



# Health literacy of Breast Cancer and Its Related Factors in Kashanian Women

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**Abstract**

**Introduction:** Health literacy is related to better adherence to the recommendations of health care providers, health care appointments and acceptance of preventive care such as cancer screening. Considering the importance and role of health literacy in breast cancer screening, this study was conducted to investigate health literacy about breast cancer and its related factors among women.

**Methods:** An analytic cross-sectional study was conducted on 186 women who were referring to health care centers in Kashan city in Iran in 2020 with basic literacy. All the participants filled out a questionnaire developed based on Health literacy of breast cancer and its related factors using the questionnaires of AHL-C (Assessment of Health Literacy in Cancer Screening) and Breast-CLAT. The random cluster sampling method was applied to select participants. The statistical analysis was performed with chi-square in SPSS 18.

**Results:** The majority of the participants were 40-49 and marital. The total of health literacy in half of the participants was medium. The most undesirable and desirable dimensions of health literacy were related to numerical literacy and reading literacy, respectively. Determinants related to health literacy were identified as the following: education, visit a doctor due to having a problem in the breast and cancer family history. Moreover results showed that a significant correlation between comprehensive literacy and prior knowledge dimension with performing BSE.

**Conclusions:** Of all the health literacy dimensions examined, Prior knowledge and comprehensive literacy were the strongest predictors with do breast self-examination. It can be concluded that, promoting health literacy could be effective for the primary prevention of non-communicable diseases and early diagnosis. We recommend educating all women for the prevention and early diagnosis of breast cancer.

## INTRODUCTION

Health literacy is defined as "the degree to which persons are able to acquire, process, and understand basic health information and services in order to make appropriate health decisions" [1]. The health literacy framework has several components, including; cultural and conceptual knowledge, print literacy (ability to read, write, and comprehend text), numerical literacy (ability to do numerical work), oral literacy (listening, speaking, communication), and media literacy (ability to access and evaluate media information, including Health) on a health issue. Each of these components, or a combination of these, may affect a person's ability to make decisions about cancer screening. Understanding the benefits, harms, alternatives, and recommending the cancer screening are important in deciding whether to

perform cancer screening [2]. Health literacy is related to better adherence to the recommendations of health care providers, health care appointments and acceptance of preventive care such as cancer screening [3-5].

Low health literacy is a strong predictor of insufficient use of health care resources and poor health outcomes in vulnerable populations [6-8]. Low health literacy is associated with limited health vocabulary and consequently limited understanding of the concept of screening and awareness of its benefits, lack of willingness to perform screening and poor access to care. Also, low health literacy is one of the social determinants of health related to cancer [9-11]. Some

studies reported inadequate health literacy on breast cancer screening [12-15].

The second cause leading to death worldwide is cancer. Colon, breast, cervical, lung and thyroid cancers are the most common cancers in women [16]. According to the World Health Organization in 2018, the incidence of breast cancer in Iran was 40.9 [17]. The mortality rate from breast cancer was 13.9% [18]. Also in 2018 in Iran, the incidence of breast cancer in Kashan city was 55.8 per 100,000. Statistics also show that in 2018, the percentage of breast screening in Kashan city was 15.7% [19].

Factors contributing to the reduction in cancer mortality include increased cancer screening, follow-up for abnormal screening tests, and therapeutic advances [20, 21]. Cancer screening is one of the most important and challenging preventive care measures in primary care [21, 22]. Several studies examined the association of health literacy with breast and cervical cancer, and their results showed a wide range of inadequate health literacy [23, 24]. The importance of health literacy has been highlighted in the national programs and guidelines of the people of 2020 [25]. It is obviously that health care providers play important role in promoting patients' health literacy levels about prescribing medications, misusing medications, and paying for health care [26]. Considering the importance and role of health literacy in breast cancer screening, this study was conducted to investigate health literacy about breast cancer and its related factors among women referring to health care centers in Kashan city.

## METHODS

This was an analytic cross-sectional study of women with basic literacy (ability reading, writing and math), or education above sixth grade and aged over 20, referred to the health care centers of Kashan in Iran 2020. The random cluster sampling method was applied to select participants. Among the total health care centers in Kashan, eight health care centers were selected as a cluster, which randomly 24 participants in each center were asked to complete the questionnaire. Out of 192 questionnaires, 6 questionnaires were excluded from the study due to incompleteness, and the data of 186 questionnaires were analyzed.

