considered statistically significant.

Results

Socioeconomic demographics

A total of 300 patients consented to participate: 218 from Naim health centre and 81 from Hidd health centre. According to Table 1 approximately half of the respondents (54%), were aged between 30 and 50. The majority of the patients was married (81%), and had children, (74.7%). The sample included an adequate representation of patients with different educational attainment levels. About 65.7% of respondents were employed. The sample included 53 (17.7%) women who were previously diagnosed with breast cancer.

Variable	Count (%)
Age group	
<30	86 (28.7)
30-50	162 (54)
50-65	44 (14.7)
>65	7 (2.3)
Marital Status	
Married	243 (81)
Single	56 (18.7)
Children	
Have children	224 (74.7)
Do not have children	72 (24)
Level of education	
None	4 (1.3)
Primary	47 (15.7)
Secondary	95 (31.7)
Third Level	147 (49)
Employment status	
Employed	197 (65.7)
Unemployed	103 (34.3)
History of breast cancer	
Previously diagnosed with breast cancer	53 (17.7)
No history of breast cancer	246 (82)
No answer	1 (0.3)
Total	300 (100)

Table 1: Characteristics of the Socio-demographics among participants.

	Frequency	Percent (%)
Knowledge of breast cancer risk factors		
Overweight		
Agree	53	17.7
Disagree	127	42.3

Don't know	116	38.7
Smoking		
Agree	122	40.7
Disagree	81	27
Don't know	92	30.7
Drinking alcohol		
Agree	94	31.3
Disagree	78	26
Don't know	122	40.7
Family history		
Agree	154	51.3
Disagree	69	23
Don't know	74	24.7
BRCA gene		
Agree	153	51
Disagree	45	15
Don't know	99	33
Knowledge of breast cancer screening		
Age of screening		
40	247	82.3
50	13	4.3
60	0	0
Don't know	39	13
Increased chance of survival due to screening		
Agree	266	88.7
Disagree	9	3
Don't know	25	8.3
Safety of screening		
Agree	273	91
Disagree	12	4
Don't know	14	4.6
Knowledge of treatment		
Necessity of surgery in all patients diagnosed with breast cancer		
Agree	103	34.3
Disagree	154	51.3
Don't know	42	14
Necessity of chemotherapy in all patients diagnosed with breast cancer		
Agree	98	32.7
Disagree	166	55.3
Don't know	35	11.7
Necessity of radiation in all patients diagnosed with breast cancer		
Agreed	87	29

Disagreed	143	47.7
Don't know	68	22.7
Mastectomy being the best surgical treatment for breast cancer		
Agreed	54	18
Disagreed	64	21.3
Don't know	182	60.7
Most important treatment for breast cancer		
Chemotherapy	39	13
Radiation	30	10
Surgery	131	43.7
All	1	0.3
Don't know	96	32

Table 1: Risk factor, screening and treatment responses in numbers and percentages.

In terms of knowledge of the risk factors that lead to cancer, participants seemed to be most confident in believing that family history and BRCA gene are risk factors to developing BC (51.3% and 51.0% respectively). Participants were least confident in answering whether drinking alcohol is a risk factor for the development of BC, with 40.7 responses being I don't know, and 31.3 responses being yes. There is a statistically significant relationship between having had a previous diagnosis of BC and answering "yes" in response to whether family history of BC increases the risk of getting BC ($p=0.048$, chart 1).

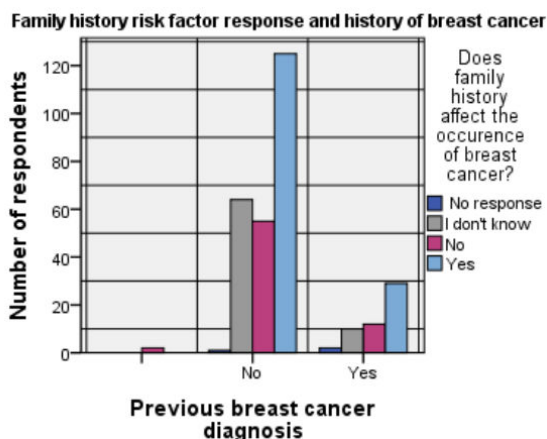


Figure 1: Previous breast cancer diagnosis.

Which is the best method for detecting BC? (1=best, 2=second best, 3= 3rd best, 4= 4th best, 5=5th best)	Count	Percentage
Physical exam		
1	37	12.3
2	15	5
3	10	3.3
4	15	5

Knowledge of breast cancer screening

In Table 2, 82.3% of the sample selected 40 as the age where routine screening starts for breast cancer. 88.7% agreeing to improved survival following screening, and 91.0% believing in the safety of screening.

Knowledge of treatment

Regarding treatment, about half of subjects disagreed with the necessity of chemotherapy, surgery or radiation to all patients (55.3%, 51.3% and 47.7% respectively). When participants were given the option to choose the most important treatment for breast cancer, surgery was the most popular (43.7%). This was in turn followed by chemotherapy and radiation therapy (13.0 and 10.0% respectively).

5	44	14.7
Mammogram		
1	41	13.7
2	36	12
3	20	6.7
4	15	5
5	9	3
Ultrasound		
1	16	5.3
2	27	9
3	38	12.7
4	27	9
5	12	4
MRI		
1	15	5
2	26	8.7
3	21	7
4	30	10
5	28	9.3
CT		
1	12	4
2	18	6
3	31	10.3
4	33	11
5	25	8.3

Table 2: Responses to the Knowledge of breast cancer screening items in numbers and percentages.

