DOI:10.22034/APJCP.2018.19.1.9
Attitude and Practice about Breast Cancer

REVIEW

Editorial Process: Submission:11/20/2017 Acceptance:01/01/2018

Attitude and Practice Regarding Breast Cancer Early Detection among Iranian Women: A Systematic Review

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Abstract

Objectives: To determining attitudes and practice regarding breast cancer early detection techniques (breast self-examination (BSE), clinical breast examination (CBE) and mammography) among Iranian woman. **Methods:** International (PubMed, ISI, and Google Scholar) and national (SID and Magiran) databases were reviewed up to September 2017 to identify articles related to the attitudes and practices of Iranian women concerning breast cancer screening behavior with reference to BSE , CBE and mammography. The screening steps, analysis of quality of the studies and extraction of the papers were performed by two reviewers. **Results:** Of the 532 studies included initially, 21 performed on 10,521 people were considered eligible. Subjects with a positive attitude toward BSE in various studies were 13.5% to 94.0% with an average of 47.6%. Positive attitudes to CBE and mammography were found in 21.0% and 26.4%, respectively. Participant performance of BSE ranged from 2.6% to 84.7%, with an average of 21.9%. The respective figures for CBE and mammography were 15.8% and 16.7%. **Conclusion:** Considering the poor performance and low rates for positive attitudes, it is suggested that educational programs should be conducted across the country.

Keywords: Breast self-examination- early detection of cancer- attitude- Iran- systematic reviews

Asian Pac J Cancer Prev, **19 (1)**, 9-16

Introduction

Nowadays, breast cancer is a serious problem for women in all countries of the world. Almost 1.7 million new cases and 522,000 deaths occur each year due to breast cancer (Torre et al., 2015). Breast cancer contains 25% of all cancers, and is the second most common cancer (Ferlay et al., 2010) and have an increasing trend (Rafiemanesh et al., 2016). While, the majority of women who die as a result of breast cancer (324,000), are from the countries with low or medium income (World Health Organization, 2017). According to the statistics of World Health Organization (WHO), the highest rate will be in Eastern Mediterranean countries in the next 15 years (World Health Organization, 2017). The mortality rate from breast cancer is 70% in Eastern Mediterranean countries, which is higher than that of the developed countries (40-55%) (World Health Organization, 2017). In Iran, breast cancer accounts for 32% of women cancers (Rahimzadeh et al., 2016). The results show that breast cancer mortality, which reached 3742 in 2015, will pass 7,000 by 2,035 and the incidence of breast cancer will triple(Valipour et al., 2017). Being woman and growing old are two important and irreplaceable factors of breast cancer, therefore, controlling and preventing breast cancer is a serious women's health problem (Badal et al., 2017). Given the nature of breast cancer, according to the WHO recommendations, early diagnosis of breast cancer is the most important measure to reduce mortality and complications (McGuire, 2016). So that the survival rate of breast cancer is 90% in those diagnosed at an early stage, while it falls to less than 15% in those diagnosed in the last stages (DeSantis et al., 2016). The survival rate is low in developing countries and is associated with increased incidence of breast cancer mortality rate. Breast cancer diagnostic methods include breast self-examination (BSE), clinical breast examination (CBE), and mammography (Humphrey et al., 2002). The most important steps to increase the rate of early diagnosis of breast cancer is high awareness and positive attitudes in people, especially in less developed countries, where people have a lower awareness of breast cancer (Robb et al., 2009; Sayed et al., 2017). Various studies have also shown that increased knowledge leads to positive attitude towards breast cancer in at-risk individuals (Bener et al., 2001; Akhigbe and Omuemu, 2009). Attitudes about a disease are a major contributor towards accomplishment of a preventative behavior (Dandash and Al-Mohaimeed,

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2007). Regarding the increased incidence of breast cancer in Iran, the importance of awareness programs on breast cancer in the country and insufficient study on the general attitude of Iranian population about breast cancer, this study aimed to solve this epidemiological gap and determining the attitude and practice about breast cancer early detection techniques among Iranian woman (breast self-examination, clinical breast examination and mammography).

Materials and Methods

Eligibility criteria

The methods adopted for this systematic review have been developed in accordance with the guidelines detailed on the PRISMA (Moher et al., 2009). Observational studies were included in present study. Case series, case reports, clinical trials, and reviews (systematic review and narrative reviews) were excluded. The target populations were woman. The attitude and practice toward breast cancer early detection techniques (BSE,CBE, Mammography) were measured in this study. Minimum required sample size was ≥25 patients.

