RESEARCH ARTICLE

Literacy and Breast Cancer Prevention: a Population-Based Study from Iran

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Abstract

Breast cancer is the most common cancer in women worldwide and the leading cause of death from cancer among women. Evidence suggests that early diagnosis and screening interventions might help to improve outcomes. This population-based study was conducted to determine breast cancer awareness and screening behavior among Iranian women and to examine its association with women's literacy. The study was carried out in two provinces, with 1,477,045 population, located in central and eastern part of Iran. Overall, 770 women were studied. Of these, 482 (62.7%) were literate and 287 (37.3%) were not. The results obtained from the data analysis indicated that there was a significant difference between literate and illiterate women. Further analysis of the data using logistic regression showed that literacy was an important contributing factor for breast cancer prevention behavior. The findings suggest that in order to improve women's health and breast cancer outcomes providing equal educational opportunities for women seems necessary.

Keywords: Breast cancer awareness - breast self-examination - clinical breast examination - mammography - Iran

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Introduction

Breast cancer (BC) in women is a major public health problem worldwide (Ferlay et al., 2010). It is also the principal cause of death from cancer among women globally (Ferlay et al., 2010). In Iran, breast cancer is ranked first among malignancies in women (Mousavi et al., 2009), with the incidence of 22 per 100,000 (Mousavi et al., 2007).

However, despite the low prevalence of breast cancer in Asia, the cause-specific mortality in most Asian countries is reported higher than Western countries (Yip et al., 2009). In the limited resource countries such as Iran patients with breast cancer are commonly diagnosed with a locally advanced tumor (Harirchi et al., 2010).

Of the available cancer control measures for breast cancer, only mammography screening is recognized to be effective in reducing mortality from breast cancer(Anderson et al., 2008). Yet, developing a breast cancer screening is un-established in many Asian countries (Bozgunchiev et al., 2008). In Iran, at the national level, mammographic screening of breast cancer is not still routinely prescribed for eligible women. This may be due to limited financial resources, infrastructure constraints and existence of other health priorities. Also, other screening programs (such as clinical breast examination) for mentioned reasons are not available in every health centers of the country (Harirchi et al., 2007; Anderson et al., 2008; Bozgunchiev et al., 2009; Harirchi et al., 2009). Thus, considering the present condition it is far to reach to implement breast cancer screening program at national level in Iran and other similar countries. Until achieving a well-functioning screening program for breast cancer, burden of breast cancer may decrease by rising women awareness about breast cancer and thereby the down staging of breast tumor by detecting the palpable mass with small size.

At present the emphasis is to raise breast cancer awareness among women to overcome ever-increasing burden of the disease (Hampton et al., 2008).

Improving women's breast cancer awareness by mass education is the basic pre-requisite for encouraging women to participate and accept breast cancer screening program after implementing the mass screening for breast cancer (Thornton et al., 2008). In countries with high rate of illiteracy among women (especially middle age and old women) lack of education can influence awareness and also breast cancer screening behavior (Thornton et al., 2008).

This population-based study was conducted to measure

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breast cancer awareness and breast cancer screening behavior of Iranian women and to examine its association with women's literacy. It was hoped that the findings from this study might contribute to the existing literature and could help health policy makers to design a proper intervention to decrease breast cancer burdens.

Materials and Methods

Design and participants

This was a cross-sectional household survey carried out in Semnan and Khorasan provinces, with 1,477,045 populations, located in central and eastern part of Iran, respectively. To collect data participants were contacted at their homes. We included women over 30 years old using a stratified simple-random sampling using postcodes provided by Iranian Post Company.

The study questionnaire

A structured questionnaire was used for this study. A panel was held to design the questionnaire by previous experiences on this filed in Cancer Research Center of Cancer Institute-Tehran University of Medical Sciences (Montazeri et al., 1999: 2008; Jarvandi et al., 2002 Haji-Mahmoodi et al., 2008). The questionnaire had 15 multiple choice questions, to determine baseline knowledge on breast cancer (6 items), to clarify the women attitude on breast cancer early detection (5 items), and to define practice on breast self examination (BSE), clinical breast exam (CBE), and mammography (4 items).

The questionnaires were filled out by trained-health staffs.

Statistical analysis: We have used six questions to assess participants' knowledge on breast cancer. Respondents received score 1 if they responded correctly and 0 if they did not. Also, five questions have been used to estimates attitudes toward breast cancer and those who indicated appropriate attitude received score 1 and for inappropriate attitude received score 0. Descriptive analysis frequencies and chi-square test, t test and Mann Whitney U test were used to explore the data. Binary logistic regression analysis was used to estimate the odds ratios for not performing breast self-examination, not having clinical breast examination, and mammography while controlling for dependent variables including age, literacy, knowledge, and attitude.

Ethics: The ethics committee of Tehran University of Medical Sciences approved the study. The staffs explained the project to the selected women and they were included in the study after accepting the informed consent.

Results

In all, 782 women were approached. Of these, 770 women were participated in the study. The remaining 12 women did not agree to take part in the study. Overall, 482 women (62.7%) were literate and 287 (37.3%) were not. There was a significant difference between literate and illiterate women. The characteristics of study samples are shown in Table 1.

