



Knowledge and Source of Information About Early Detection Techniques of Breast Cancer Among Women in Iran: A Systematic Review

ORIGINAL
ARTICLE

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Background: An increase of access to knowledge about early detection techniques of breast cancer can reduce this mortality rate. This study aimed to determine the knowledge and source of information about early detection techniques of breast cancer among Iranian women.

Methods: Both International (PubMed, Web of Science, and Google Scholar) and national (scientific information database [SID] and Magiran) databases were reviewed launching to September, 2017 to obtain related articles. Steps involving the screening, analysis of quality of the studies and extraction of papers were performed by two researchers.

Results: Of the 749 studies searched initially, 25 studies performed on 11,756 people were selected for the final stage. General knowledge for breast cancer screening among women ranged from 4.5% to 45%. The number of people with sufficient knowledge about breast self-examination in various studies was between 5% and 79.8%. The most important source of information was the Healthcare team.

Conclusions: Considering the poor knowledge and different source of information, it is suggested that educational programs be conducted around the country especially in at-risk populations.

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Key Words: Breast self-examination, Early detection of cancer, Knowledge, Iran, Systematic reviews

INTRODUCTION

Worldwide, breast cancer is the second leading cause of death from cancer in women.^{1,2} In Iran, breast cancer is common cancer with 76% of women cancer patients suffering from this malignancy.³ The results of a study in Iran showed that 23% of breast cancers were observed in women under 40 years of age, and 70% of women died from the diagnosis of advanced disease in a short period of time. The persistence of death from breast cancer in Iranian women is partly due to the low usage of breast cancer screening and late detection.⁴ There is evidence that among all Iranian women, one of every four women with cancer diseases is diagnosed as advanced stages breast cancer, and this

has killed more than 3,742 people by 2017.^{3,5,6} According to the World Health Organization, the best way to control breast cancer is early diagnosis.⁷ The purpose of the screening program is to diagnose the disease after it starts and before it can lead to clinical symptoms. The American Cancer Society recommends the following screening methods for early detection of cancer in asymptomatic patients including: 1) Breast self-examination (BSE); 2) Clinical breast examination (CBE); and 3) Mammography.⁸ In developing countries including Iran, awareness of breast cancer screening methods is low.⁶ In Iran, with an increase in life expectancy and aging, the incidence and mortality rate of breast cancer will increase in the coming years, so that deaths caused by breast cancer are expected to increase by more than 7,000 by 2035.^{1,3}

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Given the importance of the knowledge and determining the correct age of the early diagnosis of breast cancer in the timely treatment of the disease and reducing the resulting mortality, accurate determination of women's awareness as an epidemiologic gap can help increase the awareness of health decision-makers and determine the suitable source of information. Therefore, this systematic study was conducted to assess the knowledge and information resources about the prevention techniques of breast cancer among women in Iran.

MATERIALS AND METHODS

1. Eligibility criteria

The methods adopted for this systematic review have been developed in accordance with the Cochrane Handbook for Systematic Reviews and reported using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) tool.⁹ Quantitative observational studies were included in the present study. Case series, case reports and letter to editors were excluded. The target population was women with and without breast cancer living in Iran. The knowledge and source of information about early detection of techniques of breast cancer were measured in this study. Minimum required sample size was ≥ 25 participants.

2. Search strategy and databases

Literature review was done using the medical subject headings (MeSH) and key words related to knowledge and source of information about breast cancer screening techniques in Iran. The international (MEDLINE [PubMed interface], Google Scholar, and Web of Science [Web of Science interface]) and national (scientific information database [SID] and Magiran) and National key journal (Iranian Journal of Breast Diseases) databases were searched for relevant studies without settings and language limits from lunching to 30 December 2017. Health Sciences Librarian and PRESS standard were used for creating the search strategy.¹⁰ The MEDLINE program was adopted to search in for other databases. Moreover, PROSPERO was used to search for ongoing or recently completed systematic reviews. Boolean operators (AND, OR, and NOT), MeSH, truncation "*" and related text words were used for search in title and abstract using following keywords: Knowledge, Sources of information, Breast cancer, Breast neoplasm, Breast cancer self-examination, Mammography, Clinical breast examination, Population and Iran.