Search strategy and databases

Literature review was done using the medical subject headings (MeSH) and key words related to attitude towards breast cancer in Iran. We explored the electronic databases including international databases (MEDLINE (PubMed interface), Google scholar and ISI Web of science (web of science interface)) and national databases (scientific information database (SID) and MAGIRAN), National key journal (Iranian Journal of Breast Diseases) for relevant studies. No settings and language limits were imposed on the search. The specific search strategies were created by a Health Sciences Librarian with expertise in systematic review searching. PRESS standard used for creating the search strategy (McGowan et al., 2016). The MEDLINE search strategy was adopted to search in another databases. Moreover, PROSPERO searched for the ongoing or recently completed systematic reviews. Key words that used in search strategy were Attitude, Belief, Practice, Use, Breast Cancer, Breast Neoplasm ,Breast Cancer Early Detection, Population and Iran that were combined with Boolean operators included AND, OR, and NOT.

Study selection

Literature review results were uploaded by the Endnote Software. The team developed the test screening questions and forms for level 1 and 2 assessments based on the inclusion and exclusion criteria. Citation abstracts and full text articles were uploaded with screening questions to the Endnote. Prior to the formal screening process, a calibration exercise was undertaken to pilot and refine the screening questions. Formal screening process of titles and abstracts were conducted by two researchers according the eligibility criteria and consensus method was used for solving controversies among the two researchers. The full text obtained for all titles that meet the inclusion criteria. Additional information retrieved from the study authors in order to resolve queries regarding the eligibility criteria. We recorded the reasons for the exclusion criteria. Neither of the review authors was blinded to the journal titles or to the study authors or institutions.

Data Extraction, Quality assessment and Data synthesis

Extracted data items included general information (First Author, Year of publication and Province), study characteristics (study design, (Sampling method, Mean of data collection, Setting, Sample size, Brief title, Questioner characteristics and Psychometric characteristics), participant characteristics (demographics, sample size), and outcome measures (attitude and practice towards breast cancer early detection techniques). Hoy et al tool used for assessing the quality of studies (Hoy et al., 2012). These decisions were made independently by two review authors based on the criteria for judging the risk of bias, in case of any disagreement, using the consensus method to resolve any controversies. Studies were tabulated in chronological order in tables.

Results

Study selection

A total of 532 articles were retrieved from the initial search in different databases. Out of 487 non-duplicated studies in title and abstracts screening process 431 studies excluded due to unrelated titles. Of 56 studies, 21 studies met the eligibility criteria. In 35 excluded studies seven studies were review, two studies were qualitative, five studies were letter to editor, ten studies have not full text and 11 studies had not at least quality for including in study. The list of studies is available at http://uploadboy.me/f2sevlw95bc8/List of papers Attitude and practice about _ cancer.pdf.html (Figure 1).

Study characteristics

There studies were conducted on 10,521 participants, the mean age of participants was 33.5 years (age group range 15-79 years). Total studies designs were cross-sectional. Studies were conducted only in 13 out of 31 provinces in Iran. Of the 21 studies five studies were from Tehran (Haji-Mahmoodi et al., 2002; Jarvandi et al., 2002; Khaleghnezhad and Khaleghnezhad, 2008; Kadivar et al., 2012; Nafissi et al., 2012), three studies were from Chaharmahal and Bakhtiari (Danesh et al., 2002; Banaeian et al., 2006; shahbazi and Heidari, 2014),two studies were from Isfahan (Abedzadeh et al., 2003; Reisi et al., 2011), Mazandaran (Hajian Tilaki and Auladi, 2015; Iurigh et al., 2016), Ardabil (Dadkhah and Mohammadi, 2002; Eyvanbagha et al., 2016) and in other provinces were conducted one study in each province. Most studies were conducted at health centers (n=12), had a simple random sampling method (n=9), date were collected through interview (n=16), had low risk of bias (n=15) (Table 1).