Mammogram was ranked the best screening method for BC by 13.7% of participants as shown in Table 2 and second best by 12%. This is followed by physical examination where it was ranked best screening method by 12.3% of respondents. 91.0% of respondents believed that BC screening is safe. There was a statistically significant correlation between age of respondents and how safe screening was perceived. Younger participants perceived screening to be safer than did older participants ($p=0.032$, Figure 2).

Age group and opinion on whether screening is safe

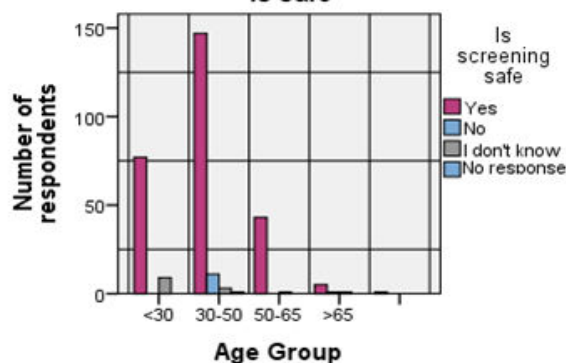


Figure 2: Younger participants perceived screening to be safer than did older participants.

Education was a statistically significant positive variable with regards to whether respondents believed that screening improved survival. ($p=0.002$, Figure 3).

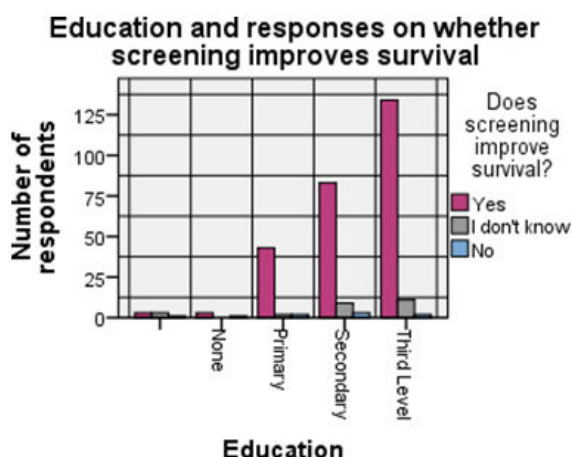


Figure 3: Education and respondents on screening improved survival.

Discussion

This study included 300 women in the waiting area of two breast clinics in the primary health care centres with the aim of exploring their knowledge about breast cancer screening and treatment. In this study, the participants showed superior knowledge on screening compared to the knowledge on treatment and risk factors. However, we cannot conclude how this reflected on the actual behaviour and practice of participants as the questionnaire did not include questions on their practices. Universal poor knowledge was also reported in other regional studies [8-10].

On the whole, participants knew that family history and genetics factors represent important risk factors to the disease whereas other life style factors such as overweight, smoking and excessive alcohol drinking were less known to them. This is in line with international [7] and regional studies [9,10].

In our study this knowledge is significantly associated with having previous diagnosis of breast cancer. This may be because those with a personal history of breast cancer may have had access to more information concerning risk factors of the disease. One should note that our questionnaire did not include a question inquiring about participants having family history of breast cancer themselves which could have been linked to this observation as suggested by other studies in the literature [11-14]

The association between education and knowledge of breast cancer screening and risk factors has given conflicting results in various studies with some studies confirming it [8] and other don't. In this study this relationship did not reach statistical significance. Despite the recent mammogram screening debate [15], mammogram was exceedingly rated as the most effective method for detecting breast cancer in our study. A possible interpretation for this is that patients may have not had access to this recent debate. A study on Kuwaiti female schoolteachers reported that 85.7% of respondents did not know what mammography is in the first place. Interestingly, majority of respondents believed that breast cancer screening is safe and didn't have concerns regarding its harms [16-20].

Another study assessing the knowledge of breast cancer in Bahrain in the context of primary health care has been published in 2005. Knowledge in this study was assessed in terms of the following

categories: screening, diagnosis, risk factors, and clinical presentations. This study incorporated knowledge of symptoms which was not assessed in our study (*i.e.*, breast pain, painful and painless lumps). Risk factors assessed in this study also differed as they included: short breastfeeding, advanced age, the age of delivery of first child, early menarche and late menopause. Our study added patients' life style risk factors such as weight, and drinking alcohol. Our study also adds an evaluation of knowledge of age of screening, whether or not screening improves survival, and the safety of screening, which was not assessed in this study. Moreover, knowledge about treatment was assessed by our study.

Family history was identified as a risk factor by 50%, which is similar to our study's 51.3%. Smoking was identified as a risk factor by 68.7%, as opposed to 40.7% in our study. Positive family history of breast cancer and higher educational levels were associated with better overall knowledge in this study. However, factors such as age and marital status were found to statistically insignificant. In general, both studies found poor knowledge among Bahraini women, which may partly explain their late presentations to healthcare providers.

The study results are difficult to generalise to the entire population of women in Bahrain due to the convenience sampling technique used. Furthermore, since the data is collected in the form of self-reporting, response bias or social desirability bias cannot be excluded. Although this study's results provide a good benchmark upon which planning of efficient mass screening campaigns can take place, population-based studies and randomised sampling are needed in order to obtain more generalizable findings. Also targeting women attending breast clinics may have resulted in selection bias as these women are more likely to have had more access to information about breast cancer treatment and screening at some point.

Comparison with other research papers is not always possible, as most questionnaires did not address modalities of treatment as part of their exploration of breast cancer knowledge. Differences in study designs, methodology and questionnaire format and content were also a barrier to comparison.

Conclusion

Our study explored women's breast cancer knowledge in Bahrain; an area with a very limited body of research. This provides new data about awareness in Bahrain, thus updating the previous data in Bahrain, which was collected in 2005. The findings of this study point to improved screening knowledge level but limited knowledge regarding risk factors and treatment. These areas can be targeted in future educational campaigns.

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