

Assessment and Practice of Female Health Care Workers Regarding Risk of Breast Cancer and Screening Methods Cross-Sectional Study, Saudi Arabia

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Abstract

Background: A high level of knowledge practice among female health care workers regarding risk factors for breast cancer and screening methods is important in increasing awareness in the general population. Objective: To assess the knowledge and practice of female health care workers in Najran about breast cancer and their behavior in relation to breast screening methods. Methods: This cross-sectional study was conducted using an interviewer administered questionnaire-based survey method at a Maternity and Children's Hospital, primary health care centers and King Khalid Hospital at Najran City, Saudi Arabia. The study was conducted from April 2019 to June 2019. A total of 493 participants were included. Data were collected, coded, and entered into a statistical software program (IBM SPSS version 25) for statistical analysis. Result: Among the 493 participants, 17% had good knowledge about the risk factors for breast cancer, while 37% had moderate knowledge and 46% had poor knowledge. Knowledge and attitudes regarding methods of screening for breast cancer was poor in 57.2% of the participants, moderate in 36.5% and only 6.3% had good awareness. In terms of barriers to screening, 47.3%, 50.5% and 27.2% were unaware of mammograms, clinical breast examinations and self-examination, respectively. Among the participants, 42.0% obtained relevant information from symposia, workshops and social media. Conclusion: The level of knowledge and attitudes among female health care workers regarding risk factors of breast screening is low. Urgent intervention by the health care system in Saudi Arabia is required to increase the awareness of breast cancer screening among health care workers.

Keywords

Breast Cancer, Screening, Health Care Providers, Saudi Arabia, Risk Factors

1. Introduction

Breast cancer is the most common cancer in women both in the developed and developing world. Breast cancer is the second most common cancer overall accounting for 11.9% of all cancers, but ranks 5th globally as a cause of death, accounting for 6.4% of all deaths [1]. In Saudi Arabia, breast the most common cancer affecting Saudi women, with 25% of all women diagnosed with breast cancer [2]. Saudi women with breast cancer usually present at an advance stages [3]. Therefore, early detection remains the cornerstone of breast cancer management to improve patient outcomes and survival. Mammography, clinical breast examination, and breast self-examination are the secondary prevention methods used for screening breast cancer. There are many risk factors for breast cancer including age, with the incidence increasing with age, and approximately doubling every 10 years until menopause [4]. In Saudi Arabia, 2741 new cases of cancer were reported in 2012 among them 20% diagnosed with breast cancer [5].

The a high level of knowledge practice among female health care workers regarding risk factors for breast cancer and screening methods is important in increasing awareness in the general population. Therefore, in this study, we assessed the knowledge of female health care workers in Najran about breast cancer and their behavior in relation to breast screening methods.

2. Methods

This cross-sectional study was conducted using an electronic administered questionnaire at Maternity and Children's hospitals, primary health care centers and King Khalid Hospital at Najran City, Saudi Arabia. All female health care workers (Saudi and non-Saudi) were included and agreed to participate in this study. Those who refused to participate were excluded. The study was conducted from April 2019 to June 2019.

A total of 493 participants were included, with margin of error set at 5% and a confidence interval of 95%. An ethical approval for this study was obtained from the research committee at the College of Medicine, Najran University before the start of the study. Data were obtained by a research team who administered the electronic questionnaire directly to female health care workers. Each participant took five minutes to complete the questionnaire, which consisted of three parts:

Part 1: Sociodemographic data: age, nationality, occupation, marital status, medical history, family history of breast disease, ages at menarche, marriage and

parity.

Part 2: Items related to awareness risk of breast cancer and knowledge of screening methods.

Part 3: Items related to the practice of screening methods and barriers to their practice.

