Original Article

The Association of Health Literacy with Breast Cancer Knowledge, Perception and Screening Behavior

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ABSTRACT

Objective: The incidence of breast cancer among Iranian women is increasing, and 70% of patients are diagnosed at advanced stages. The current study aimed at evaluating the association of health literacy (HL) with breast cancer knowledge, perception, and screening behavior in women.

Materials and Methods: The current cross- sectional, descriptive study was conducted on 250 women who referred to health centers in Zahedan, Iran. Data collection instrument included a demographic information form, Iranian Health Literacy Questionnaire (IHLQ), and Champion's health belief model scale.

Results: The majority of participants (89.6%) had limited HL. Participants with limited HL had less breast cancer knowledge, and less perceived severity than who had higher HL score. Participants with higher HL score had done breast self-exam (BSE) more than the others. There was no significant relationship between HL and clinical breast examination (CBE), and with perceived susceptibility.

Conclusion: Interventions to enhance breast cancer knowledge and screening should notice the HL of women.

Keywords: Breast cancer, cancer screenings, health literacy, women

Introduction

Iran is recognized as having the lowest mean age of breast cancer in the Middle East (1). Breast cancer affects the Iranian women at least a decade earlier than women in developed countries (2), and the mean age of women with breast cancer Iran is 49.6 years (1). 70% of patients are diagnosed at advanced stages (3). So, breast cancer is the most common cancer among women in Sistan and Baluchestan province, Iran (4).

Women are at risk of breast cancer from puberty (5). It is obvious that actions for cancer management and early screening consider as a rational way towards the aim of achieving cancer control (6). Breast self-exam (BSE), mammography and clinical breast examination (CBE) are considered as screening methods for early detection of breast cancer (7). One of the factors which may directly influence an individual's enthusiasm or capacity to involve in necessary information about cancer screening is health literacy (HL) (8). HL is defined as the individual's capacity to obtain, process, and understand the basic essential health information for appropriate health decisions (9). Studies show that inadequate HL predicts negative consequences, especially for cancer control, including poor understanding of the risk and the need for screening, as well as lower participation rate in the cancer prevention efforts related to clinical adverse outcomes (10, 11).

The results of a study analyzing the role of HL on mammography screening behavior and adherence of Hispanic women showed that women with adequate HL had done mammography more often than others. Also, inadequate HL was strongly associated with lower mammography performance (12). Another study showed that people with low HL were less likely to have an appointment with a doctor, and had less knowledge about common cancer screening tests (13).

Some studies having been done base on theories of health behavior showed that perceived susceptibility and perceived severity are among the factors that can influence a person's decision and motivation to promote breast cancer screening behavior (14-16). Perceived susceptibility refers to one's perception of the risk or the chances of contracting a health disease or condition (17). Perceived severity refers to the degree to which people deem a particular disease or condition serious. Perceived severity includes how people perceive the deleterious consequences of a serious health event or outcome, such as a diagnosis of cancer (18). To our knowledge, no study has evaluated how

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HL may correlate with perceived susceptibility and severity for breast cancer. The current study aimed at evaluating the association of HL with breast cancer knowledge, perceived susceptibility and severity, and screening behavior in women.

Materials and Methods

Study design

This cross- sectional, descriptive study was conducted on 250 women who referred to urban health centers in Zahedan from September to November 2015. Zahedan is the capital of Sistan and Baluchestan province located in the south-east of Iran. The sample size of 247 was calculated using the following formula based on a previous study (19), and taking into account the 95% confidence level, d=4.5 and S=36.1.

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}}\right)^2 (S)^2}{(d)^2}$$

Participants

In the study, a random cluster sampling method was used. At first, the city was divided into 5 geographical regions including North, South, East, West, and Center; then, an urban health clinic was selected randomly by drawing from the list of urban health centers in each district of the city. After that, 50 women were selected from each health center by convenience sampling.

The characteristics of participants were the ability to read and write, Iranian citizenship, and no history of breast cancer or other cancers in the case or her relatives.

The demographic information form and questionnaires were put at the disposal of the eligible people after obtaining the written consent and were collected once completed; they were given 60 minutes to complete the questionnaires.

