

Knowledge and Awareness of Breast Cancer among Young Women in the United Arab Emirates

Moustafa Younis*, Dania Al-Rubaye, Hadeel Haddad, Ahmed Hammad, Manar Hijazi

College of Medicine, University of Sharjah (UOS), Sharjah, United Arab Emirates

Email: *u00022147@sharjah.ac.ae

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Abstract

Background: Breast cancer is the most common cancer among females in the United Arab Emirates (UAE). It carries poor prognosis when detected late. Patients usually present at late stages due to lack of awareness of various aspects of breast cancer. **Aim:** The objective of this study is to gain insight into the level of knowledge of breast cancer among young adult females in UAE. **Methods:** A cross-sectional study was conducted among females aged 25 to 45. A total of 492 females were selected using a convenience sampling method. Data were collected through an interview-based questionnaire. Frequency distributions and percentages were used to describe the knowledge tested within the questionnaire. **Results:** The mean age of the participants was 33.5 years. Almost 27% of our participants received a high school degree. The average total knowledge of our population was 51%. The majority (89%) knew that breast cancer is common and 45% knew that it affects ages above forty. The knowledge of signs and symptoms was 53%, and more than half (57%) knew that the most common presenting sign is a breast lump. The knowledge of risk factors was 43%. Almost 94% knew that cancer can be detected early, and 93% knew that early diagnosis improves outcome. The total knowledge of screening methods was 67%. **Conclusion:** The study revealed that respondents' knowledge of breast cancer is less than expected. The increased burden of the disease should be accompanied by powerful means of spreading awareness by implementing campaigns that would improve knowledge deficits.

Keywords

Breast Cancer, Awareness, Knowledge, Breast Self-Examination, Clinical Breast Examination, Young Adults, UAE

1. Introduction

Breast cancer is the most common cancer in the United Arab Emirates, accounting for

22.8% of all cancer cases (UAE Ministry of Health, 2010) [1]. The main obstacle encountered when dealing with breast cancer is its subtle symptoms; hence it is usually diagnosed at a late stage where cure chances are much lower. In fact, only 30% of cases in the UAE—a lower number than in most western countries—are diagnosed in the early stages [1].

Breast cancer is affected by multiple risk factors, including family history/genetic background, hormonal exposures, such as: an early age at menarche, late age at menopause, fewer number of children and null parity, late age at first birth, little or no breastfeeding and long-term use of hormone replacement therapy

Signs of breast cancer may include a palpable breast lump, nipple discharge and skin changes. Mammography detecting early signs of the disease is a valuable diagnostic test, while a pathological examination of a biopsy (fine needle aspiration (FNA), core biopsy, ultrasound-guided core biopsy, stereotactic biopsy, open excisional biopsy, and sentinel node biopsy) from a breast lump aids in differentiation of the types of cancer and survival rate. Breast cancer prognosis and treatment depend on tumor-node-metastasis staging, lymphovascular spread, histological grade, hormone receptor status, comorbidities, and the patient's menopausal status. Generally, treatment includes surgical removal of the breast tissue, chemotherapy, hormone therapy, and radiotherapy (Maughan *et al.* 2010) [2].

There are various breast cancer screening tests. That includes self-breast examination, clinical breast examination and most importantly regular mammograms. Mammography has been proven to have the strongest impact in decreasing mortality and morbidity (US Department of Health and Human Services, 2000) [3]. The United States Preventive Services Task Force (USPSTF) [4] recommends biennial screening mammography for women aged 50 to 74 years.

Although it is known that breast cancer affects older age groups, the age threshold is gradually decreasing. According to the National Institute of Cancer statistics [5], there is a lower survival rate amongst women diagnosed below the age of forty, eminently that the cancer diagnosed in young women tends to be more aggressive with a higher mortality rate.

The recent fall of death from breast cancer in western nations is particularly explained by earlier diagnosis as a result of early presentation. It has been demonstrated that delayed presentation of symptomatic breast cancer for several months (≥ 3 months) from the first detection to the time of diagnosis and treatment has been associated with increased tumor size (Richards. *et al.* 1999) [6] and poor long-term survival (Rossi 1990) [7]. The negative sociocultural perception of breast cancer, strong beliefs in traditional medicine and perhaps strong religious beliefs are the main reasons for the delay in presentation in the Arab world and developing countries (Rashidi *et al.* 2000) [8] (Rajaram *et al.* 1999) [9]. It has been demonstrated that the majority of breast cancer cases in the UAE are diagnosed late with involvement of regional lymph nodes or distant metastasis (Al-Sharbatti *et al.* 2013) [10].