First, we developed a questionnaire for Health literacy of breast cancer and its related factors using the questionnaires of AHL-C (Assessment of Health Literacy in Cancer Screening) [27]. and Breast-CLAT (Breast Cancer Literacy Assessment Tool) [28]. The first section of the questionnaire contained six items to measure demographic characteristics of individuals such as age, marital state, educational level, visiting a doctor due to breast problems, cancer family history, and Performed breast self-examination (BSE) in last one year.

The second section contained four dimensions of the health literacy, including print, numerical, comprehension and prior knowledge. The print literacy dimension has two subscales of reading (9 items) and filling in the blanks (6 items). For the reading questions, participants had 5 seconds to read each item. If the participant was not able read a particular item in more than 5 seconds, we told them to skip that item and move on to the next word.

The questions had a score between 0 and 15 based on true or false answers. A score of 0 to 5 was considered weak, a score of 6 to 10 was moderate and a score between 11 and 15 was considered favorable. Numerical literacy dimension has 3 items (0 to 3 scores). A score between 0 and 1 were considered unacceptable numerical literacy and between 2 and 3 were considered acceptable numerical literacy score. The comprehension dimension has 9 items. A score of 0 to 3 was considered weak, a score of 4 to 6 was moderate and a score between 7 and 9 was considered favorable. The previous knowledge dimension has 25 items. Scores between 0 and 8 were assessed as weak, between 9 and 17 as moderate and 18 to 25 as favorable. After translation the questionnaire from English into Farsi and native speakers reviewed for potential syntax errors. Then to determine face validity by using two methods of qualitative and quantitative of face validity. Fifteen women were interviewed face to face on the questionnaire (58 items). We received their comments about levels of difficulty, irrelevancy and ambiguous for each item. Then we used Item impact method to determine a quantitative of face validity. Each item of the questionnaire was measured based on a five- point Likert scale include unimportant (1 point), slightly important (2 point), relatively important (3 point), important (4 point) and very important (5 point). Fifteen women were asked to identify the items they thought are the most important for them. We used this formula: (Item Impact Score= frequency  $\times$  Importance). In this formula, the frequency means percent a participant who scored 4 or 5 to item importance and the importance means the mean importance score of items. If the item impact of an item is equal to or higher than 1.5 is maintained in the questionnaire; otherwise it is eliminated. Also, we used CVR and CVI to determine content validity. To calculate CVR, of 10 experts (five specialists in health education and promotion, three gynecologists and two researchers related to research) was requested to identify whether an item is necessary or not in a 3-Likert scale (1. Essential, 2. Useful but not essential, 3. Not necessary). We used the Lawshe table to determine the value of CVR. The results showed that the score of all items was  $> 0.62$  and all items remained in the questionnaire [29]. To calculate CVI, of 10 experts was asked to identify three criteria of simplicity, clarity and relevance. CVI  $\geq 0.79$  was considered excellent, 0.70-

0.79 required a revision, and less than 0.70 were unacceptable and eliminated. The results showed that the score of all items was >0.79 and all items remained in the questionnaire [29]. The Intra-Class Correlation (ICC) was used to determine test-retest reliability. To determine test-retest reliability, of 15 participants was asked to complete the questionnaire (except the selected centers). After 2 weeks, they completed the questionnaire again. A reliability coefficient > 0.7 was acceptable [29]. The results showed that the score of all items was 0.83 and all items were acceptable. Informed consent was obtained from all the participants. The statistical analysis was performed using SPSS 18. Mean, standard deviation, frequency and percentage were used for descriptive analysis, and chi-square was used for assess the relationship between the variables.

**RESULTS**

The majority of the participants were between 40-49 (34%, 65), marital (86.6%, 161), diploma (50.5%, 94), did not visit a doctor due to having problem in breast (83.3%, 155), do not have cancer family history (66.1%, 123) and never perform BSE in the last one year (64%, 119). The half of the participants had medium score of health literacy (52.2%, 97), comprehensive literacy (54.3%, 101) and prior knowledge (55.4%, 103). Most

of participants had a great score of print literacy (95.2%, 177). More half of the participants had an acceptable score of numerical literacy (68.8%, 128). As Table 1 shows health literacy was correlated with education (p = 0.001), visit a doctor due to having a problem in breast (p = 0.009) and cancer family history (p = 0.000). Participants with higher education, visit a doctor due to having a problem in breast and cancer family history had a good score of health literacy.

As seen in Table 2 the print literacy was correlated with age (p = 0.03) and education (p = 0.029). But age groups had no significant difference (p =0.577). Only the age group 50 years and older were less print literacy. Participants with higher education had a good score of print literacy.

Also Table 3 shows that the numerical literacy was correlated with age (p = 0.007) and education (p = 0.000) and cancer family history (p =0.026). But there was no significant difference between age groups. Only the age group 50 years and older were less numerical literacy. Participants with higher education had a good score of numerical literacy.

