Knowledge, Attitudes, and Practices Surrounding Breast Cancer and Screening in Female Teachers of Buraidah, Saudi Arabia

Khadiga F. Dandash, Abdurrahman Al- Mohaimeed

Department of Family and Community Medicine, College of Medicine, Qassim University, Saudi Arabia.

Abstract:

Background : Breast cancer is by far the most frequent cancer of women. However the preventive measures for such problem are probably less than expected.   The objectives of this study are to assess breast cancer knowledge and attitudes and factors associated with the practice of breast self examination (BSE) among female teachers of Saudi Arabia.

Patients and Methods: We conducted a cross-sectional survey of teachers working in female schools in Buraidah, Saudi Arabia using a self-administered questionnaire to investigate participants' knowledge about the risk factors of breast cancer, their attitudes and screening behaviors. A sample of 376 female teachers was randomly selected. Participants lived in urban areas, and had an average age of 34.7 ±5.4 years.

Results: More than half of the women showed a limited knowledge level. Among participants, the most frequently reported risk factors were non-breast feeding and the use of female sex hormones. The printed media was the most common source of knowledge. Logistic regression analysis revealed that high income was the most significant predictor of better knowledge level. Knowing a non-relative case with breast cancer and having a high knowledge level were identified as the significant predictors for practicing BSE.

Conclusions: The study points to the insufficient knowledge of female teachers about breast cancer and identified the negative influence of low knowledge on the practice of BSE. Accordingly, relevant educational programs to improve the knowledge level of women regarding breast cancer are needed.

Key words: breast cancer, Saudi Arabia, knowledge, screening, self examination of breast

Correspondence:
Dr. Abdurahman Al-Mohaimeed
Family & Communiuty Medicine
College of Medicine, Qassim University
Saudi Arabia.

Introduction

Breast cancer is by far the most frequent cancer of women (23% of all cancers), ranking second overall when both sexes are considered together. It is the leading cause of cancer mortality in women and constitutes 14% of female cancer deaths. [1] Incidence rates are increasing in most countries, and the changes are usually greatest where rates were previously low. [2] In Saudi Arabia, while it had once been presumed that the incidence of breast cancer was low; more recent data has indicated that it is a significant disease in this community, as elsewhere in the world. [3,4] The pattern of breast cancer in the Kingdom of Saudi Arabia is very disturbing. It usually presents at advanced stages and more frequently in young pre-menopausal women in comparison to western countries. [3, 5, 6]

Since breast cancer is a progressive disease, small tumors are more likely to be at an early stage and their early detection is more likely to have a better prognosis and more successful treatment. [7] The three screening tests usually considered for early detection are clinical breast examination (CBE), X-ray mammography, and breast self-examination (BSE). [8] In industrial countries breast cancer mortality is declining where screening mammography is the standard for care. [9] BSE is appealing as a patient-centered, noninvasive screening procedure that allows women to become comfortable with their own bodies [10]. Regular performance of BSE does not mean that the breast cancer is necessarily self-detected. BSE increases body awareness, so that there is heightened awareness of changes that may be detected during BSE or at some other time. [1] Although, the American Cancer Society recommended in 2003 that women beginning in their 20s should be told about the benefits and limitations of BSE, this procedure is not considered the best method for early detection but the best option for interval screening among women of all ages. [12]

The poor knowledge and wrong beliefs about cancer breast prevention among women are responsible for a negative perception of the curability of a cancer detected early and of the efficacy of the screening tests. [13]

In Saudi Arabia, studies that detect awareness of breast cancer and the practice of BSE among Saudi women were few [14, 15, 16] One of these studies pointed to a lack in breast cancer knowledge of young female students. [15] Since teachers play an effective role in communication and motivation of young students, assessment of their knowledge,

attitudes and behaviors is essential to reduce the risk of breast cancer among future young generations.

This study aimed to determine breast cancer related knowledge attitudes and screening behaviors among female teachers in order to introduce the best intervention plans.

Methodology

Research Questions

1- Is the breast cancer related knowledge of highly educated female school teachers considered good? And what are the factors influencing it?

2- What are the attitudes towards breast cancer and its screening?

3- Among socioeconomic, knowledge level, attitudes and other health related variables what are the factors that motivate women to practice BSE?

