Original Article

Health Literacy and Breast and Cervical Cancer Screening Behaviors in Women

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Abstract

Background: Breast cancer and cervical cancer, the most common forms of cancer in women worldwide, are on a fast and steady rise. Cancer screening tests are an important tool to combat cancer-related morbidity and mortality. Considering the importance of health literacy in promoting community health, this study aimed to investigate the relationship between health literacy and the history of screening behaviors of common cancers in women referred to Bushehr healthcare centers in 2019.

Methods: This cross-sectional study was carried out on 380 women referred to urban health centers in Bushehr in 2019. Data were collected by using a questionnaire consisting of three parts: demographic characteristics, breast and cervical cancer screening behavior, and health literacy (HELIA) questionnaire. Data were analyzed via SPSS 21 software using the Chi-square test, an independent t-test, and descriptive statistical methods. Furthermore, $P<0.05$ was considered statistically significant.

Results: The mean age of the subjects was 34.88 ± 9.15 years. Moreover, 3.2% of subjects had inadequate health literacy, 13.9% had health literacy at a border level, and 82.9% had sufficient health literacy. In this study, 46.8% and 88.2% of the women did not undergo Pap tests and mammography, respectively, and 73.9% were never referred to the health centers for clinical examination of breasts. In addition, health literacy had a significant relationship with monthly breast examination and undergoing Pap smear ($P<0.001$), but health literacy had no significant relationship with undergoing mammography and clinical breast examination ($P>0.05$).

Conclusion: The results of this study indicated that women with higher levels of health literacy are more likely to get in the habit of doing monthly breast self-examination and undergoing the Pap test. Thus, it is suggested that this result be considered in prevention programs (primary and secondary) to increase women's health.

Keywords: Health literacy, Screening, Breast cancer, Mammography

Introduction

Cancer ranks as a leading cause of death and an important barrier to increasing life expectancy in every country of the world (1). According to estimates from the World Health Organization (WHO) in 2019, cancer is the first or second leading cause of death before the age of 70 years (2). It is the main cause of death in developed countries and the second main cause of death in developing countries. In Iran, cancer is the second largest group of chronic non-communicable diseases and the third most common cause of death after heart disease, accidents, and other natural phenomena (3). The most commonly diagnosed cancer in women is dominated by two cancer types: breast cancer and cervical cancer (4). According to the WHO prediction, up to 2.3 million women will be diagnosed with breast cancer by 2050 (5,6).

In Iran, breast cancer ranks first among malignancies diagnosed in females, comprising 24.4% of all cancers with an age-standardized incidence rate (ASR) of 23.1 per 100 000 and is the fifth most common cause of death due to cancers (3). Breast cancer is responsible for 24.4% of all malignancies with an ASR of 17.1 per 100 000 and affects Iranian women 10 years earlier than in Western countries (3). Breast cancer mortality in Iran increased from 3.93 in 2006 to 4.92 per 1 000 000 people in 2010. The cervical cancer incidence rate increased after age 30 and peaked

between ages 55 and 65. Moreover, the ASR of cervical cancer was low and about 6 per 100 000. The prevalence of human papillomavirus infection was 76% in Iranian patients with cervical cancer, while it was reported 7% among healthy women (4). The mortality-to-incidence ratio of cervical cancer was more than 44%. Although the ASR of breast and cervical cancer in Iran is low, the mortality-to-incidence ratio is high, which was due to late diagnosis where the cancer prognosis is poor (7-11).

Studies indicated that the death rate of women participating in screening for breast cancer decreased by 40% (12). Invasive cervical cancer is also known as preventable cancer due to its long period before the invasion, the availability of appropriate screening programs, and effective treatment of primary lesions (13).

Today, the role of any individual is emphasized as the main factor in one's health management. Words such as patient-centeredness, lifestyle, patient actions, and empowering all emphasize that the role of a person is more critical than that of healthcare providers in controlling his/her health. This suggests that the person should take part in his/her health decision-making as an informed individual. Global experiences suggest that factors such as economic development, education and literacy promotion, and social services improvement will have a positive impact on the health and welfare of the community (14). The term "Health Literacy", which refers to a set of reading, hearing, analyzing, and decision-making skills as well as the ability to use these skills and health-related conditions (15) has been considered one of the greatest health determinants (16). Although it is still unclear to what extent health literacy affects health outcomes, there are several reasons indicating that many adverse health outcomes result from inadequate health literacy (17). Numerous studies have been carried out on health literacy and cancer screening, most of which examined one type of cancer. For instance, Tavakolian et al and Keshavarz et al studied the relationship between health literacy and breast cancer (18,19). Given the importance of health literacy in promoting community health and the importance of focusing on screening for common cancers in women, this study examined the relationship between health literacy and screening behaviors toward common cancers among women to provide policy makers and community planners with the information obtained in this study and the previous ones on the factors affecting health literacy so that they can improve women's health literacy to increase screening behavior for common cancers in women.