Main results

Instruments

In general, all the instruments used in the study have been author-made and each one was prepared through a review of papers and consultation with experts of each

Table1. Summary of Included Studies

Author	Year	Province	Sampling method	Mean of data collection	Setting	Sample size	Age group	Risk of bias
Abedzadeh et al., 2003	2003	Isfahan	Multistage stratified	Interview	Health center	400	20-45	Low
Alaei Nejad et al., 2007	2007	Semnan	Simple random	Interview	Health center	89	20 - 57	Low
Banaeian et al., 2006	2005	Chaharmahal and bakhtiari	Simple random	Interview	Health center	400	31.1	Moderate
Dadkhah and Mohammadi, 2002	2001	Ardabil	Systematic cluster	Interview	Health center	150	34.2	Low
Danesh et al., 2002	2002	Chaharmahal and bakhtiari	Systematic random	Self-report	ministry of education	340	20-49 >50	Low
Eyvanbagha et al., 2016	2015	Ardabil	Census	Interview	University	300	26-41	Low
Ghorbani and Abdulahi, 2009	2009	Golestan	Simple random	Interview/self-report	Mixed	330	22-54	Moderate
Haghighi et al., 2012	2012	Khorasan razavi	Simple random	Interview	Ministry of education	400	20-56	Low
Hajian Tilaki and Auladi, 2015	2015	Mazandaran	Cluster sampling	Interview	Health center	500	20-65	Low
Haji-Mahmoodi et al., 2002	2002	Tehran	Simple random	Interview	Health center	410	19-58	Moderate
Iurigh et al., 2016	2016	Mazandaran	Multistage random	Interview/ self-report	Health center	3044	20-75	Low
Jarvandi et al., 2002	2002	Tehran	Simple random	Interview	Ministry of education	578	30-50	Low
Kadivar et al., 2012	2012	Tehran	Simple random	Self-report	Hospital	147(physicians) 139(non-health care personnel)	20-50	Moderate
Khaleghnezhad and Khaleghnezhad, 2008	2008	Tehran	Conventional	Self-report	Ministry of education	77	24-54	Low
Mahvari, 2003	2003	Fars	Random stratified	Interview	Health center	1000	35-60	Low
Marzouni et al., 2015	2013	Khuzestan	Simple random	Interview	Health center	1020	15-79	Low
Nafissi et al., 2012	2012	Tehran	Conventional	self-report	Health center	650	20-60	Moderate
Naghibi et al., 2009	2009	west azerbaijan	Census	Interview	Health center	89	20-60	Moderate
Reisi et al., 2011)	2011	Isfahan	Simple random	Self-report	Health center	119	38.3	Low
shahbazi and Heidari, 2014	2014	Chaharmahal and bakhtiari	Census	Self-report	Hospital	89	31.95	Low
Zadeh, 2016	2016	Yazd	Purposive	Interview	Hospital	250	25-65	Low

Table 2. Attitude and Practice of Iranian Woman about Breast Cancer Early Detections Tests