Study Population

The studied population consisted of the female teachers working in the females' primary, intermediate and secondary schools in Buraidah city in Al-Qassim region, Saudi Arabia.

Design and Sampling Technique

A cross sectional study was conducted to assess the breast cancer related knowledge, attitudes and practice of BSE among female teachers assuming that about 50 % of women lack knowledge about breast cancer risk factors and screening methods with absolute precision of 5%. The needed sample size was estimated to be 384 women (considering the confidence limits to be 95%). After adding 10 % for non-response, it turned out to be 423. [17]

To obtain this sample, twenty schools were selected randomly by the stratified sampling method from all female schools of the city that included primary, intermediate and secondary schools. The number of teachers expected to be studied in each school was estimated to be about 25. In Each selected school, all teachers were invited to participate in the study.

Data collection

A questionnaire was constructed based on the study objectives. It included questions related to personal data and history of related health events. The questionnaire also investigated the knowledge and attitude of teachers regarding breast cancer and their practice of screening procedures. The data collection process was made by pre-trained female medical students during their research training course of the academic phase.

Variables

- Knowledge

Knowledge about the risk of breast cancer was assessed by 15 questionnaire items related to personal and history data. Seven items were derived from the Gail Model [18] for estimating a

woman's risk of developing breast cancer in the next 5 years. These items included having had breast cancer once before, late age at first pregnancy, early onset of menstruation, having had a breast biopsy, having a family history of breast cancer, advanced age and late onset of menopause in addition to 5 items recently identified: breast feeding, exposure to radiation, hormonal treatment, high fat diet and obesity.[9,20,21]

The knowledge of women about the common screening methods[8] (mammography, clinical breast examination and breast self examination) was assessed by asking three questions.

A positive answer was assigned one point, whereas a negative answer was given zero. The studied women were divided according to their answers into three levels, limited level (0-2 point), moderate level (3-5 points) and high level (6+ points). Moderate and high levels were coded as the better level.

The source of knowledge was detected by asking the participant to define a source of her knowledge about breast cancer; it was permissible to give more than one source.

- Experience

Out of women's history, three factors have been identified to have an impact on women's knowledge, attitude and practices related to breast cancer. These variables are termed experience variables and included: family history of having breast cancer, personal history of a lump and knowing a friend or non- relative with breast cancer.

- Attitudes and screening

In addition, the questionnaire included items pertaining to women's attitudes and practice of the commonest breast cancer screening methods [10].

Two opposite attitudes were selected: fatalism and control. Fatalism was identified as the belief that death is inevitable when cancer is present. It has been identified as a barrier to participation in cancer screening, detection, and treatment.[25] Control is indicated by positive attitudes towards breast cancer screening.

- The outcome measures were Knowledge about breast cancer and practice of BSE

Data analysis

Epi-info 6 (version 6.04) and SPSS software package (version 10) were used for data entry and analysis. Descriptive statistics with cross-tabulations were performed. The Chi-squared test was used to examine the association between variables. The level of significance was set at 5% using the two-sided test.

To find out the most important factors considered as predictors of having better knowledge and of BSE practice, a logistic regression analysis was used. A model was developed using all factors suspected to be associated with positive knowledge and practice. They included personal and experience variable. Positive knowledge and BSE practice were considered the dependent variables. Independent variables are reference parameterized with the theoretically low risk category serving as reference. For the logistic regression model regarding BSE practice knowledge level and attitudes related to breast cancer were added to the independent variables.

Results

Participants in this study were 376 female teachers working in female primary, intermediate and secondary schools in Buriadah city which is located in Qassim region in the center of Saudi-Arabia. The response rate was 88.9%,. All studied teachers were from urban areas and had university degrees. Their mean age was 34.7 ±5.4 years (range: 23-51 years). Most participants (81.9 %) were aged less than 40 years and were married (84.0%). The highest monthly income (6000+ SR) was obtained by more than half (50.8%) of all teachers.