Statistical analysis

Data collected, coded, and entered into a statistical software program (IBM SPSS version 25). Any correct answer given a score of one point; otherwise, a score of zero given. The discrete scores for the different knowledge domains summed. Knowledge scores categorized relative to the maximum score as follows: poor, <50%; moderate, 50% - 75%; and good, >75%. Descriptive statistics, including frequencies and percentages, used to describe the frequency of each response for the categorical data. The Chi-squared test/Monte Carlo exact test and Fishers exact test used to evaluate between sample characteristics and knowledge level. All statistical analysis performed using two-tailed tests, with an alpha error of 0.05. *P*-value less than or equal to 0.05 were considered statistical significance.

3. Results

In total, 493 women's health care providers were invited to participate in this study. As shown in **Figure 1**, 17.4% of the participants had good knowledge about risk factors for breast cancer, while 36.9% had moderate knowledge. The remaining 45.6% had only poor knowledge about risk factors for breast cancer. The knowledge and attitude regarding the methods of screening for breast cancer was poor in 57.2% of the participants, moderate in 36.5% and only 6.3% had good awareness.

The demographic data shown in **Table 1** demonstrate that majority of participants were Saudi (86.2%) and aged under 30 years (68.4%). In total, 68.2% of the participants were nurses, and 58.6% were single. No medical disease reported by 91% of participants and 86% had no history of breast disease.

As shown in **Table 2**, analysis of the distribution of predictors of risk factors for breast cancer revealed that nationality was the most significant predictor (P =



Breast Cancer Awareness



	Demographi	c data	
		п	%
Age (years) <i>n</i> = 4	93		
Less	than 30	337	68.4
Fro	n 31 to 40	138	28
Fro	m 41 to 50	18	3.7
Nationality n = 4	93		
Sau	li	425	86.2
Nor	-Saudi	68	13.8
Occupation $n = 4$.93		
Doc	tor	51	10.3
Pha	rmacist	24	4.9
Nur	se	336	68.2
Phy	siotherapist	7	1.4
Rad	iology technologist	69	14
Lab	specialist	6	1.2
Marital status n	= 493		
Sing	le	289	58.6
Mai	ried	187	37.9
Div	orced	14	2.8
Wid	lowed	3	0.6
Medical history	n = 493		
Nil		452	91.7
Dia	oetes mellitus	11	2.2
Hyp	ertension	18	3.7
Oth	er	12	2.4
Surgical history	n = 493		
Yes		81	16.4
No		412	83.6
Medication histo	ry <i>n</i> = 493		
Yes		64	13
No		429	87
Family history of	f any breast disease $n = 493$		
Nil		426	86.4
Aur	ıt	30	6.1
Gra	ndmother	14	2.8
Mot	her	8	1.6
Siste	er	8	1.6
Oth	ers	7	1.4

Table 1. Socio-demographic data.

55	11.2
82	16.6
271	55
85	17.2
33	6.7
152	30.8
18	3.7
1	0.2
289	58.6
51	10.3
153	31
289	58.6
	55 82 271 85 33 152 18 1 289 51 153 289

 Table 2. Distribution of the general knowledge level of breast cancer.

			General Knowledge Level							
Pr	redictors	Poor		Mod	erate	Good		Total		Р
		п	%	п	%	п	%	п	%	
	Less than 30	159	47.2	127	37.7	51	15.1	337	100	
Age (vears)	From 31 to 40	59	42.8	48	34.8	31	22.5	138	100	0.391
	From 41 to 50	7	38.9	7	38.9	4	22.2	18	100	
Nationality	Saudi	212	49.9	158	37.2	55	12.9	425	100	0.000*
	Non-Saudi	13	19.1	24	35.3	31	45.6	68	100	0.000*
	Doctor	16	31.4	15	29.4	20	39.2	51	100	
Occupation	Pharmacist	11	45.8	9	37.5	4	16.7	24	100	
	Radiology technologist	28	40.6	28	40.6	13	18.8	69	100	0.007*
	Nurse	165	49.1	125	37.2	46	13.7	336	100	0.007*
	Physiotherapist	2	28.6	4	57.1	1	14.3	7	100	
	Lab specialist	3	50	1	16.7	2	33.3	6	100	
	Single	126	43.6	120	41.5	43	14.9	289	100	
Marital status	Married	88	47.1	57	30.5	42	22.5	187	100	0.020*
Marital status	Divorced	9	64.3	5	35.7	0	0	14	100	0.039*
	Widowed	2	66.7	0	0	1	33.3	3	100	
	Nil	205	45.4	170	37.6	77	17	452	100	
Madical history	Diabetes mellitus	4	36.4	4	36.4	3	27.3	11	100	0.650
Medical history	Hypertension	9	50	4	22.2	5	27.8	18	100	0.000
	Other	7	58.3	4	33.3	1	8.3	12	100	