Author	Brief title	Questioner characteristics	Psychometric characteristics	Attitude 1.overall Attitude 2. BSE 3.CBE 4. Mammography	Practice 1.overall Practice 2.BSE 3.CBE 4. Mammography
Abedzadeh et al., 2003	knowledge, Attitude and Practice about BC Screening	36 items in four sections: Demographics (9 items),knowledge(10 items),Attitude(10 items), Practice(7 items) Attitude Scoring: Negative (lower than 10), neutral(10-20), Positive(20-30) Practice Scoring: Poor (lower than 5), Average (5-10), good (10-15).	Reliability: NR validity: NR	1.378 (94.5%)	1.19.3% 2.NR 3.NR 4.NR
Alaei Nejad et al., 2007	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), Attitude (NR), Skill: Poor (under3), Average (3/5 - 5/5), Good (above6).	Reliability: NR validity: NR	1.NR 2. 71(78.7%) 3.NR 4.NR	1. NR 2.12.4% 3.NR 4.NR
Banaeian et al., 2006	knowledge, Attitude and Practice about BC Screening	31 items in three sections: knowledge (11 items), Attitude (16 items), Practice (4 item). Attitude Scoring: NR	Reliability: NR validity: by experts in field.	1.67(16.7%) 2. 92(23%) 3.84(21%) 4.106(26.4)	1.NR 2.5%(20) 3.6.2%(24) 4.50(12.5%)
Dadkhah and Mohammadi, 2002	knowledge, Attitude and Practice about BSE	36 items in four sections: Demographics (NR), knowledge (22 items), Attitude (6 item), practice (10 item) scoring: Attitude: (NR) Practice poor(4 and under4), practice average (5-8), practice good (9 and above9)	Reliability: Attitude 0.80, Practice 0.76 validity: By experts in field.	1.NR 2.77(51.3%) 3.NR 4.NR	1.NR 2.17(10.7%) 3.NR 4.NR
Danesh et al., 2002	knowledge, Attitude, Practice about BSE	A Four-part questionnaire included: Demographics, Knowledge, Attitude and Practice. Scoring: Attitude and practice: poor (under 8), average (8-29), good (up 29).	Reliability: 0.85 validity: NR	1.NR 2.46(13.53%) 3.NR 4.NR	1.NR 2.15(4.4%) 3.NR 4.NR
Eyvanbagha et al., 2016	knowledge, Attitude, Practice about BSE	54 items in four sections: Demographics (14 item), Knowledge (29 item), Attitude (11 item), Practice (NR), Scoring: Attitude: poor (11 17), average (18-46) and good (37-55). Practice poor (1-33), average (32-46), and good (64-96).	Reliability: Attitude 0.86, Practice 0.88 validity: By experts in field.	1.NR 2.133(53.60) 3.NR 4.NR	1.NR 2.210(84.70%) 3.NR 4.NR
Ghorbani and Abdulahi, 2009	knowledge, Attitude, Practice about BSE	38 items in four sections: Demographics (6 item), knowledge (15 item), Attitude (12 item), practice (6 item). Scoring: Attitude: poor (11-17), average (18-46), good (37-55). Practice poor (1-32), average (32-46), and good (46-96).	Reliability: 88% validity: By experts in field	1.NR 2.74(22.4%) 3.NR 4.NR	1.NR 2. 57(17%) 3.NR 4.NR
Haghighi et al., 2012	knowledge, Attitude, Practice about BC screening	67 items in four sections: Demographics (14 item), practice: (7item), knowledge (27 item),Attitude (19 item). Scoring: Attitude: poor (under%30), Average (30-60%), good(above %60).	Reliability: 0.87 validity: By experts in field	1.NR 2.94(23.5%) 3.NR 4.NR	1.NR 2.NR 3.NR 4.NR
Hajian Tilaki and Auladi, 2015)	knowledge, Attitude, Practice about BC screening	A Four-part questionnaire included: Demographics, Knowledge (22 items), health Belief (6 items) and practice (3 items). Scoring: attitude: negative (under 3), positive (up 3).	Reliability: 80% validity: By experts in field	1.NR 2.129(25.8%) 3.NR 4.NR	1.NR 2.51(10.2%) 3.NR 4.NR