The main aim of this research is to gain insight on the level of awareness of breast

cancer among young adult females in the UAE; hence assessing if there is a need to implement interventional programs to encourage and increase awareness of breast cancer based on the identified level of knowledge. Several studies have been conducted in different emirates in the UAE to investigate women's knowledge and their awareness of breast cancer in different age groups (Elobaid *et al.* 2014) [11]; (Abduelkarem *et al.* 2015) [12]. However, none of these studies were aimed at the UAE as a whole. In addition, we strongly emphasized on the "golden age" for awareness by targeting the young adult female population only. Public education about a disease is pragmatic and simple, yet a pivotal tool that would help in early detection and would subsequently improve the prognosis by providing better chances for successful treatments and definitive cures.

2. Methodology

2.1. Study Design

A descriptive cross-sectional survey was used to conduct this research.

2.2. Ethical Consideration

All the necessary approvals for carrying out the research were obtained. The Deanship of Scientific Research Ethics Committee at the University of Sharjah approved the study protocol. In addition, each questionnaire included a written informed consent demonstrating the researchers' names and explaining the objective and protocol of the research. The informed consent was signed by all participants. Privacy and confidentiality were insured. Study subjects were permitted to withdraw from the research at any time and their responses were considered invalid and discarded. There were no further requirements to obtain ethical approval for this study in the UAE.

Moreover, the topic of the research may have caused a slight conflict with the society's cultural and moral values. As the research is about breast cancer, the topic might be a sensitive one to discuss with some participants. In order to minimize discomfort among the female participants, the interviews were held by the female members of the research team.

2.3. Study Subjects and Sampling

The sample was selected based on a convenience sampling method. Inclusion criteria includes: adult females between 25 and 45 years of age that were available at the time of data collection in community centers, health care centers, entertainment centers-malls, family relations, teaching faculty. Exclusion criteria: Personal history of breast cancer, family history of breast cancer. Eligibility for the study was screened for using the consent form in the questionnaire. Data were collected from February 2nd, 2013 until March 1st, 2013. A sample size calculator was used to estimate the number of participants in our study in order to get results that reflect the target population as precisely as needed. The confidence level and interval chosen were 95% and 5 respectively. The calculator uses the Kish Leslie formula. The calculation also considered

a 10% nonresponse rate. The calculated sample size was 472. However, erroneously a larger sample of 492 respondents was collected.

2.4. Data Collection

An interview-based questionnaire was designed to be used as the instrument for data collection. The questionnaire included 66 questions that were a combination of closed ended and open-ended questions. The questions aimed at recording the demographics of the respondents as well as, their knowledge of breast cancer epidemiology, risk factors, signs and symptoms; and methods of screening, in addition to their screening behavior. The knowledge section of the questionnaire was developed based on information in the literature on the pertaining topics. The questionnaire was then reviewed by a Breast Surgeon, an oncologist and four Gynecologists from the University Hospital of Sharjah. Their review comments were then incorporated into the revised questionnaire.

A pilot study with 20 respondents was conducted two weeks prior to data collection in order to test the reliability and validity of the questionnaire, and changes were done accordingly. The data collected from the pilot study was not included in the research.

Participants underwent verbal face-to-face interviews; performed by the investigators to insure the quality of data collection e.g., disregarding or misunderstanding questions, the skip pattern in questions .etc.

2.5. Study Variables

The socio-demographic data (seven questions) included age in years, nationality (locals, non local arabs, or non-arabs), marital status (single, married, widowed, and divorced), beared children or not, educational level (Intermediate, Secondary University, Masters, PhD or Other), occupation (housewife vs. Medical job vs non medical job) and family history of breast cancer.

The knowledge variables were based on closed ended multiple choice questions, including questions about the epidemiology (six questions), knowledge and practice of breast cancer screening (13 questions), including mammography, breast self-examination (BSE), and clinical examination. A table containing the most common risk factors was used to evaluate the level of knowledge of risk factors. The participants were asked if these risk factors were present (documented as a positive respondant), absent (documented as a negative respondant) or if they did not know. A similar table was collected for the most common signs and symptoms. The study questionnaire also included questions about the obstacles and barriers preventing women from undergoing a mammography and sources of information for the pertaining knowledge.

