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

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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 70% 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
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 (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,13,15 while in Golestan,17,18 Isfahan,19,20 Khuzestan,21,22 Mazandaran,23,24 Yazd,25,26 Razavi Khorasan,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).12,15-17,19-22,26,28-31,34,35
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    | 2003 | Isfahan  | Healthy housekeepers | Multistage stratified | Interview | Outpatient clinics | 400 | 20-45 | Low |
| Akharti-Zavare | 2014 | Hamedan  | Healthy housekeepers | Purposive | Interview | Outpatient clinics | 384 | 18-45 | Low |
| Alaei Nejad   | 2007 | Semnan   | Healthy housekeepers | Simple random | Interview | Outpatient clinics | 89 | 20-57 | Low |
| Asgharnia     | 2013 | Gilan    | Healthy women      | Convenience | Interview | Hospital | 400 | 40-70 | Low |
| Banaei        | 2006 | Chaharmahal and Bakhtiari | Healthy housekeepers | Simple random | Interview | Outpatient clinics | 400 | 31.1 | Moderate |
| Besharat      | 2004 | Golestan | Healthy students   | Stratified random | Interview | Mixed | 428 | 15-65 | Low |
| Dadkhah       | 2002 | Ardabil  | Healthy housekeepers | Systematic cluster | Interview | Outpatient clinics | 150 | 20-50 | Low |
| Danesh        | 2002 | Chaharmahal and Bakhtiari | Healthy staff | Systematic random | Self-report | Ministry of education | 340 | 20-40 | Low |
| Eyvanbagha    | 2016 | Ardabil  | Healthy staff      | Census          | Interview | Outpatient clinics | 300 | 26-41 | Low |
| Fazel         | 2010 | Razavi  | Healthy woman      | Stratified random | Interview | Hospital | 1,000 | 20-40 | Moderate |
| Ghorbani      | 2009 | Golestan | Healthy staff       | Simple random   | Interview/Self-Report | Mixed | 330 | 22-54 | Moderate |
| Haghighi      | 2012 | Razavi  | Healthy teachers   | Simple random   | Interview | Ministry of education | 400 | 20-56 | Low |
| Hajian Tilaki | 2015 | Mazandaran | Healthy woman | Cluster sampling | Interview | Outpatient clinics | 500 | 20-65 | Low |
| Iurigh        | 2016 | Mazandaran | Rural healthy woman | Multistage random | Interview/Self-report | Outpatient clinics | 3,044 | 20-75 | Low |
| Lalouei       | 2006 | Tehran  | Healthy woman      | Census          | Interview | Outpatient clinics | 376 | 19-59 | Moderate |
| Mahvari       | 2003 | Fars    | Healthy woman      | Random stratified | Interview | Hospital | 1,000 | 35-60 | Low |
| Zare Marzouni | 2014 | Khuzestan | Healthy woman | Simple random | Interview | Outpatient clinics | 1,020 | 15-79 | Low |
| Moajhed       | 2001 | Yazd    | Healthy nurses and midwives | Census | Self-report | Hospital | 280 | >20 | Low |
| Naghibi       | 2009 | West Azerbaijan | Healthy healthcare professionals | Census | Interview | Outpatient clinics | 80 | 20-60 | Moderate |
| Navvabi-Rigi  | 2012 | Sistan and Balochistan | Healthy students | Stratified random | Self-report | University | 385 | >21 | Low |
| Nourizadeh    | 2010 | East Azerbaijan | Healthy woman | Cluster random | Interview/Self-report | Hospital | 210 | 30-40 | Low |
| Reisi         | 2011 | Isfahan  | Healthy healthcare professionals | Simple random | Self-report | Hospital | 119 | 38.3 | Low |
| Shahbazi      | 2014 | Chaharmahal and Bakhtiari | Healthy healthcare professionals | Census | Self-report | Hospital | 89 | 31.95 | Low |
| Talaezadeh    | 2009 | Khuzestan | Healthy woman | Simple random | Interview | Health center | 400 | 20-60 | Low |
| Zadeh         | 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 Oman and Ethiopia were author-made. General knowledge for breast cancer screening among women 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 knowledge¹ | Source of information                  |
|-----------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------|------------------------|----------------------------------------|
| Abedzadeh¹⁹           | Knowledge, attitude and practice about BC screening                           | 36 items in four sections: demographics (9 items), knowledge (10 items), attitude (10 items), practice (7 items) | Reliability: NR             | 1. 22%                 | 1. Radio/TV                            |
|                       |                                                                              | Knowledge scoring: poor (lower than 10), average (10-15), positive (16-20)                | Validity: NR                | 2. NR                  | 2. Healthcare team                     |
|                       |                                                                              |                                                                                            |                              | 3. NR                  | 3. Newspaper/book                      |
|                       |                                                                              |                                                                                            |                              | 4. NR                  | 4. Family                              |
| Akhtari-Zavare²⁸      | Knowledge towards BSE                                                        | A two part questioner included demographics and knowledge                                   | Reliability: NR             | 1. NR                  | 1. Media                               |
|                       |                                                                              |                                                                                            | Validity: NR                | 2. 20.6%               | 2. Brochure                            |
|                       |                                                                              |                                                                                            |                              | 3. NR                  | 3. Friends                             |