Table 2. Continued

Author	Brief title	Questioner characteristics	Psychometric characteristics	Attitude 1.overall Attitude 2. BSE 3.CBE 4. Mammography	Practice 1.overall Practice 2.BSE 3.CBE 4. Mammography
Haji-Mahmoodi et al., 2002	knowledge, Attitude, Practice about BCE	A Four-part questionnaire included: Demographics, Knowledge, attitude and practice.	Reliability: NR validity: NR	1.NR 2.258(63%) 3.NR 4.NR	1.NR 2.25(6%) 3.NR 4.NR
Iurigh et al., 2016	knowledge, Attitude, Practice about BC screening	A Four-part questionnaire included: Demographics, Knowledge, attitude and practice. Scoring: NR	Reliability: Attitude: 0.68 validity: By experts in field	1.NR 2.1461(48%) 3.NR 4.NR	1.NR 2.730(24%) 3. 730(24%) 4. 730(24%)
Jarvandi et al., 2002	Beliefs and behaviors about BC screening and early detection	15 items in a section: Attitude (6 items), knowledge (5 item), practice (3item). Scoring :NR	Reliability: NR validity: NR	1.NR 2.378(67%) 3.NR 4.NR	1.NR 2.NR 3.NR 4.NR
Kadivar et al., 2012	knowledge, Attitude, Practice BC screening	A Four-part questionnaire included: Demographics, knowledge, attitude and screening behaviors	Reliability: 0.75 validity: By experts in field	1.NR 2.27.59% 3.NR 4.NR	1.NR 2.26.1% 3.27.59% 4.17.24%
Khaleghnezhad and Khaleghnezhad, 2008	knowledge, Attitude, Practice BC screening	A Four-part questionnaire included: Demographics, knowledge, attitude and screening behaviors	Reliability: NR validity: NR	1.NR 2.10.14 3.NR 4.NR	1.NR 2.2(2.6%) 3.NR 4.NR
Mahvari, 2003	Knowledge and Practice BC screening	A Four-part questionnaire included: Demographics (knowledge and practice) Scoring: NR.	Reliability: NR validity: By experts in field	1.NR 2.NR 3.NR 4.NR	1.280(28.7%) 2.284(28.3%) 3.NR 4.91(9.1%)
Marzouni et al., 2015	Awareness, Attitude towards BSE	A Five-part questionnaire included: demographic, knowledge, and BC risk factors. Scoring: NR	Reliability: 0.86 validity: By experts in field	1.NR 2. 210 (20.6%) 3.NR 4.NR	1.NR 2. 525 (51.5%) 3.NR 4.NR
Nafissi et al., 2012	Knowledge and attitude towards BC Screening	17 items in a section: demographic, Knowledge, Attitude. Scoring : (NR)	Reliability: NR validity: NR	1.NR 2.NR 3.NR 4.NR	1.499(76.8%) 2.NR 3.38(5.8%) 4.NR
Naghibi, A	knowledge, Attitude, Practice towards BSE	43 items in four sections: demographics (10 items), Attitude (13 items), knowledge (10 items), practice (10 items). Scoring: Attitude: positive and negative, Practice: poor (≤12), average (12.1-16.9), good (≥17).	Reliability: 0.85 validity: By experts in field	1.NR 2.68(87%) 3.NR 4.NR	1.NR 2.8(9%) 3.NR 4.NR
Reisi et al., 2011	knowledge, Attitude, Practice towards BSE	42 items in a section: Demographics (6 items), knowledge (20 items), Attitude (10 items), practice (6 items). Scoring: Attitude (positive, Negative), Practice (yes, no).	Reliability: Attitude:0.71 Practice: 0.83 validity: approved By experts in field	1.NR 2. 85 (%72.45) 3.NR 4.NR	1.NR 2.48(39.5%) 3.NR 4.NR
shahbazi and Heidari, 2014	Knowledge and Attitude towards BSE	35 items in four sections: demographics, knowledge, Attitude. Scoring: Attitude (positive, Negative).	Reliability: Attitude:0.71 validity: approved By experts in field	1.NR 2.55.50 3.NR 4.NR	1.NR 2.NR 3.NR 4.NR
Zadeh, 2016	Awareness and Attitude towards BSE	20 items in three sections: demographics, knowledge, Attitude. Scoring : NR	Reliability: NR validity: approved By experts in field	1. NR 2. 95 (38%) 3.NR 4.NR	1.NR 2.NR 3.NR 4.NR

NR, none reported

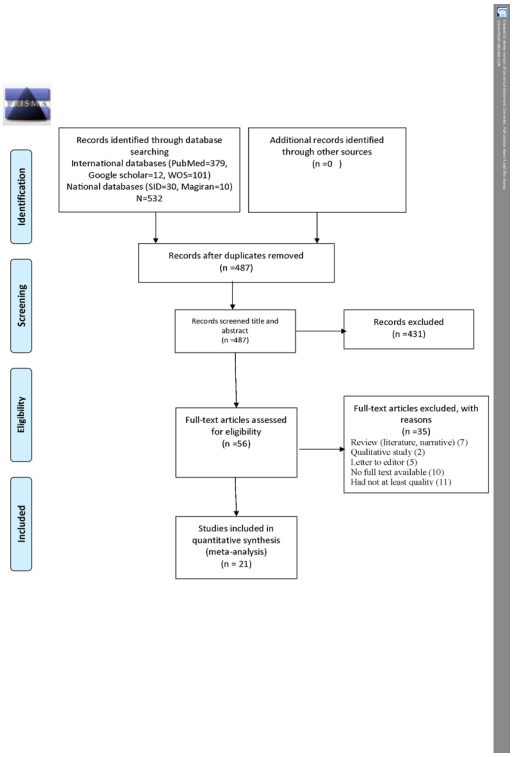

Figure 1. Studies Selection Process

area. The aim of the questionnaire was to assess the general and partial knowledge, attitude and practice of techniques of breast cancer diagnosis such as breast cancer self-examination, CBE and mammography. The total number of items in different questionnaires was between15-69. of the 21 studies, only 11 analyzed the reliability of instruments. The reliability of the instruments was investigated by test-retest and the Cronbach alpha results were between 0.68 (Iurigh et al., 2016) and 0.8 (Ghorbani and Abdulahi, 2009; Eyvanbagha et al., 2016) 8. Fourteen studies affirmed the validity of the used instruments by expert opinions from the related disciplines.