The questionnaires where then corrected by comparing the answers with a fixed answering scheme that we developed. An average score in percent was then calculated for each patient using this equation $((\#correct\ answers/66)*100)$ and subsequently for the whole population. The latter score represents the average level of total knowledge in our whole population of participants. Participants were also grouped based on their level of knowledge into poor ($<35\%$), moderate ($36\% < x < 70\%$) and good ($>70\%$).

2.6. Statistical Analysis

Upon data entry, participants' incomplete questionnaires were discarded. Data analysis was achieved using the SPSS (statistical package for social sciences) version 20. Continuous data is presented with a mean \pm standard deviation (and quantiles as appropriate). Categorical data are presented as counts and percentages; the chi-square test was used to assess for an association between two categorical variables. In our study, Chi square was used to identify any significant differences among participants in the level of knowledge between different age groups, marital status and nationalities. Associations between continuous and categorical variables were measured with a t-test, and correlation between two continuous variables was assessed with a spearman's rank correlation coefficient. Correlation tests were applied when comparing level of knowledge with the educational status. The data analyzed were then presented using tables and figures.

3. Results

A total of 492 respondents met the inclusion and exclusion criteria and were therefore included in the study. All respondents had complete questionnaires. The response rate was a 100%.

The mean age of the participants was 33.5 years (SD = 6.9, range = 25 - 45), where almost half (44.7%) were of ages 25 - 30. A percentage of 26.8% of participants did not continue their education following high school, the rest were all of higher education (bachelor degree, masters, PhD). The percentage of illiteracy in our population is 0%. The demographic characteristics have been presented in **Table 1**.

The average total knowledge of all our population about breast cancer was 51% (**Table 2**).

Participants were then grouped based on their total level of knowledge into poor (13%), moderate (77%) and good (10%) (**Figure 1**).

Majority of the population (89%) knew that breast cancer is common among females; 45% knew that breast cancer affects ages above forty. The percentage of participants that knew that breast cancer affect males is 55%. In addition, 55% of females didn't know how common breast cancer is in the UAE (**Table 3**).

The total knowledge of signs and symptoms was 53% (**Figure 1**). More than half of the targeted population (58%) knew that the commonest presenting sign is a lump in the breast or under the armpit (**Table 4**) and 90% of the participants reported that a lump is a sign of breast cancer (**Table 5**). Signs and symptoms of breast cancer that participants were tested on are included in (**Table 5**) along with the positive number of respondents and its corresponding percentage.

The total knowledge of risk factors was 43%, which was least among all the other compared aspects of knowledge (**Table 2**). Advanced age was identified as a risk factor for breast cancer in 67% of the respondents. On the other hand, 78% identified genetics a risk factor (**Table 6**). Knowledge of different risk factors of breast cancer was included in **Table 6**.

The total knowledge of the different aspects of diagnosis and early detection methods

Table 1. Participants' demographics.

Demographic characteristics	Respondents	Percentage
Age distribution of the respondents		
<35	284	57.7%
≥35	208	42.3%
Total	492	100%
Marital Status of the respondents		
Single	184	37.4%
Married	282	57.3%
Divorced	14	2.8%
Widowed	4	0.8%
Separated	8	1.6%
Total	492	100%
Having children of the respondents		
Yes	438	88.5%
No	54	11.5%
Total	492	100%
Level of education of the respondents		
Intermediate	15	3%
Secondary	106	21.5%
University	326	66.3%
Masters	28	5.7%
PhD	6	1.2%
Other	11	2.2%
Total	492	100%
Occupation of the respondents		
Medical job	87	17.8%
Non-medical	227	46.3%
No job	178	35.9%
Total	492	100%
Nationality of the respondents		
Local (Emirati)	102	20.7%
Arabs	304	62%
Non Arabs	86	17.4%
Total	492	100%
Having family history of breast cancer among the respondents		
Yes (exclusion criteria)	0	0%
No	472	95.9%
I don't know	20	4.1%
Total	492	100%

was 67% (**Figure 1**). Approximately 88% of the participants were aware that breast cancer can be detected using screening tools. In addition, 83% reported the breast cancer can be curable if detected early (**Table 7**). Mammography was identified as a screening tool for breast cancer in 44% but only 18% performed mammography at any point in their lives (**Table 8**).