Table 1. Relationship of HL with demographic characteristics of the participants

Characteristics	N (%)	Mean (SD)	p
Age			
<20 years	41 (16.4)	6.42 (1.6)	
20-35 years	194 (77.6)	7.17 (2.1)	<0.001
>35 years	15 (6)	8.89 (1.8)	
Education			
Elementary school	47 (18.8)	5.41 (1.21)	
Middle school	37 (14.8)	6.19 (1.63)	
High school	29 (11.6)	6.79 (1.61)	<0.001
Diploma	81 (32.4)	7.6 (1.9)	
Associate degree	26 (10.4)	8.58 (2.08)	
BA or higher degree	30 (12)	8.97 (1.53)	
Occupation			
Housewife	222 (88.8)	6.89 (1.9)	
Employed	19 (7.6)	10.31 (1.2)	<0.001
Unemployed	9 (3.6)	7.03 (1.7)	

SD: standard deviation; BA: bachelor of arts; HL: health literacy

Data collection tool

Three instruments including a demographic information form, Iranian Health Literacy Questionnaire (IHLQ), and Champion's health belief model scale (to evaluate breast cancer knowledge, perception, and screening behavior) for data collection.

Demographic information form

Demographic information form developed by researcher based on previous literatures. Demographic information included age (year), education and occupation (housewife, employed, and unemployed).

Iranian Health Literacy Questionnaire (IHLQ)

Iranian Health Literacy Questionnaire was designed by the Health Modeling Center associated with Kerman University of Medical Sciences, Kerman, Iran, to evaluate HL in Persian speaking adults and was approved in terms of reliability and validity in Haghdoost et al. (20) study. They reported internal consistency and test-retest reliability (ICC) of IHLQ factors as ranging from 0.71 to 0.96 and 0.73 to 0.86, respectively. It contains 9 sub-components as follows: Access to health information sources (5 items), using the sources (6 items), the ability to read (5 items), the ability to understand the text (8 items), judgment and assessment (6 items), the ability to make decisions and communications (8 items), health knowledge (5 items), individual empowerment (8 items), and social empowerment (4 items). To determine HL score, each sub-component score was calculated separately and, then, multiplied by the number of questions of the same sub-component. Ultimately, to obtain the total score, sum of the components scores was divided by the total number of questions (55 items). The final score of HL was based on a 0 to 20 scale, in which less than 10, 10 to 14, and more than 14 were considered limited, marginal, and adequate HL, respectively.

Champion's health belief model scale

Champion's health belief model scale includes breast cancer knowledge questions (28 items), screening behavior questions (3 items, do=1 score, and not to do=0 score), and perception questions. One score was given to each correct answer of breast cancer knowledge. Perception questions includes perceived susceptibility questions (5 questions with a score range of 5 to 25), and perceived severity (7 questions with a score range of 5 to 35), ranked on a 5-point Likert scale. Champion's health belief model scale was translated to Persian by Taymoori et al. (21) and it was examined for validity and reliability in Iranian women (Cronbach's alpha >0.7). In the current study, Cronbach's alpha for IHLQ and health belief model scale were calculated as 0.92 and 0.7, respectively.

Ethical approach

The study was approved by the ethics committee of Zahedan University of Medical Sciences (IR. ZAUMS. REC. 1394.153). We obtained informed consent form our participants after explaining study objectives. Confidentiality of data was guaranteed by the researchers.

Statistical analysis

All the 250 distributed forms and questionnaires were completed and returned. Descriptive statistics, ANOVA, Chi-square test, and independent t-test were employed to analyze the data. The Statistical Package for the Social Sciences (SPSS) version 20 statistics software (IBM Corp.; Armonk, NY, USA) was used for statistical analysis, α=0.05 was considered as the level of statistical significance.