3. Study selection

Results of the Literature review were exported to Endnote.

Prior to the formal screening process, a calibration exercise was undertaken to pilot and refine the screening. Formal screening process of titles and abstracts were conducted by two researchers according to the eligibility criteria, and consensus method was used for solving controversies among the two researchers. The full text was obtained for all titles that met the inclusion criteria. Additional information was retrieved from the study authors in order to resolve queries regarding the eligibility criteria. The reasons for the exclusion criteria were recorded. Neither of the review authors was blinded to the journal titles, the study authors or institutions.

4. Data extraction, quality assessment

Data form items included general information (first author, brief title, province and year of publication), study characteristics (study design, sampling method, mean of data collection, setting, sample size and risk of bias, questioner characteristics and psychometric characteristics), participants characteristics (age group) and outcome measures (knowledge and source of information). The tool of Hoy et al.¹¹ was used to assess the quality of studies. These decisions were made independently by two review authors based on the criteria for judging the risk of bias; in case of any disagreement, the consensus method was used to resolve such controversies. Studies were tabulated in chronological order.

RESULTS

1. Study selection

A total of 749 articles were retrieved from the initial search in different databases. Out of 620 non-duplicated studies in title and abstracts screening process, 575 studies were excluded due to irrelevant titles. Of 45 studies, 25 studies met the eligibility criteria. In 20 excluded studies, two studies were review, six studies were letter to editor, three studies had no full text and nine studies were of low quality and could not be included in the study. The list of studies is available at [http://uploadboy.me/verhw72hohee/List of final included studie1.pdf.html](http://uploadboy.me/verhw72hohee/List%20of%20final%20included%20studie1.pdf.html) (Fig. 1).

2. Study characteristics

Final included studies were conducted on 11,756 participants; the age group range was 15 to 75 years. All the included studies used a cross-sectional design. Studies were conducted only in 16 out of 31 provinces in Iran. Of the 25 studies, three studies were from Chaharmahal and Bakhtiari,¹²⁻¹⁴ two studies were from Ardabil,^{15,16} while in Golestan,^{17,18} Isfahan,^{19,20} Khuzestan,^{21,22} Mazandaran,^{23,24} Yazd,^{25,26} Razavi Khorasan,^{4,27} and in other