As Table 4 shows the comprehensive literacy was correlated with education (p = 0.000), marital (p = 0.02), visit a doctor due to having a problem in the breast (p = 0.000), cancer family history (p = 0.000) and perform BSE in last one year (p = 0.018).

**Table 1.** The correlation health literacy with its related factors

Variables	Health Literacy (n=186)			P-Value
	Weak	Medium	Great	
<b>Age</b>				0.577
20-29	0 (0)	20(55.6)	16(44.4)	
30-39	2(4)	26(52)	22(44)	
40-49	1(1.5)	30(46.2)	34(52.3)	
50 ≥	0 (0)	21(60)	14(40)	
<b>Marital status</b>				0.942
Single	0 (0)	10(47.6)	11(52.4)	
Married	3(1.9)	85(52.8)	73(45.3)	
Divorced	0 (0)	2(50)	2(50)	
<b>Education</b>				0.001
Diploma≤	3(5.5)	37(67.3)	15(27.3)	
Diploma	0 (0)	51(54.3)	43(45.7)	
BSc	0 (0)	7(25)	21(75)	
MSc ≥	0 (0)	2(14.3)	7(85.7)	
<b>Visit a doctor due to having a problem in breast</b>				0.009
Yes	0(0)	9(29)	22(71)	
No	3(1.9)	88(56.8)	64(41.3)	
<b>Cancer family history</b>				0.000
yes	0(0)	18(28.6)	45(71.4)	
no	3(2.4)	79(64.2)	41(33.3)	
<b>Perform BSE</b>				0.396
never	3(2.5)	70(58.8)	46(38.7)	
1	0 (0)	5(38.5)	8(61.5)	
2	0 (0)	6(60)	4(40)	
3	0 (0)	4(44.4)	5(55.6)	
4	0 (0)	4(80)	1(20)	
5	0 (0)	0 (0)	2(100)	
6	0 (0)	0 (0)	2(100)	
7	0 (0)	0 (0)	2(100)	
9	0 (0)	0 (0)	2(100)	
12	0 (0)	8(36.4)	14(63.6)	

**Table 2.** The correlation the print literacy with its related factors

Variables	Print Literacy(n=186)			P-Value
	Weak	Medium	Great	
<b>Age</b>				0.03
20-29	0 (0)	0 (0)	36 (100)	
30-39	0 (0)	4 (8)	46 (92)	
40-49	0 (0)	1 (1.5)	64 (98.5)	
50 ≥	0 (0)	4 (11.4)	31 (88.6)	
<b>Marital status</b>				0.263
Single	0 (0)	0 (0)	21 (100)	
Married	0 (0)	9 (5.6)	152 (94.4)	
Divorced	0 (0)	0 (0)	4 (100)	
<b>Education</b>				0.029
Diploma≤	0 (0)	7 (12.7)	48 (87.3)	
Diploma	0 (0)	2 (2.1)	92 (97.9)	
BSc	0 (0)	0 (0)	28 (100)	
MSc ≥	0 (0)	0 (0)	9 (100)	
<b>Visit a doctor due to having a problem in breast</b>				0.169
Yes	0(0)	0(0)	31(100)	
No	0(0)	9(5.8)	146 (94.2)	
<b>Cancer family history</b>				0.492
Yes	0(0)	4(6.3)	59 (93.7)	
No	0(0)	5 (4.1)	118 (95.9)	
<b>Perform BSE</b>				0.283
never	0(0)	5(4.2)	114(95.8)	
1	0(0)	0(0)	13(100)	
2	0(0)	0(0)	10(100)	
3	0(0)	0(0)	9(100)	
4	0(0)	0(0)	5(100)	
5	0(0)	0(0)	2(100)	
6	0(0)	0(0)	2(100)	
7	0(0)	0(0)	2(100)	
9	0(0)	0(0)	2(100)	
12	0(0)	4(18.2)	18(81.8)	