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Sumaical history	Yes	35	43.2	26	32.1	20	24.7	81	100	0.161
Surgical instory	No	190	46.1	156	37.9	66	16	412	100	0.101
Medication history	Yes	30	46.9	25	39.1	9	14.1	64	100	0 741
	No	195	45.5	157	36.6	77	17.9	429	100	0.741
	Nil	204	47.9	153	35.9	69	16.2	426	100	
	Mother	2	25	3	37.5	3	37.5	8	100	
Family history	Sister	3	37.5	4	50	1	12.5	8	100	0.079
ramily history	Grandmother	4	28.6	9	64.3	1	7.1	14	100	0.079
	Aunt	11	36.7	9	30	10	33.3	30	100	
	Others	1	14.3	4	57.1	2	28.6	7	100	
	Less than 20 year	20	60.6	10	30.3	3	9.1	33	100	
	From 21 to 30	73	48	45	29.6	34	22.4	152	100	
Age at marriage (years)	From 31 to 40	6	33.3	7	38.9	5	27.8	18	100	0.027*
	More than 40	0	0	0	0	1	100	1	100	
	Single	126	43.6	120	41.5	43	14.9	289	100	
	Nulliparous	27	52.9	17	33.3	7	13.7	51	100	
Parity	Multiparous	72	47.1	45	29.4	36	23.5	153	100	0.043*
	Single	126	43.6	120	41.5	43	14.9	289	100	
	Less than 12	45	54.9	25	30.5	12	14.6	82	100	
Age at menarche	From 12 to 14	107	39.5	109	40.2	55	20.3	271	100	0.053
(years)	More than 14	40	47.1	31	36.5	14	16.5	85	100	0.055
	Unknown	33	60	17	30.9	5	9.1	55	100	

Continued

0.001), followed by occupation (P = 0.007). Age at marriage, marital status and parity were also significant predictors of risk factors for breast cancer (P = 0.027; P = 0.039 and P = 0.043, respectively).

As shown in **Table 3**, analysis of the distribution of predictors of breast cancer screening methods of breast cancer revealed that nationality was the most significant (P = 0.001), followed by occupation and age (P = 0.010; P = 0.035, respectively). Other predictors shown not significant for screening of breast cancer.

Table 4 shows the barriers to screening for breast cancer. Overall, 9.9% of participants had undergone mammograms, 30.4% had received clinical examination and 59.2% carried our self-examination. However, among the participants, 47.3%, 50.5% were unaware of mammograms and 27.2% were not aware of clinical breast examination and self-examination. Furthermore, for each method, 13.4%, 4.1% and 2.4%, respectively, believed that the screening would be painful.

Regarding sources of information, 42.2% of participants obtained information from attending symposia and workshops and 42% obtained information from