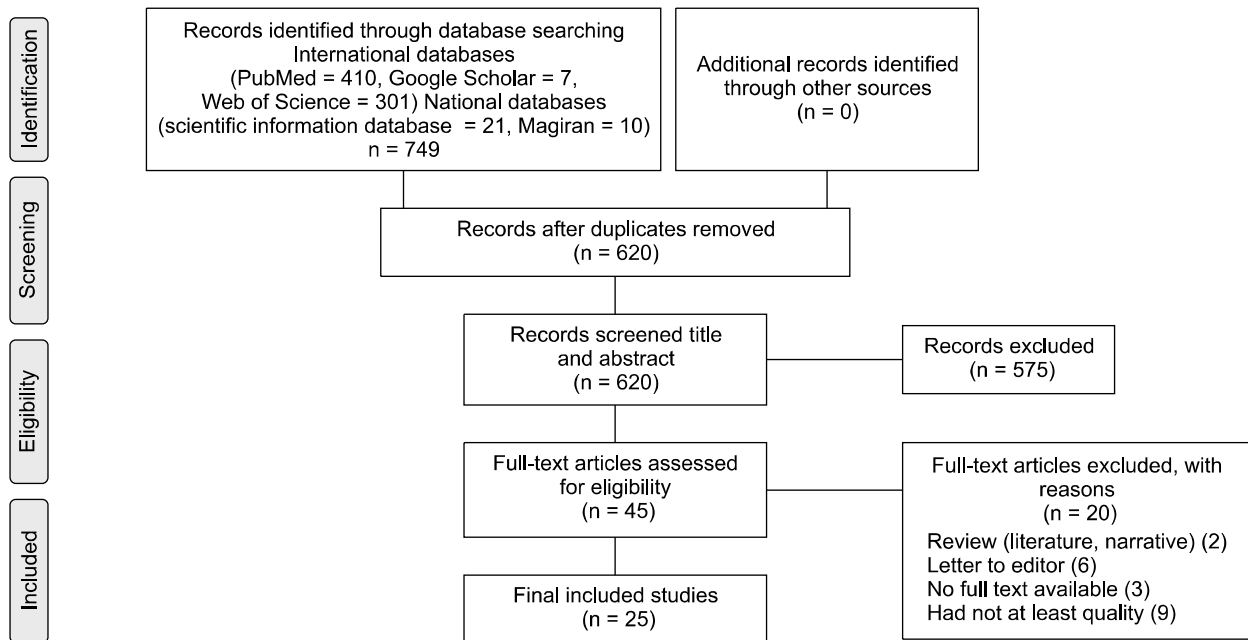


Figure 1. Study selection process.

provinces were conducted one study each. Most studies were conducted at outpatient clinics ($n = 14$), had a simple random sampling method ($n = 7$), data were collected through interview ($n = 19$) and had low risk of bias ($n = 20$) (Table 1).^{4,12-35}

3. Main results

1) Instruments

In general, all the instruments used in the reviewed studies were researcher-designed. The aim of the questionnaires was to assess the knowledge, attitude and practice about early detection techniques of breast cancer. The total number of items in different questionnaires ranged from 20 to 54. Of the 25 studies, only 14 studies analyzed the reliability of used instruments. The reliability of the instruments was investigated by test-retest, and results of the Cronbach alpha were between 0.64¹⁴ and 0.95.³⁰ In nineteen studies, the validity of used instruments was approved by opinions of experts from the related disciplines.

2) Knowledge of breast self-examination, clinical breast examination, and mammography

From among the 25 included studies, 19 had reported attitudes about BSE. Knowledge about breast cancer screening methods was measured by answering whether enough awareness of breast screening techniques exists to perform the tests at the right time and with the right number of test replicates. The responses included the duality of aware/unaware, and the general

knowledge for breast cancer screening among woman was classified as sufficient, moderate, and poorly informed. In Table 2,^{4,12-35} the results of knowledge level in general aspects of BSE, CBE, and Mammography are reported as a percentage of people with adequate knowledge of breast cancer screening methods. General knowledge for breast cancer screening among woman was reported in five studies, ranging from 4.5%³⁰ to 45%.³² Participants' knowledge of BSE was investigated in 22 studies. The number of people with sufficient knowledge about BSE in various studies was between 5%³⁵ and 79.8%.²⁰

Knowledge about CBE and Mammography was only mentioned in two studies, with the awareness of CBE rated between 7.8%¹² and 76%.³² The awareness of mammography was between 6%¹² and 33.8%.³²

3) Source of information about breast self-examination, clinical breast examination, and mammography

The information sources used by the participants were listed in 14 studies. The most important sources of information in terms of the number of studies used were the healthcare team (13 studies), TV/radio/media (10 studies), family/friends (six studies), and books (five studies) (Table 3).^{12,15-17,19,22,23,26,28-31,34,35}