Concerning experience variables that may have an impact on knowledge and practices of breast cancer, 12.0 % of all teachers had a positive family history, 6.6% had a history of a breast lump and about half (45.5 %) of them had known a non- relative breast cancer case

Knowledge

Table (1) presents the distribution of participants according to their knowledge levels about breast cancer. The better level, which included moderate and high scores, was presented by less than half of the participants (47.9 %). Only 12.0% had gained the high score. The rest of the participants (52.1%) were categorized in the limited knowledge level. A great percentage (41.5%) of participants failed to define a source of their knowledge about breast cancer. Print media was the most commonly reported source of cancer information (83.2%). This was followed by television (68.2 %), family and friends (28.6%) and lastly (14.1%) reported health care professionals.

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Table (1). Knowledge, Attitudes and Behaviors of Study Sample

Characteristics	No. (376)	% (100)
Knowledge level		
o Limited	196	52.1
o Moderate	135	35.9
o High	45	12.0
Knowledge source(s)		
o No	156	41.5
o Yes*	220	58.5
- Press media	183	83.2
- Television	o 150	68.2
- Family /friends	63	28.6
- Health workers	31	14.1
Attitudes		
Curability of breast cancer		
o Agree	157	41.8
o Disagree	219	58.2
Screening		
o Agree	109	29.0
o Disagree	267	71.0
B S E		
o Never done	254	67.6
o Done at least once before	122	32.4
o Done during the last month	58	15.4

Permissible of more than one response

Participants' identification of the different risk factors of breast cancer was presented in Table 2. The most reported risk factor was non- breast feeding (52.7 %) followed by the use of female sex hormones (38.6 %). Positive family history of breast cancer and repeated exposure of the breast to radiation came next (22.1 % and 17.8 % respectively). Getting older and history of a breast lump were reported by less than 3.0 % of responses. None of the respondents linked age at menarche or menopause to risk factors.

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Table (2). Breast Cancer Risk and Screening Knowledge of Studied School Teachers

Variables	No. (376)	% (100)
Risk factors*		
o No breast feeding	189	52.7
o Hormones	145	38.6
o Family history of breast cancer	83	22.1
o Exposure to radiation	67	17.8
o High fat diet	21	5.6
o Giving birth at an older age / nulipara	18	4.8
o Having a breast lump	11	2.9
o Getting older >50 years	10	2.7
o Obesity	4	1.1
Screening *		
o BSE	163	43.4
o CBE	106	28.2
o Mammography	35	9.3

*** Permissible by more than one answer**

The religious tendency was manifested in responses by attributing breast cancer to God (27.9%), and the belief in the evil eye (7.2 %). Some participants believed in hitting or bumping the breast (n= 8) as a cause of breast cancer, while others reported direct spraying of perfumes on the skin (n= 5), tight clothes (n= 2), and air pollution (n=1).

Concerning recognition of screening methods, BSE was the most familiar method (43.4 %), clinical breast examinations (CBE) came next (28.2%). Mammography was the least identified method (9.3 %).

Table (3) presents socioeconomic and experience factors that may have an impact on acquiring knowledge. Among socioeconomic variables, older age (40 years and over) working in secondary schools were significantly related to higher knowledge level. Among experience variables, those having a non relative case showed significant better knowledge level than others who did not (Odds 2.1). Other experience variables; positive family history and history of a lump showed no significant association with knowledge level.

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Table (3). Factors Associated with Knowledge.

Characteristics	Better knowledge		X^2	P value [a]	OR(95% C I) #
	No.	%			
Socio demography					
Age in years					
≥ 40- (N= 68) < 40 (N= 308)	44 135	64.7 43.8	9.73	0.002	2.4 (1.32-4.2)
Marital status					
Unmarried (N= 60) Married (N= 316)	28 152	46.7 48.1	0.38	0.539	
Children					
No (N= 92) Have (N= 284)	41 139	44.6 48.9	0.53	0.465	
Income /month/ SR					
≥ 4000 (N = 314) < 4000 (N= 62)	155 25	83.8 40.3	1.70	0.192	
School of work					
High/preparatory (N= 248) Primary (N= 128)	134 46	54.0 35.9	11.08	0.001*	2.1 (1.3-3.3)
Experience					
Family history					
Yes (N= 45) No (N=331)	25 155	55.6 46.8	1.21	0.271	
History of a breast lump					
Yes (N= 25) No (N= 351)	11 169	44.0 48.1	0.16	0.688	
A non relative breast cancer case					
Yes (N= 171) No (N= 205)	89 91	52.0 44.4	11.20	0.000*	2.0 (1.3-3.1)
Source(s) of knowledge					
Defined((N= 220) Not (N= 156)	117 63	53.2 40.3	5.99	0.010*	1.7 (1.1-2.6)

a: probability value   * statistically significant difference
only for significant   C I: Confidence Interval

Defining more than one source of knowledge about breast cancer was significantly associated with a better knowledge level than defining one source or failure to define (OR=1.7).