**Table 3.** The correlation the numerical literacy with its related factors

Variables	Numerical (n=186)		P-Value
	Non Acceptable	Acceptable	
<b>Age</b>			0.007
20-29	12 (33.3)	24 (66.7)	
30-39	12 (24.0)	38 (76.0)	
40-49	15 (23.1)	50 (76.9)	
50 ≥	19 (54.3)	16 (45.7)	
<b>Marital Status</b>			0.84
Single	5 (23.8)	16 (76.2)	
Married	52 (32.3)	109 (67.7)	
Divorced	1 (25.0)	3 (75.0)	0.000
Diploma≤	34 (61.8)	21 (38.2)	
<b>Education</b>			
Diploma	21 (22.3)	73 (77.7)	
BSc	3 (10.7)	25 (89.3)	
MSc ≥	0 (0)	9 (100.0)	
<b>Visit a doctor due to having a problem in breast</b>			0.000
Yes	7(22.6)	24(77.4)	0.257
No	51(32.9)	104(67.1)	
<b>Cancer family history</b>			0.026
Yes	13 (20.6)	50 (79.4)	
No	45 (36.6)	78 (63.4)	
<b>Perform BSE</b>			0.103
Never	39(32.8)	80(67.2)	
1	1(7.7)	12(92.3)	
2	3(30)	7(70)	
3	1(11.1)	8(89.9)	
4	2(40)	3(60)	
5	0(0)	2(100)	
6	0(0)	2(100)	
7	0(0)	2(100)	
9	2(100)	0(0)	
12	10(45.5)	12(54.5)	

**Table 4.** The correlation the comprehensive literacy with its related factors

Variables	Comprehensive Literacy(n=186)			P-Value
	Weak	Medium	Great	
<b>Age</b>				0.22
20-29	15 (41.7)	16 (44.4)	5 (13.9)	
30-39	17 (34.0)	27 (54.0)	6 (12.0)	
40-49	13 (20.0)	37 (56.9)	15 (23.1)	
50 ≥	10 (28.6)	21 (60.0)	4 (11.4)	
<b>Marital status</b>				0.02
Single	7 (33.3)	6 (28.6)	8 (38.1)	
Married	46 (28.6)	93 (57.8)	22 (13.7)	
Divorced	2 (50.0)	2 (50.0)	0 (0)	
<b>Education</b>				0.000
Diploma≤	24 (43.6)	28 (50.9)	3 (5.5)	
Diploma	28 (29.8)	52 (55.3)	14 (14.9)	
BSc	3 (10.7)	17 (60.7)	8 (28.6)	
MSc ≥	0 (0)	4 (44.4)	5 (55.6)	
<b>Visit a doctor due to having a problem in breast</b>				0.000
Yes	2(6.5)	17(54.8)	12(38.7)	
No	53(34.2)	84(54.2)	18(11.6)	
<b>Cancer family history</b>				0.000
Yes	6 (9.5)	37 (58.7)	20(31.7)	
No	49(39.8)	64(52)	10(8.1)	
<b>Perform BSE</b>				0.018
Never	42(35.3)	61(51.3)	16(13.4)	
1	4(30.8)	7(53.8)	2(15.4)	
2	4(40)	6(60)	0(0)	
3	3(33.3)	6(66.7)	0(0)	
4	0(0)	5(100)	0(0)	
5	0(0)	2(100)	0(0)	
6	0(0)	1(50)	1(50)	
7	0(0)	2(100)	0(0)	
9	0(0)	1(50)	1(50)	
12	2(9.1)	10(45.5)	10(45.5)	

**Table 5.** The correlation the prior knowledge with its related factors

Variables	Prior Knowledge(n=186)			P-Value
	Weak	Medium	Great	
<b>Age</b>				0.05
20-29	0 (0)	26 (72.2)	10 (27.8)	
30-39	11 (22.0)	23 (46.0)	16 (32.0)	
40-49	8 (12.3)	33 (50.8)	24 (36.9)	
50 ≥	6 (17.1)	21 (60.0)	8 (22.9)	
<b>Marital status</b>				0.84
Single	2 (9.5)	11 (52.4)	8 (38.1)	
Married	23 (14.3)	90 (55.9)	48 (29.8)	
Divorced	0 (0)	2 (50.0)	2 (50.0)	
<b>Education</b>				0.007
Diploma≤	14 (25.5)	30 (54.5)	11 (20.0)	
Diploma	9 (9.6)	56 (59.6)	29 (30.9)	
BSc	0 (0)	15 (53.6)	13 (46.4)	
MSc ≥	2 (22.2)	2 (22.2)	5 (55.6)	
<b>Visit a doctor due to having a problem in breast</b>				0.023
Yes	2(6.5)	13(41.9)	16(51.6)	
No	23(14.8)	90(58.1)	42(27.1)	
<b>Cancer family history</b>				0.000
Yes	0 (0)	34(54)	29(46)	
No	25(20.3)	69(56.1)	29(23.6)	
<b>Perform BSE</b>				0.011
Never	22(18.5)	69(58)	28(23.5)	
1	1(7.7)	6(46.2)	6(46.2)	
2	1(10)	8(80)	1(10)	
3	1(11.1)	4(44.4)	4(44.4)	
4	0 (0)	5(100)	0 (0)	
5	0 (0)	0 (0)	2(100)	
6	0 (0)	0 (0)	2(100)	
7	0 (0)	1(50)	1(50)	
9	0 (0)	0 (0)	2(100)	
12	0 (0)	10(45.5)	12(54.5)	