Table 2 presents the association between literacy

Table 1. Demographic Characteristic of Surveyed Women (n=770)

	All No. (%)	Literate No. (%)	Illiterate No. (%)
Age			P<0.0001
<40	241 (32.2)	179 (38.1)	62 (22.3)
40-50	211 (28.2)	147 (31.3)	64 (23.0)
50-60	170 (22.7)	109 (23.2)	61 (21.9)
>60	126 (16.8)	35 (7.4)	91 (32.7)
Mean (SD)			P<0.0001
	46.91 (13.3)	44.23 (10.2)	51.47 (16.44)
Marital status			P<0.0001
Married	663 (88.3)	436 (90.4)	227 (79.09)
Single	69 (9.2)	16 (3.3)	53 (18.46)
Divorced	29 (2.5)	23 (4.8)	6 (2.09)
Employment			P<0.0001
Employed	42 (5.5)	41 (8.5)	1 (0.34)
Unemployed	715 (94.5)	429 (89.0)	286 (99.65)

Table 2. Knowledge, Attitude and Breast Self Examination, Clinical Breast Exam and Mammography by Literacy (n = 770)

	All Mean (SD)	Literate Mean (SD)	Illiterate Mean (SD)
Knowledge			P<0.0001*
	3.40 (1.41)	3.55 (1.20)	3.13 (1.67)
Attitude			P<0.0001*
	3.70 (1.32)	4.01 (1.16)	3.20 (1.40)
Do you practice Breast Self Examination?			P<0.0001**
Yes	281 (36.6)	237 (49.3)	44 (15.4)
No	486 (63.4)	244 (50.7)	242 (86.4)
Have you had Clinical Breast Examination in the last year?			P<0.0001**
Yes	134 (17.4)	108 (22.5)	26 (9.1)
No	634 (82.6)	373 (77.5)	261 (90.9)
Have you ever had mammography?			P=0.005**
Yes	49 (6.4)	40 (8.3)	9 (3.2)
No	716 (93.6)	440 (91.7)	276 (96.8)
Number of BSE during last year			P<0.0001*
	1.73 (3.78)	2.44 (4.24)	0.55 (2.40)

*Derived from Mann Whitney U test, **Derived from Chi-Square test

Table 3. The Results Obtained form Logistic Regression Analysis for Not Performing Breast Self Examination (Bse), Not Having Clinical Breast Examination (Cbe) and Mammography

		OR (95% CI)	P
Breast Self Examination			
	Age	0.99 (0.98-1.009)	0.47
Education:	Literate	1.0 (ref)	
	Illiterate	4.56 (2.96-7.01)	<0.0001
	Knowledge	0.73 (0.64-0.83)	<0.0001
	Attitude	0.71 (0.61-0.83)	<0.0001
Clinical Breast Examination			
	Age	1.00 (0.98-1.02)	0.54
Education:	Literate	1.0 (ref)	
	Illiterate	2.51 (1.49-4.24)	0.001
	Knowledge	0.86 (0.74-1.01)	0.075
	Attitude	0.88 (0.74-1.05)	0.18
Mammography:	Age	0.96 (0.93-0.99)	0.01
Education:	Literate	1.0 (ref)	
	Illiterate	3.14 (1.30-7.58)	0.01
	Knowledge	0.78 (0.60-1.02)	0.075
	Attitude	0.74 (0.54-1.001)	0.051

and knowledge, attitude and practice and breast cancer screening behavior. There were significant associations between knowledge, attitude and breast cancer screening behaviors with literacy.

The results obtained from logistic regression analysis for not performing breast self examination revealed that the risk of not performing breast self examination for illiterate women was 4.56 times more than literate women (P value<0.0001) and the risk of not having clinical breast examination and mammography for illiterate women was 2.51 and 3.14 times more than literate women, respectively. The results are shown in Table 3.

Discussion

The findings from this study indicated that literacy was an important contributing factor for breast cancer prevention behaviors. The risk of not performing breast self examination, clinical breast examination and mammography was significantly higher in illiterate women (Table 3). Also, we found that women's knowledge and attitudes were significant factors in predicating breast self-examination but did not have significant impact on having clinical breast examination and mammography. It seems that attitude and knowledge might play a role in simple preventive measures (i.e., breast self examination), but their effects decrease in more complicated procedures (i.e., having clinical breast examination and mammography). However literacy was found to have a significant role in all occasions. In addition one might argue that since knowledge and attitude did not show significant association with clinical breast self examination and having mammography, this might be related to the issue of access to appropriate health care. In fact, since there were no facilities for women to have CBE or mammography therefore even if a woman have had enough knowledge and positive attitudes toward breast cancer prevention, she would not be able to do so.

The most important feature of this study was the fact that it was a population-base study. In fact most similar studies on the topic, especially those carried out in developed countries, were rather limited to certain groups of nurses, students and professionals.

In general, as indicated in this study illiterate or less educated people usually show poor health behaviors including cancer screening habits compared to better educated counterparts. It is argued that in many circumstances lower education means having less economic resources and thus economic barriers could be an important explanatory factor for disparities on screening methods. Education also has been interpreted as influencing health through the acquisition of higher cognitive functions. Education might effect not only on knowledge and attitudes, but also on the degree of control individuals take about their own health (Lahelma et al., 2004).

Studies from USA (Jones et al., 2003) , Australia (Paul et al., 1999), Germany (Pöhls et al., 2004) , India (Ahuja et al., 2010) , Egypt (Abd El Aziz et al., 2009), Saudi Arabia (Alam, 2006), Nigeria (Michael et al., 2006), and Iran (Yavari et al., 2007) reported that literacy was significantly correlated with a greater degree of knowledge about breast cancer, and literate women were significantly more likely to perform breast self examination. However, studies on association between literacy and clinical breast self-examination and mammography are scarce. We hope this study could help investigators to initiate similar studies on this important women's health topic.

In conclusion, the findings from this study suggest that knowledge, attitude and practice of breast cancer screening (BSE, CBE & mammography) are associated with women's literacy. Indeed in order to improve women's health and breast cancer providing equal educational opportunities for women seems necessary.

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