In Multivariate logistic regression (Table 4), relative odds of all included variables point to the strongest significant power of high income in having a better knowledge level. An age of 40 years and over and work in secondary schools came next. (Adj Odds: 2.1 and 1.8 respectively) Defining the knowledge source (s) is/are the least in power and value (Adj Odds 1.7).

Table (4). Relative Odds of Better Knowledge Score: the Outcome of Logistic Regression

The Variable	Standard Error	P value [a]	Adjusted OR (95% C I)
Higher income	0.347	0.009	2.5 (1.3- 4.9)
≥ 40 years old	0.302	0.013	2.1 (1.2-3.8)
Secondary schools teachers	0.244	0.019	1.8 (1.1-2.9)
Defining the source of their knowledge	0.225	0.019	1.7 (1.1- 2.6)

a: probability values   C I: Confidence Interval

Attitudes

As can be seen in Table (1) most of participants (58.2%) held pessimistic views about the curability of breast cancer. Less than one third (29.0%) agreed to screening for early detection.

Breast Self Examination

Concerning BSE, 43.4 % of the participants had identified BSE as a screening method (Table 2). Table 1 shows that 32.4 % of participants reported the practice of BSE at one time. Amongst them 15.4 % practiced it during the last month. About two thirds (67.6%) of the total participants had never tried BSE.

Table (5) presents the factors associated with BSE practice. Among socioeconomic factors, participants who were significantly more likely to have done BSE in the last month were the unmarried, those having known a non relative case of breast cancer, those having a better knowledge level and those 40 years of age or older. However, BSE was not significantly associated with any of the attitudes variables towards breast cancer curability or screening.

Table (5). Factors Associated with BSE

Characteristics	Practice of BSE		X^2	P value [a]	OR (95% C I) #
	No.	%			
Socio demography					
Age in years					
≥ 40- (N = 68)	15	22.1	5.95	0.015*	2.3 (1.1-4.9)
< 40 (N = 308)	43	14.0			
Marital status					
Unmarried (N = 60)	15	25.0	5.02	0.025*	2.1 (1.0-4.3)
Married (N = 316)	43	75.0			
Children					
Yes (N = 92)	39	13.7	2.55	0.110	
No (N = 284)	19	20.7			
Income / SR / month					
≥ 4000 (N = 314)	51	16.2	0.97	0.323	
< 4000 (N = 62)	7	11.3			
School					
High/preparatory (N = 248)	44	17.7	3.00	0.834	
Primary (N = 128)	14	10.9			
Experience					
Family history					
Yes (N = 45)	10	22.2	1.81	0.179	
No (N = 331)	48	14.5			
History of a breast lump					
Yes (N = 25)	6	24.0		0.248 [F]	
No (N = 351)	52	14.8			
A non relative breast cancer case					
Yes (N = 171)	39	9.3	13.10	0.000*	2.9 (1.5-5.4)
No (N = 205)	19	22.8			
Knowledge					
Better (N = 180)	38	21.2	8.68	0.003*	2.4 (1.3-4.4)
Limited (N = 197)	20	10.2			
Attitudes					
Curability of breast cancer					
Agree (N = 157)	24	15.3	0.00	0.949	
Disagree (N = 219)	34	15.5			
Screening					
Agree (N = 109)	17	15.6	0.00	0.953	
Disagree (N = 267)	41	15.4			

a: probability values   * statistically significant difference
only for significant   C I: Confidence Interval
F Fischer exact test

The logistic regression model for BSE contained eleven covariates. After adjusting, the practice of BSE was found most powerful among participants who had known a non relative case of breast cancer (Adj Odds 2.8), while those with a better knowledge level came next in power and value (Adj Odds 2.5).