Attitude towards BSE, CBE and Mammography

From among the 21 available studies, 19 had reported attitudes about BSE. The positive and negative attitudes of participants were obtained by answering the question whether BSE was useful or not. Attitudes of participants were reported as positive and negative in 17 studies and as means of 10.14 (Khaleghnezhad and Khaleghnezhad, 2008) and 55.55(shahbazi and Heidari, 2014) in two others.

Participants with a positive attitude in different studies ranged from 13.53% (Danesh et al., 2002) and 94.5% (Abedzadeh et al., 2003). A mean 47.63% of participants had a positive attitude toward BSE, which is less than the average. Also, one study reported positive attitudes toward CBE and Mammography as 21% and 26.4% (Banaeian et al., 2006), respectively.

Practice about BSE, CBE and mammography

From among 21 studies, 16 had studied participants' performance in BSE. To assess the BSE performance among participants, the percentage and number of BSE users were considered for the past month. The performance of the participants in the studies was reported as poor, moderate, and good. In the present study the value of good performance was assessed. The performance of the participants in the various studies was between 2.6% (Khaleghnezhad and Khaleghnezhad, 2008) and 84.7% (Eyvanbagha et al., 2016). On average, only 21.9% of participants had good performance in BSE. On screening methods, two studies reported the performance between 28.7% (Mahvari, 2003) and 76.8% (Nafissi et al., 2012). Participants 'performance in the on CBE was studied in four studies, ranging from 5.8% (Nafissi et al., 2012) to 27.59% (Kadivar et al., 2012) with an average of 15.8%. Participants' performance in mammography was studied in three studies, with the performance reported between 9.1% (Mahvari, 2003) and 24% (Iurigh et al., 2016) with an average of 16.7%.

Discussion

This systematic review was performed aiming at determining the attitude and practice about breast cancer early detection techniques among Iranian woman (breast self-examination, clinical breast examination and mammography) by September 2017. Twenty-one studies on 10,521 people were included in the final study. The instruments used in all of the studies were made by the author based on expert opinions, paper-reviewing, and using tools developed by the researcher (Harris and Rees, 2000). Also in other studies that looked at CAM awareness, attitude and practice, research instruments were author-made. In the present study, the mean number of positive attitudes toward breast cancer was 47.63%. However, in studies from countries such as Cameroon the rate was (63.4%) (Nde et al., 2015) and Nigeria (61.7%) (Oladimeji et al., 2015), which indicates a better attitude in these countries.

Meanwhile, the difference seems to be due to the dominant cultures in these countries. Another study shows that it is only in India that the positive attitude toward breast self-examination is less than the present study (20.5%) (Doshi et al., 2012). The difference may be due to the high Indian population and less availability of proper educational programs to increase the positive attitude (Khokhar, 2012).

In the present study, 21.9% of the participants performed regular monthly breast self-examination, which is higher than studies performed in Cyprus (10.9%) (Sapountzi-Krepia et al., 2017), and Asian countries (9.1%) (Pengpid and Peltzer, 2014). This may be due to higher attention paid to the issue in Iran in recent years and the establishment of relevant research centers. Although the studies in South Africa (33%) (Trupe et al., 2017) and the countries of the European Union (48%)(Andreeva and Pokhrel, 2013) show a better individual performance in these countries, the reason may be due to differences in sample size from a methodological point of view and also the availability of educational programs needed in these countries. In the case of CBE, the average participants'

performance was 16.7%, which is lower than South African (23.4%) (Trupe et al., 2017) and European (27%-54%) countries (Andreeva and Pokhrel, 2013).