Materials and Methods

This is a cross-sectional study conducted in 2019. The statistical population consisted of the women referred to urban health centers in Bushehr. The inclusion criteria were married women aged 18-65 referred to urban health centers in Bushehr as well as having at least the literacy to read and write, Iranian citizenship, and willingness to participate in the study. The women with breast or cervical cancers or a history of these diseases were excluded. The sample size was based on the estimation of the mean health scores of the population in the study, so the maximum estimate error with a probability of 95% was not more than 0.1 of the standard deviation of the health literacy scores (0.1 σ). As a result, the number of the samples was 380 who were selected through cluster sampling. Thus, the health centers in Bushehr were considered clusters, and 38 people were randomly selected from each center and entered the study. First, the required permission was obtained from the Deputy of Research at University and Health Department to visit the health centers in Bushehr. The women were selected according to the inclusion criteria. Then, the selected women were contacted via phone and invited to take part in the research. After explaining the purpose of the research to them and obtaining their written informed consent, they were provided with the questionnaires.

The data collection tool was a questionnaire consisting of three sections: demographic characteristics, history of cancer screening behaviors, and Health Literacy for Iranian Adults (HELIA) questionnaire. Demographic characteristics included age, education, insurance status, economic status, source of information on health and disease, and history of breast and cervical cancers. Breast and cervical cancer screening behaviors were evaluated by four questions ("yes" or "no" questions with scores of 1 and 0). The HELIA questionnaire was used to assess health literacy. The questionnaire was designed and psychometrically tested by Montazeri et al in 2014, and its validity and reliability were measured. Its internal correlation was 0.756-0.9, and Cronbach's alpha was 0.72-0.89 (20). The HELIA questionnaire consisted of 33 items with five dimensions: reading skills (4 items), access (6 items), understanding (7 items), assessment (4 items), and decision-making and application of health information (12 items), all of which were related to doing health behaviors. The scoring was done using the 5-point Likert scale, ranging from 1 to 5, with the lowest and the highest scores referred to as never and always, respectively. The scores of the questionnaire ranged between 33-165. By adding the scores of each domain, the raw score of that domain was obtained. Then, the raw scores became the standard scores, so eventually, the score of each domain was between 0-100. Afterward, the scores obtained from the questionnaire were divided into four levels: insufficient (0-50), borderline (50.1-66), sufficient (66.1-84), and excellent (84.1-100). In this study, two levels of sufficient and excellent were regarded as sufficient levels (66.1-100). The higher scores denote higher health literacy. Then, the data were entered into the SPSS Statistical software version 21 and analyzed using the Chi-square test, an independent t-test, and descriptive statistical methods. Finally, $P < 0.05$ was considered statistically significant.

Results

The mean age of the subjects was 34.88 ± 9.15 years. Most

of the participants (38.7%) had an associate degree, 73.9% were housewives, and 72.6% had a moderate economic status. Furthermore, the majority of the subjects had insurance coverage (88.7%), and the source of health information in most subjects (57.9%) was physicians and mass media. Moreover, eight participants (2.1%) reported a history of cancer in their first-degree relatives. In addition, 46.8% and 88.2% of the women did not do a Pap smear and mammography, respectively, while 23.7% of them reported that they always do breast self-examination (Table 1).

The results of this study showed that in general, 3.2% (n = 12) have inadequate health literacy, 13.9% (n = 53) have health literacy at a border level, and 82.9% (n = 315) have sufficient health literacy. In addition, the mean health literacy of the subjects was 139.1 ± 19.5, and

Table 2 illustrates the mean and standard deviation of health literacy dimensions.

Table 3 presents the mean health literacy scores of the participants based on demographic variables. As observed, there is a significant difference between the mean health literacy scores and the variables of education, occupation, economic status, and insurance ($P < 0.05$).