|                       |                                                                              |                                                                                            |                              | 4. NR                  | 4. Healthcare team                     |
| Alaei Nejad²⁹         | Knowledge, attitude and skill about BSE                                      | 50 items in four sections: demographics (NR), knowledge (21 items), attitude (22 items), and skill (7 items) | Reliability: NR             | 1. NR                  | 1. Healthcare team                     |
|                       |                                                                              |                                                                                            | Validity: NR                | 2. 78.7%               |                                        |
|                       |                                                                              |                                                                                            |                              | 3. NR                  |                                        |
|                       |                                                                              |                                                                                            |                              | 4. NR                  |                                        |
| Asgharnia³⁰           | Knowledge and practice about BC and screening tests                          | 30 items in three sections: demographics (13 items), knowledge (16 items), and practice (4 items) | Reliability: 0.96           | 1. 4.5%                 | 1. TV/radio                            |
|                       |                                                                              |                                                                                            | Validity: approved by experts in field | 2. 37.8%               | 2. Journals                            |
|                       |                                                                              |                                                                                            |                              | 3. 7.8%                | 3. Healthcare teams                    |
|                       |                                                                              |                                                                                            |                              | 4. 6%                  | 4. Internet                            |
|                       |                                                                              |                                                                                            |                              |                       | 5. Friends                             |
|                       |                                                                              |                                                                                            |                              |                       | 5. Family                              |
| Banaei¹²              | Knowledge, attitude and practice about BC screening                          | 31 Items in three sections: knowledge (11 items), attitude (16 items), and practice (4 item) | Reliability: NR             | 1. 3.7%                 | 1. Healthcare team                     |
|                       |                                                                              |                                                                                            | Validity: approved by experts in field | 2. 37.8%               |                                        |
|                       |                                                                              |                                                                                            |                              | 3. 7.8%                |                                        |
|                       |                                                                              |                                                                                            |                              | 4. 6%                  |                                        |
| Besharat¹⁷            | Knowledge towards BSE                                                        | A two-part questionnaire included: demographics and knowledge                              | Reliability: NR             | 1. NR                  | 1. Classes                             |
|                       |                                                                              |                                                                                            | Validity: approved by experts in field | 2. 17.1%               | 2. Media                               |
|                       |                                                                              |                                                                                            |                              | 3. NR                  | 3. Brochure                            |
|                       |                                                                              |                                                                                            |                              | 4. NR                  |                                        |
| Dadkhah¹⁵             | Knowledge, attitude and practice about BSE                                   | 36 items in four sections: demographics (NR), knowledge (22 items), attitude (6 item), practice (10 item) | Reliability: Cronbach’s alpha = 0.87 | 1. NR                  | 1. Health care team                    |
|                       |                                                                              |                                                                                            | Validity: approved by experts in field | 2. 14%                 | 2. Media                               |
|                       |                                                                              |                                                                                            |                              | 3. NR                  |                                        |