Table 1. Summary of included studies

First author	Year	Province	Target population	Sampling method	Mean of data collection	Setting	Sample size (n)	Age group (yr)	Risk of bias (quality of study)
Abedzadeh ¹⁹	2003	Isfahan	Healthy housekeepers	Multistage stratified	Interview	Outpatient clinics	400	20-45 > 45	Low
Akhtari-Zavare ²⁸	2014	Hamedan	Healthy housekeepers	Purposive	Interview	Outpatient clinics	384	18-52	Low
Alaei Nejad ²⁹	2007	Semnan	Healthy housekeepers	Simple random	Interview	Outpatient clinics	89	20-57	Low
Asgharnia ³⁰	2013	Gilan	Healthy women	Convenience	Interview	Hospital	400	40-71	Low
Banaeian ¹²	2006	Chaharmahal and Bakhtiari	Healthy housekeepers	Simple random	Interview	Outpatient clinics	400	31.1	Moderate
Besharat ¹⁷	2004	Golestan	Healthy students	Stratified random	Interview	Mixed	428	15-65	Low
Dadkhah ¹⁵	2002	Ardabil	Healthy housekeepers	Systematic cluster	Interview	Outpatient clinics	150	20-50	Low
Danesh ¹³	2002	Chaharmahal and Bakhtiari	Healthy staff	Systematic random	Self-report	Ministry of education	340	20-49 > 50	Low
Eyvanbagha ¹⁶	2016	Ardabil	Healthy staff	Census	Interview	University	300	26-41	Low
Fazel ²⁷	2010	Razavi Khorasan	Healthy woman	Stratified random	Interview	Outpatient clinics	364	20-40 > 40	Moderate
Ghorbani ¹⁸	2009	Golestan	Healthy staff	Simple random	Interview/ Self-Report	Mixed	330	22-54	Moderate
Haghighi ⁴	2012	Razavi Khorasan	Healthy teachers	Simple random	Interview	Ministry of education	400	20-56	Low
Hajian Tilaki ²³	2015	Mazandaran	Healthy woman	Cluster sampling	Interview	Outpatient clinics	500	20-65	Low
Iurigh ²⁴	2016	Mazandaran	Rural healthy woman	Multistage random	Interview/ Self-report	Outpatient clinics	3,044	20-75	Low
Lalouei ³¹	2006	Tehran	Healthy woman	Census	Self-report	Hospital	376	19-59	Moderate
Mahvari ³²	2003	Fars	Healthy woman	Random stratified	Interview	Outpatient clinics	1,000	35-60	Low
Zare Marzouni ²¹	2014	Khuzestan	Healthy woman	Simple random	Interview	Outpatient clinics	1,020	15-79	Low
Moajhed ²⁵	2001	Yazd	Healthy nurses and midwives	Census	Self-report	Hospital	280	> 20	Low
Naghbi ³³	2009	West Azerbaijan	Healthy healthcare professionals	Census	Interview	Outpatient clinics	89	20-60	Moderate
Navvabi-Rigi ³⁴	2012	Sistan and Balochistan	Healthy students	Stratified random	Self-report	University	385	> 21	Low
Nourizadeh ³⁵	2010	East Azerbaijan	Healthy woman	Cluster random	Interview/ Self-report	Health center	219	30-40	Low
Reisi ²⁰	2011	Isfahan	Healthy healthcare professionals	Simple random	Self-report	Outpatient clinics	119	38.3	Low
Shahbazi ¹⁴	2014	Chaharmahal and Bakhtiari	Healthy healthcare professionals	Census	Self-report	Hospital	89	31.95	Low
Talaiezhadeh ²²	2009	Khuzestan	Healthy woman	Simple random	Interview	Health center	400	20-60	Low
Zadeh ²⁶	2016	Yazd	Patients	Purposive	Interview	Hospital	250	25-65	Low

DISCUSSION

This study was performed aiming at determining the knowledge and source of information on breast cancer screening techniques in Iran. Twenty-five studies on 11,756 participants were included in the final stage. The instruments used in all of

the studies were researcher made based on expert opinions and literature review.

The instruments used in many studies in the countries of Oman³⁶ and Ethiopia³⁷ were author-made. General knowledge for breast cancer screening among woman was reported in five studies, which ranged from 4.5% to 45%. In various studies in

Table 2. Knowledge and source of information about Breast cancer early detections techniques among Iranian woman