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 investigations, this is the first systematic review in this area. The studies were made without any time limitations. And, all results of attitude and performance were considered in a comprehensive manner. The most important limitation of the use of researcher made instruments to determine the attitude and practice was that the investigation of validity and reliability of these instruments was lacking in most studies which made difficulties in the analysis of these studies. Due to the lack of complete information in most studies, contact was made with the authors to gain extra information. According to the results of this study, which indicate that the attitude and practice of Iranian women is inappropriate, and also the limitations in the study, it is recommended that a national study is conducted to determine the attitude and practice of women more precisely and that educational centers are established in the country to inform women of breast cancer screening methods.

Acknowledgements

None declared.

Funding Statement
None declared.

References

Abedzadeh M, Sadat Z, Saberi F (2003). Knowledge, attitude, and performance of women referring health care centers in Kashan towards breast cancer and its screening tests. *FEYZ J*, **7**, 85-92.

Akhigbe AO, Omuemu VO (2009). Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. *BMC Cancer*, **9**, 203.

Alaei Nejad F, Abbasian M, Delvarianzadeh M (2007). Evaluation of the knowledge, attitude and skills among the health volunteers regarding the breast self-examination in Shahroud. *Knowledge Health*, **2**, 23-7.

Andreeva VA, Pokhrel P (2013). Breast cancer screening utilization among Eastern European immigrant women worldwide: a systematic literature review and a focus on psychosocial barriers. *Psychooncology*, **22**, 2664-75.

Badal K, Rampersad F, Warner WA, et al (2017). A situational analysis of breast cancer early detection services in Trinidad and Tobago. *Cancer Causes Control*, 1-10.

Banaeian S, Kazemian A, Kheiri S (2006). Knowledge, attitude and practice about breast cancer screening and related factors among women referred to health care centers in Boroujen in 2005. *J Shahrekord Univ Med Sci*, **7**, 28-34.

Bener A, Alwash R, Miller CJ, et al (2001). Knowledge, attitudes, and practices related to breast cancer screening: a survey of Arabic women. *J Cancer Educ*, **16**, 215-20.

Dadkhah B, Mohammadi M (2002). Knowledge, attitude and practice of women in Ardabil about breast self- examination, 2000. *J Ardabil Univ Med Sci*, **2**, 14-20.

Dandash KF, Al-Mohaimeed A (2007). Knowledge, attitudes, and practices surrounding breast cancer and screening in female teachers of Buraidah, Saudi Arabia. *Int J Health Sci*, **1**, 61.

Danesh A, Amiri M, Zamani A, et al (2002). Knowledge, attitude and practice (KAP) rate of women employees of education organization about breast self-examination, Shahrekord, 1998. *J Shahrekord Univ Med Sci*, **4**, 47-52.

DeSantis CE, Fedewa SA, Goding Sauer A, et al (2016). Breast cancer statistics, 2015: Convergence of incidence rates between black and white women. *CA Cancer J Clin*, **66**, 31-42.

Doshi D, Reddy BS, Kulkarni S, et al (2012). Breast self-examination: knowledge, attitude, and practice among female dental students in Hyderabad City, India. *Indian J Palliat Care*, **18**, 68.

Eyvanbagha R, Kamran A, Nasiri K, et al (2016). Knowledge, attitude and practice of female employees in Khalkhal Faculty of Medical Sciences of breast self-examination and its relationship with some individual characteristics. *Taşvīr-i salāmat*, **6**, 41-7.

Ferlay J, Shin HR, Bray F, et al (2010). Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer*, **127**, 2893-917.

Ghorbani M, Abdulahi A (2009). Comparison knowledge, attitude and practice of barest self examination. *Iran J Breast Dis*, **2**, 36-42.

Haghighi F, Portaghali P, Rafaty Javanbakht L, et al (2012). Knowledge, attitude , and practice of female teachers regarding breast cancer screening in Birjand. *Mod Care J*, **9**, 146-55.

Haji-Mahmoodi M, Montazeri A, Jarvandi S, et al (2002). Breast self-examination: knowledge, attitudes, and practices among female health care workers in Tehran, Iran. *Breast J*, **8**, 222-5.

Hajian Tilaki K, Auladi S (2015). Awareness, attitude, and practice of breast cancer screening women, and the associated socio-demographic characteristics, in Northern Iran. *Iran J Cancer Prev*, **8**, e3429.

Harris P, Rees R (2000). The prevalence of complementary and alternative medicine use among the general population: a systematic review of the literature. *Complement Ther Med*, **8**, 88-96.