|                       |                                                                              |                                                                                            |                              | 4. NR                  |                                        |
| Danesh¹³              | Knowledge, attitude, practice about BSE                                      | A four-part questionnaire included: demographics, knowledge, attitude and practice         | Reliability: 0.85           | 1. NR                  | NR                                     |
|                       |                                                                              | Knowledge scoring: poor (under 8), average (8-14), good (up 14)                            | Validity: approved by experts in field | 2. 17%                 |                                        |
|                       |                                                                              |                                                                                            |                              | 3. NR                  |                                        |
|                       |                                                                              |                                                                                            |                              | 4. NR                  |                                        |
| First author | Brief title | Questioner characteristic | Psychometric characteristic | Sufficient knowledge | Source of information |
|--------------|-------------|---------------------------|----------------------------|----------------------|----------------------|
| Eyvanbagha16 | Knowledge, attitude, practice about BSE | 54 items in four sections: demographics (14 item), knowledge (29 item), attitude (11 item), practice (NR) | Reliability: Cronbach’s alpha = 0.8 | 1. NR | 1. Books |
| Fazel27      | Knowledge, and performance about BSE | A four-part questionnaire included: demographics, knowledge, practice and overall knowledge | Reliability: NR | 1. NR | NR |
| Ghorbani18   | Knowledge, attitude, practice about BSE | 38 items in four sections: demographics (6 item), knowledge (15 item), attitude (12 item), practice (6 item) | Reliability: 0.88 | 1. NR | NR |
| Haghighi4    | Knowledge, attitude, practice about BC screening | 67 items in four sections: demographics (14 item), practice (7 item), knowledge (27 item), attitude (19 item) | Reliability: 0.72 | 1. NR | NR |
| Hajian Tilaki23 | Knowledge, attitude, practice about BC screening | A four-part questionnaire included: demographics, knowledge (22 items), health belief (6 items), and practice (3 items) | Reliability: 0.8 | 1. 14.8% | 1. Healthcare team |
| Iurigh24     | Knowledge, attitude, practice about BC screening | A four-part questionnaire included: demographics, knowledge, attitude and practice | Reliability: 0.82 | 1. NR | NR |
| Lalouei31    | Knowledge | A two-part questionnaire included: demographics and knowledge items | Reliability: NR | 1. NR | 1. CDs |
| Mahvari52    | Knowledge and practice BC screening | A four-part questionnaire included: demographics (knowledge and practice) | Reliability: NR | 1. 45% | NR |
| First author        | Brief title                                      | Questioner characteristic               | Psychometric characteristic | Sufficient knowledge* | Source of information |
|---------------------|--------------------------------------------------|----------------------------------------|-----------------------------|-----------------------|-----------------------|
| Zare Marzouni²¹     | Awareness, attitude towards BSE                  | A three part questionnaire included:   | Reliability: 0.86           | 1. NR                 | NR                    |
|                     |                                                  | demographic, knowledge, and BC risk    | Validity: approved by experts in field | 2. 20.2%             |                       |
|                     |                                                  | factors                                |                             | 3. NR                 |                       |
|                     |                                                  |                                        |                             | 4. NR                 |                       |
| Moajhed²⁵           | Awareness, practice towards BSE                  | A two-part questionnaire included:     | Reliability: NR             | 1. NR                 | NR                    |
|                     |                                                  | demographics and Knowledge, attitude   | Validity: NR                | 2. 13.21%            |                       |
|                     |                                                  | and practice                           |                             | 3. NR                 |                       |
|                     |                                                  | Knowledge scoring: poor (0-5), average (6-9), good (10-13) |                             | 4. NR                 |                       |
| Naghibi²⁵           | Knowledge, attitude, practice towards BSE        | 43 items in four sections: demographics (10 items), Attitude (13 items), knowledge (10 items), practice (10 items) | Reliability: 0.85           | 1. NR                 | NR                    |
|                     |                                                  | Knowledge scoring: poor (< 8), average (9-14), good (15-18) | Validity: approved by experts in field | 2. 50.6%             |                       |
|                     |                                                  |                                        |                             | 3. NR                 |                       |
|                     |                                                  |                                        |                             | 4. NR                 |                       |