The most common cause of reluctance in performing self-breast examination was

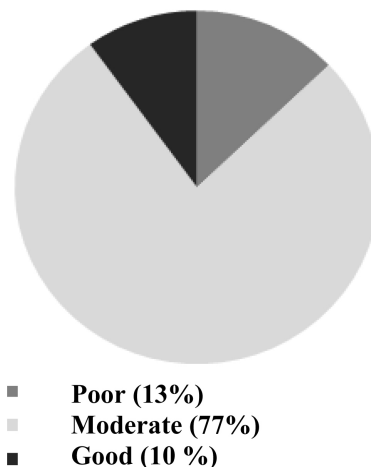


Figure 1. Participants' level of knowledge of breast cancer.

Table 2. Participants' average level of knowledge in the tested domains.

Domain	Percentage
Prevention, diagnosis, and treatment	67%
Risk factors	43%
Signs and symptoms	53%
Epidemiology	53%
<i>Total Knowledge</i>	51%

lack of time. More importantly, 21% of our participants did not believe they were at risk (**Table 9**).

The most common source of information for our participants' knowledge was Radio/Television at 64%. Family physicians were a source of information in 30% of the female volunteers (**Table 10**).

There was no significant difference in the level of knowledge between the different age groups ($p = 0.09$, 95% CI = $-4.99 - 0.34$), nor between married and single participants ($p = 0.10$, 95% CI = $-5 - 0.42$). In addition, there was no significant difference in the level of knowledge between nulliparous, uniparous and multiparous women. ($p = 0.07$, 95% CI = $-2.34 - 2.87$). There was a weak positive correlation ($p = 0.02$, $R = 0.105$) between the total knowledge and educational level of the participants. There was no significant difference in the level of knowledge between females of medical jobs and housewives. ($p = 0.14$, 95% CI = $-4.79 - 0.29$).

In addition, there was a higher total level of knowledge in Arab ex-pats in comparison to UAE nationals ($p = 0.02$, 95% CI = $-9.8 - 9.87$).

4. Discussion

The estimated level of respondents' general knowledge is 51%. Most of our respondents were in the average score category (77%). This result is satisfying, especially since in comparison with Kashmir in Pakistan (Salat *et al.* 2010) [13], their percentage of res-

Table 3. Participants' knowledge of breast cancer epidemiology.

Breast cancer epidemiology	Respondents	Percentage
Breast cancer affects males		
Yes	269	54.6%
No	125	25.5%
I don't know	98	20%
Total	492	100%
Common cancer in females		
Yes	439	89.2%
No	35	7.1%
I don't know	18	3.7%
Total	492	100%
Incidence of breast cancer worldwide		
<30%	38	7.6%
30% - 49%	125	25.2%
50% - 60%	117	23.7%
61% - 80%	44	8.9%
I don't know	1168	34.6%
Total	492	100%
Incidence of breast cancer in the U.A.E.		
<10%	4	0.8%
10% - 20%	27	5.5%
21% - 30%	57	11.6%
31% - 40%	68	13.9%
41% - 50%	65	13.3%
I don't know	271	54.9%
Total	492	100%
Age group of highest incidence of breast cancer		
16 - 30	27	5.5%
31 - 40	179	36.2%
>40	222	45.4%
I don't know	64	12.9%
Total	492	100%
Breast cancer is inherited		
Yes	348	70.7%
No	85	17.3%
I don't know	59	12%
Total	492	100%

Table 4. What is the most common sign or symptom of breast cancer?

Sign/Symptom	Percentage
Lump (breast or axilla)	58%
Breast pain	18%
Nipple discharge	9%
One breast larger than the other	7%
I don't know	7%
Others	1%

Table 5. Participants' knowledge of breast cancer signs and symptoms.

Signs & Symptoms	Actual (n) of positive respondents	Percentage
Lump in breast	446	90.7%
Lump in axilla	378	76.8%
Breast pain	321	65.6%
Nipple discharge	280	57%
One breast larger than the other	322	65.7%

Table 6. Participants' knowledge of breast cancer risk factors.