			Practices Knowledge Level							
Pre	dictors	Po	or	Mod	erate	Go	bod	То	tal	P
			%	п	%	п	%	п	%	-
	Less than 30	204	60.5	118	35	15	4.5	337	100	
Age (vears)	From 31 to 40	71	51.4	54	39.1	13	9.4	138	100	0.035*
	From 41 to 50	7	38.9	8	44.4	3	16.7	18	100	
Nationality	Saudi	270	63.5	139	32.7	16	3.8	425	100	0.000*
Nationality	Non-Saudi	12	17.6	41	60.3	15	22.1	68	100	
	Doctor	23	45.1	26	51	2	3.9	51	100	
	Pharmacist	18	75	6	25	0	0	24	100	
Occupation	Radiology technologist	29	42	35	50.7	5	7.2	69	100	0.010*
Occupation	Nurse	207	61.6	105	31.3	24	7.1	336	100	0.010
	Physiotherapist	3	42.9	4	57.1	0	0	7	100	
	Lab specialist	2	33.3	4	66.7	0	0	6	100	
Marital status	Single	166	57.4	109	37.7	14	4.8	289	100	
	Married	106	56.7	65	34.8	16	8.6	187	100	0.154
	Divorced	10	71.4	3	21.4	1	7.1	14	100	
	Widowed	0	0	3	100	0	0	3	100	
	Nil	263	58.2	163	36.1	26	5.8	452	100	
Medical history	Diabetes mellitus	5	45.5	6	54.5	0	0	11	100	0 224
Medical instory	Hypertension	9	50	6	33.3	3	16.7	18	100	00 00 0.224
	Other	5	41.7	5	41.7	2	16.7	12	100	
Surgical history	Yes	41	50.6	31	38.3	9	11.1	81	100	0 111
Surgical instory	No	241	58.5	149	36.2	22	5.3	412	100	0.111
Medication history	Yes	34	53.1	25	39.1	5	7.8	64	100	0 735
Medication mistory	No	248	57.8	155	36.1	26	6.1	429	100	0.755
	Nil	252	59.2	150	35.2	24	5.6	426	100	
	Mother	1	12.5	7	87.5	0	0	8	100	
Family history	Sister	5	62.5	3	37.5	0	0	8	100	0.067
i uniny mistory	Grandmother	7	50	6	42.8	1	7.1	14	100	0.007
	Aunt	14	46.7	11	36.7	5	16.7	30	100	
	Others	3	42.9	3	42.9	1	14.3	7	100	
	Less than 20 year	22	66.7	10	30.3	1	3	33	100	
	From 21 to 30	84	55.3	56	36.8	12	7.9	152	100	
Age at marriage (years)	From 31 to 40	10	55.6	4	22.2	4	22.2	18	100	0.104
	More than 40	0	0	1	100	0	0	1	100	
	Single	166	57.4	109	37.7	14	4.8	289	100	

 Table 3. Distribution of the practice knowledge level of breast cancer screening methods.

Continued										
	Nulliparous	31	60.8	16	31.4	4	7.8	51	100	
Parity	Multiparous	85	55.6	55	35.9	13	8.5	153	100	0.553
	Single	166	57.4	109	37.7	14	4.8	289	100	
	Less than 12	54	65.9	24	29.3	4	4.9	82	100	
Age at menarche (years)	From 12 to 14	138	50.9	113	41.7	20	7.4	271	100	0.053
	More than 14	50	58.8	30	35.3	5	5.9	85	100	0.055
	Unknown	40	72.7	13	23.6	2	3.6	55	100	

Table 4. Barriers to breast screening methods.

<i>n</i> = 493									
Barriers	п	%							
What's the barrier to you accepting mammogram screening?									
Unaware of the screening method	233	47.3							
It is harmful	43	8.7							
It is expensive	47	9.5							
It is painful	66	13.4							
Fear of the result	55	11.2							
I have had a mammogram	49	9.9							
What's the barrier to do clinical breast examination?									
Unaware of the screening method	250	50.7							
No female physician	49	9.9							
It is painful	20	4.1							
Fear of the result	24	4.9							
I have had clinical breast examination	150	30.4							
What's the barrier to do breast self-examination?									
Unaware of the screening method	134	27.2							
No training	40	8.1							
It is painful	12	2.4							
Fear of the results	15	3							
I do self-examination	292	59.2							

social media. 9.3% they don't had information about it and 6.5% of participants obtained from Campion in mall (Figure 2).

4. Discussion

The aim of this study was to evaluate the level of knowledge and practice among female health care workers in Najran. This information is important for ensuring that health care workers have the knowledge required to educate women and improve awareness about breast cancer. Our findings may be useful for planning



What is your source of information about breast cancer?