First author	Brief title	Questioner characteristic	Psychometric characteristic	Sufficient knowledge ^a	Source of information
Abedzadeh ¹⁹	Knowledge, attitude and practice about BC screening	36 Items in four sections: demographics (9 items), knowledge (10 items), attitude (10 items), practice (7 items) Knowledge scoring: poor (lower than 10), average (10-15), positive (16-20)	Reliability: NR Validity: NR	1. 22% 2. NR 3. NR 4. NR	1. Radio/TV 2. Healthcare team 3. Newspaper/book 4. Family
Akhtari-Zavare ²⁸	Knowledge towards BSE	A two part questioner included demographics and knowledge	Reliability: NR Validity: NR	1. NR 2. 20.6% 3. NR 4. NR	1. Media 2. Brochure 3. Friends 4. Healthcare team
Alaei Nejad ²⁹	Knowledge, attitude and skill about BSE	50 Items in four sections: demographics (NR), knowledge (21 items), attitude (22 items), and skill (7 items) Scoring: knowledge: poor (under 7), average (7-14), and good (above 14)	Reliability: NR Validity: NR	1. NR 2. 78.7% 3. NR 4. NR	1. Healthcare team
Asgharnia ³⁰	Knowledge and practice about BC and screening tests	30 Items in three sections: demographics (13 items), knowledge (16 items), and practice (4 items) Scoring: knowledge: poor (0-5), average (6- 10), and good (11-16)	Reliability: 0.96 Validity: approved by experts in field	1. 4.5% 2. NR 3. NR 4. NR	1. TV/radio 2. Journals 3. Healthcare teams 3. Internet 4. Friends 5. Family
Banaeian ¹²	Knowledge, attitude and practice about BC screening	31 Items in three sections: knowledge (11 items), attitude (16 items), practice (4 item) Knowledge scoring: poor (under 5), good (up 5)	Reliability: NR Validity: approved by experts in field	1. 3.7% 2. 37.8% 3. 7.8% 4. 6%	1. Healthcare team
Besharat ¹⁷	Knowledge towards BSE	A two-part questionnaire included: demographics and knowledge	Reliability: NR Validity: approved by experts in field	1. NR 2. 17.1% 3. NR 4. NR	1. Clases 2. Media 3. Brochure
Dadkhah ¹⁵	Knowledge, attitude and practice about BSE	36 Items in four sections: demographics (NR), knowledge (22 items), attitude (6 item), practice (10 item) Knowledge scoring: poor (under 8), average (8-14), good (up 14)	Reliability: Cronbach's alpha = 0.87 Validity: approved by experts in field	1. NR 2. 14% 3. NR 4. NR	1. Heath care team 2. Media
Danesh ¹³	Knowledge, attitude, practice about BSE	A four-part questionnaire included: demographics, knowledge, attitude and practice Knowledge scoring: poor (under 8), average (8-29), good (up 29).	Reliability: 0.85 Validity: approved by experts in field	1. NR 2. 17% 3. NR 4. NR	NR

Table 2. Continued

First author	Brief title	Questioner characteristic	Psychometric characteristic	Sufficient knowledge ^a	Source of information
Eyvanbagha ¹⁶	Knowledge, attitude, practice about BSE	54 Items in four sections: demographics (14 item), knowledge (29 item), attitude (11 item), practice (NR) Knowledge scoring: poor (0-9), average (10-19), and good (20-29)	Reliability: Cronbach's alpha = 0.8 Validity: approved by experts in field	1. NR 2. 56.50% 3. NR 4. NR	1. Books 2. Healthcare team 3. Internet 4. TV/Radio 5. Seminars
Fazel ²⁷	Knowledge, and performance about BSE	A four-part questionnaire included: demographics, knowledge, practice and overall knowledge Knowledge scoring: poor (under 7), average (7-14), good (up 14)	Reliability: NR Validity: approved by experts in field	1. NR 2. 12.1% 3. NR 4. NR	NR
Ghorbani ¹⁸	Knowledge, attitude, practice about BSE	38 Items in four sections: demographics (6 item), knowledge (15 item), attitude (12 item), practice (6 item) Knowledge scoring: poor (11-17), average (18-46), good (37-55)	Reliability: 0.88 Validity: approved by experts in field	1. NR 2. 28.3% 3. NR 4. NR	NR
Haghighi ⁴	Knowledge, attitude, practice about BC screening	67 Items in four sections: demographics (14 item), practice: (7 item), knowledge (27 item), attitude (19 item) Knowledge scoring: poor (under 30%), average (30%-60%), good (above 60%)	Reliability: 0.72 Validity: approved by experts in field	1. NR 2. 12% 3. NR 4. NR	NR
Hajian Tilaki ²³	Knowledge, attitude, practice about BC screening	A four-part questionnaire included: demographics, knowledge (22 items), health belief (6 items), and practice (3 items) Knowledge scoring: poor (under 7), average (7-10), good (11-14)	Reliability: 0.8 Validity: approved by experts in field	1. 14.8% 2. NR 3. NR 4. NR	1. Healthcare team 2. Magazine 3. Books 4. Brochure
Iurigh ²⁴	Knowledge, attitude, practice about BC screening	A four-part questionnaire included: demographics, knowledge, attitude and practice Knowledge scoring: poor (-10-0), average (0-10), good (11-20)	Reliability: 0.82 Validity: approved by experts in field	1. NR 2. 8.6% 3. NR 4. NR	NR
Lalouei ³¹	Knowledge	A two-part questionnaire included: demographics and knowledge items Scoring: NR	Reliability: NR Validity: NR	1. NR 2. 64.4% 3. NR 4. NR	1. CDs 2. Class 3. Healthcare team
Mahvari ³²	Knowledge and practice BC screening	A four-part questionnaire included: demographics (knowledge and practice) Scoring: NR	Reliability: NR Validity: by experts in field	1. 45% 2. 46.3% 3. 76% 4. 33.8%	NR