Participants with higher education, single, visit a doctor due to having a problem in the breast, and cancer family history had a good score of comprehensive literacy. More than half of women reported that never perform BSE in last one year (119, 64%). Few of these participants had a good score in comprehensive literacy. Table 5 shows the prior knowledge was correlated with education ( $p = 0.007$ ), visit a doctor due to having a problem in the breast ( $p = 0.023$ ), cancer family history ( $p = 0.000$ ) and perform BSE in last one year ( $p = 0.011$ ). Participants with higher education, having a problem in the breast, and cancer family history had a good score of prior knowledge. Few of participants who never perform BSE in last one year had a good score in prior knowledge.

## DISCUSSION

The purpose of the study was to investigate health literacy about breast cancer and its related factors. Health literacy includes set of skills print literacy, numerical, comprehensive, and prior knowledge [30]. Our results showed that most of the participants had a medium score in health literacy. Determinants related to health literacy were identified as the following: education, visit a doctor due to having a problem in the breast and cancer family history. Our result showed that there is a significant correlation between health literacy total score and its dimensions with education. Our results provide more evidence for the other study [31-34]. Today, more education and information in the health system is published in writing and at a level higher than what is understandable to individuals. Therefore, learning and receiving new health information requires a lot of skills in reading, calculating and decision making skills.

Moreover, our result showed that there is a significant correlation between health literacy, comprehensive literacy and prior knowledge with visit a doctor due to having a problem in the breast and cancer family history. More possibly, women who had a problem in breast and cancer family history had followed more information about breast cancer and screening. The results are in agreement with several studies, in that, they found an associate between cancer screening and cancer family history. Also, they confirmed that the most common reasons for not performing cancer screening were not having a problem with the breasts and not knowing necessity of cancer screening [35-37].

Furthermore our results showed that most of the participants had a great score in print literacy, and there was a significant correlation between print literacy with age and education levels. Although there is a correlation between print literacy with age and education, this correlation is not strong. Even people with a low level of education and in all age group scored well on print

literacy. Therefore, age and education level are not valid variables for health literacy assessment [38].

Also, the results showed that most of the participants had a great score in numerical literacy, and there was a significant correlation between numerical literacy with age, education levels and cancer family history. Specially, women higher than 50 had low numerical literacy. One possible explanation is that with increasing age, poor literacy becomes a result of reduced cognitive function and sensory abilities [39].

Another results of the study showed that a significant correlation between comprehensive literacy and prior knowledge with performing BSE. The women who had low knowledge, performed less BSE. Low comprehensive literacy and prior knowledge can be significant factors for low breast cancer screening rates. One possible explanation is that lack of prior knowledge can be a barrier to understanding health information, do better health behavior, perform cancer screening and use the services of health care system. Our results support previous studies [9, 10, 40]. A study showed that Chinese Americans with limited health literacy are a vulnerable population for breast cancer screening [9]. Also, another studies showed that there is a significant correlation between health literacy and cancer screening [14, 41]. One possible explanation is that people with higher knowledge and comprehensive literacy will be more involved in treatment decisions and will pay more attention to their health status. Prior knowledge and comprehensive literacy can be one of the most important factors in performing these behaviors by raising the understanding, comprehension and assesses the benefits of diagnostic and preventive behaviors in women.

## CONCLUSION

Of all the health literacy dimensions examined, Prior knowledge and comprehensive literacy were the strongest predictors with do breast self-examination. It can be concluded that, promoting health literacy could be effective for the primary prevention of non-communicable diseases and early diagnosis. We recommend educating all women for the prevention and early diagnosis of breast cancer.

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## ETHICAL CONSIDERATION

To comply with ethical considerations, the participants are assured that their information will remain confidential. The Ethics Review Board of Kashan

University of Medical Sciences, approved the present study with the following number: IR.KAUMS.NUHEPM>REC.1399.037.

### CONFLICTS OF INTEREST

There is no conflict of interest.

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### AUTHOR CONTRIBUTION

Zahra Batooli: Acquisition of data, Drafting of the manuscript. Azam Mohamadloo: Study concept and design, Acquisition of data, Analysis and interpretation of data, Drafting of the manuscript, Critical revision of the manuscript for important intellectual content, Statistical analysis, Study supervision

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