Risk Factors	Actual (n) of positive respondents	Percentage
Advanced age	328	67.4%
Oral contraceptive pills	234	48%
Genetics	381	77.6%
Obesity	184	37.7%
Early menarche	139	28.4%
Late menopause	147	30.1%
Hormone therapy	288	58.9%
Ovarian cancer	205	42.1%
Smoking	293	59.8%
Physical trauma	125	25.7%
Lack of breast feeding	177	23.9%

pondents in the moderate category was 12.3%, while according to Georgia R Sadler (2007) [14] 50% were in the “moderate” category and 31% in the “above average” category in the United States. However, being a country of high education and economic status in comparison to its region, we expected a higher percentage in the “above average” section.

Aging and null parity are considered major risk factors of breast cancer. Therefore, nulliparous females and/or women of older age are expected to be more aware of their increased risk in comparison to the general population, yet there was no significant difference in the level of knowledge in different age groups. In addition, there was no significant difference in the level of knowledge between nulliparous, uniparous or multiparous participants. Similar results were shown by Somdatta *et al.* (2008) [15].

There was a weak positive correlation between knowledge and educational level. It was seen that the proportion of women who were aware increased as the literacy status increased, and this was statistically significant. However, absence of illiterate participants played a role by masking the effect of educational variance on knowledge. Existing research supports our expectations as they suggest that populations with lower educational and socioeconomic status have lower cancer awareness (Brunswick *et al.*, 2001) [16] (Wardle *et al.*, 2001) [17].

Table 7. Participants' knowledge of breast cancer prevention.

Knowledge of prevention of breast cancer	Respondents	Percentage
Screening methods for breast cancer		
Yes	422	88.1%
No	70	11.9%
Total	492	100%
Performing self-breast examination		
Yes	388	78.9%
No	104	21.1%
Total	492	100%
Age to start practicing self-breast examination		
10 - 19	19	4.8%
20 - 29	212	43.4%
30 - 39	148	30.3%
40 onwards	75	15.3%
I don't know	29	6.3%
Total	492	100%
Breast cancer is curable		
Curable if detected early	409	83%
Non curable	20	4.1%
Curable	36	7.4%
I don't know	27	5.5%
Total	492	100%
Early diagnosis improves treatment outcome		
Yes	461	93.7%
No	8	1.6%
I don't know	23	4.7%
Total	492	100%

Table 8. Participants' knowledge and practice of breast cancer screening methods.

Examination/Investigation	Aspect	Percentage
Self-breast examination	Knowledge	57%
	Practice	49%
Clinical examination	Knowledge	59%
	Practice	29%
Mammography	Knowledge	44%
	Practice	18%

Table 9. Participants' Causes of reluctance in performing breast self-examination.

Cause	Percentage
Lack of time	22.2%
Not at risk	21.3%
Fear of finding abnormality	15%
Didn't know about that	14.2%
Never attended any demonstrations	14%
Don't know the appropriate way	11%
Lack of privacy	5%
Not convinced of its importance	3%

Table 10. Participants' sources of information about breast cancer.

Source	Percentage
Radio, TV	64.2%
Printed materials	52.2%
Friends	47%
Family physicians	29.9%
Colleagues	32.1%
Internet	51%
Governmental campaigns	41.3%
Others	10.4%

Respondents of medical professions had slightly higher level of knowledge (57%) compared to others of different occupations 48%. But this difference was not statistically significant ($p = 0.14$, 95% CI = $-4.79 - 0.29$). Due to this unexpected low finding, recommendations for the intervening programs to target both medical and non-medical fields are required.

UAE locals showed lower knowledge levels than expatriates bringing attention to the importance of implementing awareness that target the local population more effectively. We hypothesize that the difference could be attributed to difference in cultural backgrounds.

The level of knowledge of risk factors was 43%; this percentage was the least in comparison to other fields of knowledge. Likewise, several studies in the UK reported limited awareness of risk factors. In addition, knowledge of the warning signs was also poor, "in line with other research in the UK" (Wardle *et al.*, 2001 [17]; Grunfeld *et al.*, 2002 [18]; Waller *et al.*, 2004 [19]; Robb *et al.*, 2006 [20]).

Most of the respondents were generally aware of detection methods. On the contrary, smaller number had knowledge of proper age to start screening and performing BSE. 58% of the respondents knew about BSE, while only 49% performed it. According to Habib *et al.* (2010) [21] only 30.3% of the Saudi women knew about BSE versus 61% in Iran. Saudi Arabia was used as a comparison with the UAE due to the substantial overlap in cultures and beliefs in these two countries. In contrast, according to Shin-Ping Tu *et al.* (2006) [22], 75% of females in the USA perform BSE (Figure 2).