Using the Pearson correlation test, it was found that there is no significant relationship between age and health literacy mean score (r = 0.046, $P = 0.369$). The chi-square test also indicated that health literacy has a significant relationship with monthly breast examinations ($P < 0.001$). The test also showed that there is a significant relationship between health literacy and undergoing a Pap smear ($P < 0.001$). The Chi-square test indicated that health literacy has no significant relationship with undergoing mammography ($P = 0.766$). Moreover, no significant relationship was observed between health literacy and clinical breast examination ($P = 0.223$).

Discussion

In the present study, a significant relationship was found between health literacy and breast self-examination and undergoing a Pap smear; that is, the women with a higher level of health literacy were more likely to do a monthly breast self-examination and Pap smear. In previous

Table 1. Frequency Distribution of Demographic Variables, History of Cancer, History of Breast and Cervical cancer Screening Behaviors, and Sources of Information in Women under Study

Screening Behavior		Number	Percent
Education	Lower than diploma	52	13.7
	Diploma	143	37.6
	Associate degree	147	38.7
	Bachelor	105	27.6
	Higher than bachelor	33	8.7
Occupation	Employee	99	26.05
	Housewife	281	73.95
Economic status	Poor	29	7.7
	Moderate	276	72.6
	Good	75	19.7
Insurance	Yes	337	88.7
	No	43	11.3
Pap test	Never	178	46.8
	Once every 3 years	90	23.7
	Irregularly	112	29.5
Breast self-examination	Never	93	24.5
	Seldom	60	15.8
	Occasionally	69	18.1
	Sometimes	68	17.9
	Always	90	23.7
Mammography	Never	335	88.2
	Once in 2 years	15	3.9
	Irregularly	30	7.9
Clinical breast examination	Never referred to a doctor	281	73.9
	Referred to a doctor once a year	35	9.2
	Referred to a doctor once in a few years	64	16.8
Sources of information	Healthcare staff	125	32.9
	Physicians and mass media	220	57.9
	Other sources	35	9.2
History of cancer in their first-degree	Yes	8	2.1
	No	372	97.9

Table 2. Frequency Distribution of Health Literacy Dimensions in Women Participating in the Study

Dimension	Number of Questions	Mean ± SD	Median	Lowest–Highest
Access	6	24.7 ± 5.3	25	6-30
Reading skill	4	16.8 ± 3.6	17	4-20
Understanding	7	31 ± 4.8	33	7-35
Assessment	4	16.4 ± 3.4	17	4-20
Decision-making and behavior	12	50.1 ± 7.9	51	12-60
The mean score of health literacy	33	139.1 ± 19.5	142	33-165

Note. SD: Standard deviation.

Table 3. Comparison of the Mean Health Literacy Scores of the Participants According to Demographic Variables

Health Literacy			P Value
Variables		**Mean ± SD**	
Education	Lower than diploma	131.4 ± 22.8	<0.001**
	Diploma	135.8 ± 21.2	
	Associate degree	140.8 ± 16.5	
	Bachelor	143.6 ± 15.5	
	Higher than bachelor	148.5 ± 14.3	
Occupation	Employee	146.8 ± 13.8	<0.001*
	Housewife	136.4 ± 20.5	
Economic status	Poor	123.1 ± 24.5	<0.001**
	Moderate	138.8 ± 19.1	
	Good	146.3 ± 14.6	
Insurance	Yes	140.2 ± 18.7	0.001*
	No	130.1 ± 23.1	

*Chi-square test
**Independent T-test

studies examining women's cancer screening behaviors, a significant relationship was observed between the history of undergoing a Pap smear and the level of health literacy, and the married women with a high level of health literacy were more likely to undergo Pap test than those with a moderate level of health literacy (21). The results of the study by Izadirad et al showed that the level of health literacy, referring to the doctor, and doing preventive behaviors have a significant relationship with general health status. In other words, individuals with a higher level of health literacy evaluated their general health status better and did more preventive behaviors than others (22). Kim et al in a systematic review and Mazor et al observed a positive association between health literacy and cervical cancer screening (23,24). In addition, Rahmatpour et al (21), Rakhshkhorshid et al (25), and Armin et al (26) found a significant relationship between health literacy and cancer screening behaviors. However, the study by Goto et al (27) indicated no statistically significant relationship between health literacy and adherence to recommendations to undergo breast and/or cervical cancer screening, which contradicts the results of the present study. The reasons for this discrepancy may be lower health literacy and the lack of informational and emotional support for patients.