Table 2. Distribution of mean breast cancer knowledge, perceived susceptibility, and severity by HL level

	Number of questions	Score range	Limited HL Mean (SD)	Marginal HL Mean (SD)	p
Knowledge	28	0-28	11.51 (4.9)	13.73 (6.63)	0.03
Perceived susceptibility	5	5-25	18 (2.77)	18.5 (3.99)	0.41
Perceived severity	7	5-35	19.96 (3.67)	23.19 (6.55)	<0.001

HL: health literacy; SD: standard deviation

Table 3. Screening behavior for BSE, and CBE by HL level

	Reported BSE		Reported CBE	
Health literacy level	Yes (N)	No (N)	Yes (N)	No (N)
Limited	(12)	(212)	(36)	(188)
Marginal	(6)	(20)	(7)	(19)
p	0.006	0.134		

BSE: breast self-exam; CBE: clinical breast examination; HL: healt literacy

Results

According to the results, the majority of participants were 20-35 years (77.6%), held a high school diploma (32.4%), and were housewives (88.8 %) (Table 1). Results also showed that the mean of HL was 7/15±2/08. 89.6% of participants had limited HL (less than 10) and 10.4% had marginal HL (between 10 to 14). The results of independent t-test indicated that there was a significant relationship between HL and breast cancer knowledge (p<0.05). Moreover, the results showed that HL is associated with perceived severity (p<0.001). There was no significant relationship between HL and perceived susceptibility (p>0.05) (Table 2). The results of Chi-square test showed association between HL and BSE (p<0.05). The results also showed that there was no association between HL and CBE (p>0.05) (Table 3). The results also indicated that none of the participants performed a mammographic screening, but 14 participants had done mammography due to feeling a lump in their breasts.

Discussion

The results of the study showed that limited HL was associated with less knowledge about breast cancer, which was consistent with the results of other studies such as those of Peyman et al. (22), and Morris et al. (13). Poor knowledge about breast cancer is known as a main issue for breast cancer screening barriers, delayed treatment, and thus contributes to the high morbidity and mortality rates (23, 24). Therefore, it seems comprehensive health literacy interventions can enhance breast cancer knowledge and reduce burden of breast cancer.

In addition, there was a significant relationship between HL and BSE. Armin et al. (25) study showed that women with adequate HL were more likely than those with inadequate HL to rely on BSE. This result was in line with our study. A woman's health literacy may be a contributing factor to adherence to BSE.

The results of the study showed that there was no association between HL and CBE. The results of Peyman et al. (22) study showed that

people with low HL had less knowledge about common cancer screening tests. In our study, the participants did not have adequate HL and did not have a good knowledge of breast cancer. So this result did not seem logical. It seems other factors such as lack of guidance from primary care providers, fears of and worries about potential result, and sociocultural beliefs may play a role in non-performing CBE.

According to national breast cancer control and screening guideline, women are recommended to begin screening mammography at age 40 (5). In our study, there were only 5 participants aged forty years and older that none of them performed screening mammography. Therefore, we could not evaluate association between HL and mammography practice. In White et al. (26) study the significant association between HL and screening practice was only among women 65+ years. However, the results of other studies showed that there was a positive and significant relationship between HL and breast screening programmes (22, 27, 28).

Also, the results showed a significant relationship between HL and perceived severity. To our knowledge, no other study has examined association of HL with perceived severity. Given the role of perceived severity in a person's decision and motivation to promote a particular behavior, HL could likely have an impact on increasing breast cancer screening rate. Screening is a first step toward early detection.

The results showed no significant relationship between HL and perceived susceptibility which is the belief to be at risk for breast cancer. Peterson et al. (11) did not find that HL correlated with perceived susceptibility about colorectal cancer, which was consistent with the results of our study. In general, as age increases, the rate of cancer occurrences increase (29). In present study, the majority of participants were under 35 years of age. So, low age of participants seems to be the reason that they did not perceive their risk for breast cancer.

Limitations of the study
One of the strengths of the study was the employment of Iranian native standard health literacy assessment tool, which measures a wider scope of HL compared to the tools used in similar studies. Limitations of the study would be less participation of women aged 40 and older. Therefore, the study results could not be generalized to this age group.

Conclusion

HL may be a contributing factor to develop breast cancer knowledge, perception, and screening behaviors. Improving HL may empower women; thus, they can have an active role in improving their health. Therefore, health policy makers and health care providers should consider interventions to increase women's HL. It is also suggested health care providers evaluate HL of women and provide information about preventive ways, and early detection of breast cancer tailored to HL level of them.

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