Results showed that many respondents were reluctant in performing BSE or other screening methods. As for the cause, the most common response was due to the misperception of being at low risk, or not being aware of the incidence and risk factors of breast cancer. Similar to most researches, media (Table 10) was the most common source of knowledge [13]. Unlike media resources, physicians turned out to be of lower role (Table 10).

The strengths of this study include the questionnaire which was comprehensive and addressed nearly all knowledge items as well as a wide range of personal and belief barrier factors. Participants underwent verbal face-to-face interviews; performed by the investigators to insure the quality of data collection. The study questionnaire has also

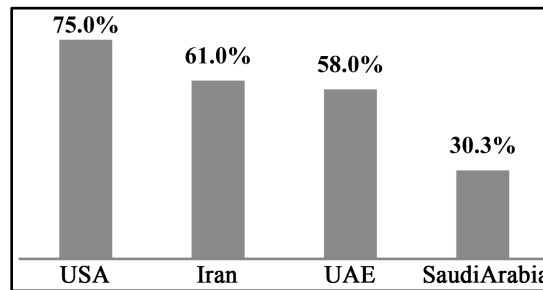


Figure 2. Knowledge of self-breast examination.

been validated by a Breast Surgeon, an oncologist and four Gynecologists from the University Hospital of Sharjah. Second of all, to the best of our knowledge, this study is the first study to investigate the knowledge, awareness and barriers of breast cancer screening in the UAE as a whole and not in certain emirates only. Therefore, our findings can be generalized to all females in the UAE. In addition, this is the first study in the UAE that has evaluated the level of knowledge in young adult females.

We acknowledge certain limitations of this study: Firstly, Non-random sampling lead to selection bias and affected the normal distribution of the characteristics of the sample population. The main characteristics that were affected by this bias were age (*i.e.*, respondents were of age extremes), literacy (*i.e.*, absence of illiterate respondents), and geographical location of the participants (*i.e.*, covering limited areas in different emirates of the country).

Secondly, the following are questions that were asked in the detection and screening section of our questionnaire: Is breast cancer a detectable cancer? Do you think that a lady can check for breast cancer herself at home? Are you aware of how to check for breast cancer yourself? Have you ever performed a “Self-Breast Examination”? At which age (in years) should a lady start practicing “Self Breast Examination”? How frequently should the breast self-examination be done? How often is clinical breast examination done? Do you know what mammography is? At what age is mammography done?. The pattern of our questions was mainly exploring the knowledge of breast cancer screening and detection. In comparison with Somdatta *et al.* (2008) [15] and Godfrey *et al.* (2016) [23], our questionnaire lacked questions targeting personal practices of the screening methods mentioned. Thus, inaccurate conclusions may be inferred about the use of different breast cancer screening tools in our population.

For the mentioned limitations, generally the results may lead to overestimation of the awareness level of breast cancer in our study.

5. Conclusions

Analyzing the study’s results revealed that respondents’ knowledge of general aspects of breast cancer like risk factors, warning signs and symptoms, and screening behavior in the UAE is sufficient but lower than the expected level. This might be attributed to the insufficient contribution of health authorities and physicians in promoting awareness. Physicians turned out to be of less importance as a source of knowledge for the partici-

pants. Therefore, it is necessary to enhance the role of health practitioners by training them in educating the women and keeping them updated about the disease and its prevention.

The increased burden of breast cancer should be accompanied by powerful means of spreading awareness; which is the exact aim of the study. Therefore, it is important to encourage the implementation of programs and community based campaigns that cover knowledge deficits, in the general population, as well as emphasize the role of prevention of breast cancer through different screening methods. The prior can be achieved by setting out stands held by junior doctors that are informed about the topic; distributing flyers about breast cancer in public places. Advertisements on television and radio would also be a strong mean to deliver information.

Finally, we suppose that campaigns and programs alone are not sufficient; as information have to be spread in a form that better captures the population's attention, that's why we recommend the establishment of policy guidelines that shall spread adequate information about breast cancer to all women as soon as possible.

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Conflict of Interest

The authors declare no conflict of interest.

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