Discussion

In Saudi Arabia, breast cancer is the most common cancer, ranked first among females and accounting for 20.6 % of all newly diagnosed female cancers. [4] It usually presents at advanced stages and more frequently in young women in comparison to western countries[4]. A recent study in Jeddah[18] pointed to the low knowledge level of the young female generation in secondary schools. To our knowledge no study dealt with their female teachers.

This study aimed to give an overview of the knowledge, attitudes and behaviors related to breast cancer among female teachers working in female schools. Study findings confirm the unsatisfactory knowledge level of women about breast cancer risk factors and screening methods previously reported among Saudi women.[15,16]

Women's limited knowledge about breast cancer has been identified elsewhere in developed and developing countries. [23,24,25] Participants showed poor understanding of major breast cancer risk factors. The most identified risk factors were non-breast feeding and hormonal treatment, which might reflect the religious culture that encourages, breast feeding and natural methods of birth control. Several misconceptions concerning the risk factors of breast cancer have been mentioned in this study e.g. hitting or bumping the breast which is consistent with beliefs of women in other societies with different cultures such as the Philippines, Korea and Australia. [26,27] Among the predictors of a better knowledge level in this study, the higher income was the strongest significant variable .Association of breast cancer knowledge with income has been identified in other studies. Data from the National American survey on cancer risk revealed poor knowledge among the poorest and least educated women. [25] Similar findings were reported among Hispanic women. [28]

Many factors were significantly responsible for a better knowledge level. Participants aged 40 years and over showed the best level of knowledge. However, many studies pointed to the negative association of knowledge scores with age. [29,30,31] The age of participants in this study is considered fairly young (34.7 ±5.4) which coincides with the literature. The study shows a significantly better knowledge level of teachers working in high schools than those working in primary schools however both groups were highly educated. This variation could be attributed to the health education activities of local organizations that were directed to high school females. The media played a significant role in the determination of better knowledge level. The role of health workers was very poor in spite of their great role in education. [32]

A frustrating fact about breast cancer, as is true of many forms of cancer, is that successful treatment depends heavily on early detection. A majority of our participants did not recognize the most common methods of breast cancer screening (mammography and CBE). This could be attributed to the absence of a national periodic examination program; which usually includes cancer screening tests; in Saudi Arabia. In contrast, BSE was familiar as a screening method and ever practiced by about one third of the participants, and 15.4% of them had practiced it during the last month. This rate is within the range of previous studies in Saudi Arabia and many Arab countries.[33,34,35] However, it is much lower compared to western countries, which approach 80 %. [36]

BSE is appearing as a noninvasive procedure that allows women to become comfortable with their own bodies.[12] In Al Qassim region the local organizations had carried out several educational activities related to breast cancer which could reflect the knowledge and practice of BSE among this community. The fatalistic view of participants towards breast cancer curability and attribution of its risk to God and the evil eye could be a factor in low knowledge level and low screening behaviors. This concurs with many studies that consider fatalism as a barrier in acquiring cancer knowledge and in participation in cancer detection and treatment. [22,25] The results of this study showed that women's practice of BSE has been linked significantly to their knowledge of breast cancer. Several studies have demonstrated this linkage. [37,38]

To make an informed decision about breast cancer screening, women need accurate information about their risks and the benefits of screening.[3].

The strongest factor influencing practice of BSE is knowing about a non relative breast cancer case. The experience of others or one's self with such a disease makes women more concerned about their health, breast diseases and BSE in particular. [40]

Limitations

The study has several limitations. The sample included only the teachers that were present at the time of data collection All teachers had the same degree of education, so, the factor of education that may have significantly influenced the knowledge and behavior was missed.

Conclusion

The study concluded that knowledge scores on breast cancer were measured at low level, the most detective factor of better knowledge level is higher income, the most known method of cancer breast screening among participants was BSE, however the majority never practiced it and knowing a friend or a non relative breast cancer case and better

knowledge level were the strongest factors associated with BSE.

With about 90 % of the participants having a low knowledge score, the study recommended a greater focused breast cancer education program to improve the knowledge about breast cancer and change misconceptions about risk factors, as these are the basis for sound attitudes and behaviors and increase awareness of participants of the body and of BSE as it is the best option for interval screening among women of all ages.

Acknowledgement

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