| Navvabi-Rigi²⁴      | Knowledge, attitude towards BSE                  | A three-part questionnaire included:   | Reliability: 0.7            | 1. NR                 | 1. Healthcare team    |
|                     |                                                  | demographic, knowledge, and attitude.  | Validity: approved by experts in field | 2. 33.9%             | 2. Books              |
|                     |                                                  | Scoring: NR                            |                             | 3. NR                 | 3. TV/Radio           |
|                     |                                                  |                                        |                             | 4. NR                 | 4. Friends            |
| Nourizadeh³³        | Knowledge                                        | A four-part questionnaire included:    | Reliability: 0.77           | 1. NR                 | 1. Healthcare team    |
|                     |                                                  | demographic, knowledge, practice       | Validity: approved by experts in field | 2. 5%                | 2. Newspapers         |
|                     |                                                  | attitude.                               |                             | 3. NR                 | 3. Books              |
|                     |                                                  |                                        |                             | 4. NR                 | 4. Journals           |
|                     |                                                  |                                        |                             |                       | 5. Media              |
|                     |                                                  |                                        |                             |                       | 6. Friends            |
| Reisi²⁰             | Knowledge, attitude, practice towards BSE        | 42 Items in a section: demographics (6 items), knowledge (20 items), attitude (10 items), practice (6 items) | Reliability: 0.88           | 1. NR                 | NR                    |
|                     |                                                  |                                        | Validity: approved by experts in field | 2. 79.8%             |                       |
|                     |                                                  |                                        |                             | 3. NR                 |                       |
|                     |                                                  |                                        |                             | 4. NR                 |                       |
| Shahbazi²¹          | Knowledge and attitude towards BSE               | 35 Items in four sections: demographics, knowledge, attitude | Reliability: 0.64           | 1. NR                 | NR                    |
|                     |                                                  | Knowledge scoring: very poor (0-5), poor (6-10), average (11-15), good (16-20). | Validity: approved by experts in field | 2. 34.8%             |                       |
|                     |                                                  |                                        |                             | 3. NR                 |                       |
|                     |                                                  |                                        |                             | 4. NR                 |                       |
| Talaezadeh²²        | Knowledge towards BSE                            | A two-part questionnaire included:     | Reliability: NR             | 1. NR                 | 1. Healthcare team    |
|                     |                                                  | demographic and knowledge              | Validity: NR                | 2. 26%                | 2. Media              |
|                     |                                                  | Knowledge scoring: NR                  |                             | 3. NR                 | 3. Friends            |
|                     |                                                  |                                        |                             | 4. NR                 |                       |
| Zadeh²⁰             | Awareness and attitude towards BSE               | 20 items in three sections: demographics, knowledge, attitude | Reliability: NR             | 1. NR                 | 1. Healthcare team    |
|                     |                                                  | Knowledge scoring: poor (0), average (1-3), good (4-6) | Validity: approved by experts in field | 2. 6.2%              | 2. Media              |
|                     |                                                  |                                        |                             | 3. NR                 | 3. Friends            |
|                     |                                                  |                                        |                             | 4. NR                 |                       |

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

*Sufficient knowledge: 1. General knowledge; 2. BSE; 3. CBE; 4. Mammography.
Table 3. Sources of information about BSE, CBE, and mammography

| Study                        | 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 Mohammadi15       | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Eyvanbagha et al.10           | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Hajian Tilaki and Auladi27     | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Lalouei and Kashani-Zadeh11    | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Navvabi-Rigi34                | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Nourizadeh et al.35           | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |
| Talaiezadeh22                 | ✓               | ✓              | ✓        | ✓                   | ✓              | ✓                  | ✓              |

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 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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