Table 2. Continued

First author	Brief title	Questioner characteristic	Psychometric characteristic	Sufficient knowledge ^a	Source of information
Zare Marzouni ²¹	Awareness, attitude towards BSE	A three part questionnaire included: demographic, knowledge, and BC risk factors Scoring: NR	Reliability: 0.86 Validity: approved by experts in field	1. NR 2. 20.2% 3. NR 4. NR	NR
Moajhed ²⁵	Awareness, practice towards BSE	A two-part questionnaire included: demographics and Knowledge, attitude and practice Knowledge scoring: poor (0-5), average (6-9), good (10-13)	Reliability: NR Validity: NR	1. NR 2. 13.21% 3. NR 4. NR	NR
Naghbi ³³	Knowledge, attitude, practice towards BSE	43 Items in four sections: demographics (10 items), Attitude (13 items), knowledge (10 items), practice (10 items) Knowledge scoring: poor (≤ 8), average (9-14), good (≥ 14)	Reliability: 0.85 Validity: approved by experts in field	1. NR 2. 50.6% 3. NR 4. NR	NR
Navvabi-Rigi ³⁴	Knowledge, attitude towards BSE	A three-part questionnaire included: demographic, knowledge, and attitude. Scoring: NR	Reliability: 0.7 Validity: approved by experts in field	1. NR 2. 33.9% 3. NR 4. NR	1. Healthcare team 2. Books 3. TV/Radio 4. Friends
Nourizadeh ³⁵	Knowledge	A four-part questionnaire included: demographic, knowledge, practice attitude. Knowledge scoring: poor (≤ 6), average (6-12), good (13-18)	Reliability: 0.77 Validity: approved by experts in field	1. NR 2. 5% 3. NR 4. NR	1. Healthcare team 2. Newspapers 3. Books 4. Journals 5. Media 6. Friends
Reisi ²⁰	Knowledge, attitude, practice towards BSE	42 Items in a section: demographics (6 items), knowledge (20 items), attitude (10 items), practice (6 items) Scoring: NR	Reliability: 0.88 Validity: approved by experts in field	1. NR 2. 79.8% 3. NR 4. NR	NR
Shahbazi ¹⁴	Knowledge and attitude towards BSE	35 Items in four sections: demographics, knowledge, attitude Knowledge scoring: very poor (0-5), poor (6-10), average (11-15), good (16-20).	Reliability: 0.64 Validity: approved by experts in field	1. NR 2. 34.8% 3. NR 4. NR	NR
Talaiezhadeh ²²	Knowledge towards BSE	A two-part questionnaire included: demographic and knowledge Knowledge scoring: NR	Reliability: NR Validity: NR	1. NR 2. 26% 3. NR 4. NR	1. Healthcare team 2. Media
Zadeh ²⁶	Awareness and attitude towards BSE	20 items in three sections: demographics, knowledge, attitude Knowledge scoring: poor (0), average (1-3), good (4-6)	Reliability: NR Validity: approved by experts in field	1. NR 2. 6.2% 3. NR 4. NR	1. Healthcare team 2. Media 3. Friends

NR, none reported; BC, breast cancer; BSE, breast self-examination; CBE, clinical breast examination.