In their research, Rutherford et al indicated that health literacy is inadequate in 37.2% of the patients, and there is a positive correlation between inadequate health literacy and a lack of understanding of the risk of breast cancer. It means that women with a higher health literacy level played a more active role in doing the tests and were more sensitive to their health. They were also more inclined to informed participation in medical care (28). Finally, it is worth mentioning that people with low levels of health literacy do not do health behaviors and do not take preventive measures and screening for important diseases such as common types of cancer, including cervical cancers) cervical cancer screening in health centers is payable with insurance(and breast cancers (breast cancer screening in health centers is free(, for which there are appropriate and low-cost screening methods in the early stages. Therefore, these behaviors are considered a challenge not only for themselves but also for healthcare providers and health systems through incurring additional costs for the systems and themselves, and this issue needs to be addressed in all areas of health.

The results of the present study on health literacy indicated that 3.2% of the women have inadequate health literacy, 13.9% have health literacy at a border level, and 82.9% have adequate health literacy. The results of the study by Tontab Haghighi et al showed that 80.6% of the subjects have good health literacy, and 19.4% have inadequate health literacy (29). In the study by Mahdavi et al, 30% of the subjects had inadequate health literacy, 24.6% had health literacy at a border level, and 45.4% had adequate health literacy (30). The results of a study on Mexican American women showed that about 51% of the participants have an inappropriate and low level of health literacy (31). According to the results of that study and other similar studies, it is clear that in the present study, the level of health literacy of most women was favorable, and the number of people with low health literacy levels was not high. This might indicate the importance of acquiring health information by women and healthcare professionals in the country.

In addition, the results of this study showed that 46.8% and 88.2% of the women have never undergone Pap smear and mammography, respectively, and 73.9% have not visited a doctor for clinical breast examination. Al-Wassia et al demonstrated that 40% of surveyed women report having mammograms. Moreover, older age (≥ 60 years), being single or divorced, having fewer than two children, not completing high school, and having a family history of breast cancer were significantly associated with never having a mammogram (32). The results of the study by Momenimovahed and Salehiniya suggested that more than half of the women have never had a Pap smear test. Of the 202 women, only 14.8% repeated the Pap smear test at standard intervals (33). Unfortunately, a large number of women do not undergo a Pap smear test, and some of the most important reasons for this are the fear of having cervical cancer, the painfulness of the test, and the embarrassment to do it, which somewhat indicates the low health literacy of these women.

In the present study, breast self-examination behavior was significantly related to occupation and economic status, but there was no significant relationship between breast self-examination and education. In contrast, the results of the study by Tavakolian et al showed a significant relationship between breast self-examination and education. In other words, breast self-examination was mostly observed in the age group under 30 years than in other age groups, and the rate of breast self-examination was higher among the women who had a diploma or university degree (18).

In this study, there was a significant difference between the mean score of health literacy and the variables of education, occupation, economic status, and insurance. In the study by Mahdavi et al, health literacy had a positive correlation with education level. In other words, an increase in educational years resulted in a decrease in the percentage of people with inadequate health literacy levels and an increase in the percentage of those with border-level and sufficient health literacy (30).

The results also revealed no significant relationship between age and health literacy score. In their study, Tontab Haghighi et al exhibited a significant and inverse relationship between the subjects' health literacy and their age, so an increase in the patients' age was accompanied by their reduced health literacy and awareness (29). In this regard, the results of Barati et al revealed that there was a significant relationship between age and prostate cancer screening (34).

Limitation

Since this is a descriptive study, there were some limitations in terms of etiology and determining the factors affecting health literacy as well as the factors affecting the behavior of screening for breast and cervical cancers. Therefore, future studies can use cohort and case-control methods to determine the factors affecting health literacy and the reasons for the lack of women's referrals for screening tests.

Conclusion

The results of this study indicated the relationship between health literacy and the habit of monthly breast self-examination and undergoing the Pap test in women. Thus, it is suggested that this result can be considered in prevention programs (primary and secondary) to increase women's health. In the present study, there was no significant relationship between health literacy and mammography and referral for clinical examination of the breasts. Hence, it seems that further studies are needed to investigate the causes of these screening behaviors.

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