Figure 2. Source of information.

education programs for health care workers about breast cancer and the importance of screening methods. In this study, we found that only 17.4% of the participants had good knowledge about risk factors for breast cancer and 45.6% had poor knowledge. A similar study in Benin showed that 12.46% of the participants had accurate knowledge [6]. Our results are consistent with other reports of poor knowledge about the risk factors of breast cancer among professions [7] [8] In contrast; another study in Nigeria revealed that 67% of participants had adequate knowledge about the risk factors for breast cancer [9]. The most significant predictor of knowledge of risk factors was nationality, with 45.6% of non-Saudi participants showing good knowledge, followed by occupation, with 39.2% of female doctors showing good knowledge compared to all other health care providers. In a similar study conducted in Pakistan, 35% of nurses had good knowledge about risk factors for breast cancer compared with 13.7% of nurses in our study [10]. This discrepancy may be due to the difference in training and variations in the participants between the two studies, because 68.2% of our study participants were nurses. These results highlight the need for improved efforts to raise awareness among health care workers about risk factors for breast cancer.

In this study, 9.9% of participants had undergone mammogram screening, while 52.3% were aware of the procedure. The main barrier to attending mammogram screening was the perception that the procedure is painful and fear of the result. Mammograms offered free-of-charge in Saudi Arabia to encourage women to attend screening. In contrast, study in Nigeria it cost effective for them [9]. In another study, approximately 40% of participants had undergone mammogram screening [11]. Another study in Morocco showed good knowledge about mammograms among doctors, although only 22% of participants reported having undergone the procedure [12]. In contrast, higher rates of mammogram screening reported in developed countries [13]. The benefit of mammogram is reduced mortality rates and increased survival rate because of

early detection [14]. Despite all the facilities and the newly designated Breast Cancer Awareness Day in Saudi Arabia, only a small percentage of women undergo mammogram screening. This is due to lack of awareness about the screening and fear of the result. Thus, urgent intervention by the health care system in Saudi Arabia is required to increase the awareness of breast cancer screening through the provision of education programs and workshops for health care workers and to increase the awareness and practice in the general population.

The American Cancer Society recommends clinical breast examination at least every 3 years in women aged from 20 to 39 years and annually, from the age of 40 years onwards [15]. In our study, 30.4% of participants had received clinical breast examination. It can be speculated that this low percentage is because 9.9% of these participants requested a female physician. In a study conducted in Bayelsa, only 23.8% of participants had received clinical breast examination when referred to a female physician [16]. This issue is dependent on religious and cultural constraints that preclude examination by a male doctor. In another study, the participants preferred self-examination to clinical breast examination because of the possibility that the examination conducted by a male doctor [9].

Despite 42% of the participants in this study obtaining information by attending symposia and workshops, a high percentage of participants still had low levels of knowledge and underwent breast screening. This indicates that the educational material and mammogram programs provided by the health system not used effectively by health care workers. Moreover, 42% of the participants obtained information via social media, which is unregulated and makes it difficult in determine the scientific validity of the information received.

Some limitations of this study noted. First, our study was limited to Najran City of Saudi Arabia; therefore, our results can't be generalized to the rest of the country and beyond. Second, the majority of participants were nurses; therefore, our study sample is not a representative reflection of the distribution of health care professionals.

5. Conclusion

Our study revealed a low level of knowledge and poor attitudes among female health care workers regarding risk factors for breast cancer and screening methods. In addition, it showed superior knowledge among doctors compared with that of nurses. Urgent intervention by the health care system in Saudi Arabia is required to increase the awareness of breast cancer screening among female health care workers and facilitate the transfer of relevant information to the general population.

Compliance with Ethical Standards Ethical Approval

An ethical approval letter has been acquired from the Research Ethics Commit-

tee, Najran University, Saudi Arabia prior to this study. All the participants in this study will kept anonymity.

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Informed Consent

Informed consent obtained from all individual participants included in the study.

Conflicts of Interest

The authors report no financial affiliations or other conflicts of interest related to the subject of this study.

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