^aSufficient knowledge: 1. General knowledge; 2. BSE, 3. CBE; 4. Mammography.

Table 3. Sources of information about BSE, CBE, and mammography

Study	Sources of information						
	Healthcare team	Books/ brochure	Internet	Seminars/CDs/ classes	TV/radio/ media	Newspaper/ journals	Family/family
Abedzadeh et al. ¹⁹	✓				✓	✓	✓
Akhtari-Zavare et al. ²⁸	✓				✓		✓
Alaei Nejad et al. ²⁹	✓						
Asgharnia et al. ³⁰	✓		✓		✓	✓	✓
Banaeian et al. ¹²	✓						
Besharat et al. ¹⁷		✓		✓	✓		
Dadkhah and Mohammadi ¹⁵	✓				✓		
Eyvanbagha et al. ¹⁶	✓	✓	✓	✓	✓		
Hajian Tilaki and Auladi ²³	✓	✓				✓	
Lalouei and Kashani-Zadeh ³¹	✓			✓			
Navvabi-Rigi ³⁴	✓	✓			✓		✓
Nourizadeh et al. ³⁵	✓	✓			✓	✓	✓
Talaiezadeh ²²	✓				✓		
Zadeh ²⁶	✓				✓		✓

BSE, breast self-examination; CBE, clinical breast examination.

Ethiopia (57.8%),³⁸ Uganda (61.3%)³⁶ and the United States (76.4%),³⁹ the knowledge rate was higher than the current study, which could be due to introduction and better implementation of breast cancer prevention programs and higher levels of community literacy in these countries.

Participants' knowledge of BSE in this study was 30.6%, which is a low level-like Angola in which only 35% had sufficient knowledge.⁴⁰ However, in countries like Iraq (38.8%)⁴¹ and Cameroon (73.5%),⁴² the level was higher despite the fact that Iran has a better position with regard to the level of literacy and socioeconomic status. A study by Khokher et al.⁴³ in Pakistan showed that only 27% of participants had enough insight into BSE.

Knowledge about Mammography was between 6% and 33.8%. But in a study conducted in Nigeria, only 5.1% had adequate knowledge of mammography.⁴⁴ However, in Malaysia (50%),⁴⁵ it was higher than the current study, which could be due to high awareness and knowledge of Malaysian screening methods. Knowledge about CBE ranged from 7.8% to 76%; The result was almost as low as Mali (20%).⁴⁶ The information sources used by the participants were listed in 14 studies. The most important information sources in terms of the number of studies used were the healthcare team, TV/radio/media, family/friends. In a study by Obajimi et al.,⁴⁴ the most important information sources were newspapers and magazines. The systematic review in Nigeria revealed the most important resource as TV.² Differences in the information resources used in various studies can be due to the availability of these resources in each country. This difference

could be due to the existence of various educational programs on breast cancer in the developed world and the existence of supportive services in these countries. The strengths of this study were: According to our searches, this is the first systematic review in this area. The studies were made without any time limitations. The most important limitation was the use of researcher made instruments to determine the knowledge. Due to the lack of complete information in most studies, contact was made with the authors to gain extra information. The present systematic review conducted aimed to determine the knowledge and source of information towards breast cancer early detection among Iranian woman. The main results showed that only one of third of women had sufficient knowledge about BSE. The main source of information was healthcare team members. According to the results of this study, it is recommended that a national study is conducted to determine the real status of knowledge in Iran and provide educational materials among women, specifically in regions with poor level of literacy.

CONFLICTS OF INTEREST

No potential conflicts of interest were disclosed.

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