Hoy D, Brooks P, Woolf A, et al (2012). Assessing risk of bias in prevalence studies: modification of an existing tool and evidence of interrater agreement. *J Clin Epidemiol*, **65**, 934-9.

Humphrey LL, Helfand M, Chan BK, et al (2002). Breast cancer screening: a summary of the evidence for the US preventive services task force. *Ann Intern Med*, **137**, 347-60.

Iurigh HK, Majdi M, Hajtalebi H, et al (2016). Knowledge, attitudes and practices towards breast cancer screening programs among Iranian rural female populations in North of Iran. *Int J Life Sci Pharma Res*, **6**, 14-23.

Jarvandi S, Montazeri A, Harirchi I, et al (2002). Beliefs and behaviours of Iranian teachers toward early detection of breast cancer and breast self-examination. *Public Health*, **116**, 245-9.

Kadivar M, Joolaee S, Joulaee A, et al (2012). Breast cancer knowledge, attitudes and screening behaviors in two groups of Iranian women: Physicians and non-health care personnel. *J Cancer Educ*, **27**, 770-3.

Khaleghnezhad TN, Khaleghnezhad TA (2008). The assessment of knowledge, attitude and behavior towards breast cancer screening methods among female teachers in Tehran. *Iran J Surg*, **16**, 50-8.

Khokhar A (2012). Breast cancer in India: where do we stand

and where do we go?. *Asian Pac J Cancer Prev*, **13**, 4861-6.
Mahvari K (2003). Knowledge and practice of women referring to health centers in Shiraz about breast cancer screening. *Hormozgan Med J*, **7**, 68-74.
Marzouni HZ, Lavasani Z, Shalilian M, et al (2015). Women's awareness and attitude toward breast self-examination in Dezful City, Iran, 2013. *Iran Red Crescent Med J*, **17**, 17829.
McGowan J, Sampson M, Salzwedel DM, et al (2016). PRESS peer review of electronic search strategies: 2015 guideline statement. *J Clin Epidemiol*, **75**, 40-6.
McGuire S (2016). World cancer report 2014. Geneva, Switzerland: World Health Organization, international agency for research on cancer, WHO Press, 2015. *Adv Nutr*, **7**, 418-9.
Moher D, Liberati A, Tetzlaff J, et al (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med*, **6**, e1000097.
Nafissi N, Saghafinia M, Motamedi MH, et al (2012). A survey of breast cancer knowledge and attitude in Iranian women. *J Cancer Res Ther*, **8**, 46-9.
Naghibi A, Vahid shahi K, Yazddani J, et al (2009). Knowledge, Attitude and Practice of male community health workers in Mako township, Iran about beast self-examination. *Sjsph*, **7**, 61-8.
Nde FP, Assob JCN, Kwenti TE, et al (2015). Knowledge, attitude and practice of breast self-examination among female undergraduate students in the University of Buea. *BMC Res Notes*, **8**, 43.
Oladimeji KE, Tsoka-Gwegweni JM, Igbodekwe FC, et al (2015). Knowledge and beliefs of breast self-examination and breast cancer among market women in Ibadan, South West, Nigeria. *PLoS One*, **10**, e0140904.
Pengpid S, Peltzer K (2014). Knowledge, attitude and practice of breast self-examination among female university students from 24 low, middle income and emerging economy countries. *Asian Pac J Cancer Prev*, **15**, 8637-40.
Rafiemanesh H, Salehiniya H, Lotfi Z (2016). Breast cancer in Iranian woman: Incidence by age group, morphology and trends. *Asian Pac J Cancer Prev*, **17**, 1393-7.
Rahimzadeh M, Pourhoseingholi MA, Kavehie B (2016). Survival rates for breast cancer in iranian patients: a meta-analysis. *Asian Pac J Cancer Prev*, **17**, 2223-7.
Reisi M, Javadzadeh H, Sharifirad G, et al (2011). Knowledge, attitudes and practice of breast self-examination among female health workers in Isfahan, Iran. *Health Syst Res*, **7**, 191-9.
Robb K, Stubbings S, Ramirez A, et al (2009). Public awareness of cancer in Britain: a population-based survey of adults. *Br J Cancer*, **101**, 18-23.
Sapountzi-Krepia D, Rekleiti M, Lavdaniti M, et al (2017). Evaluating female nursing students' knowledge and attitudes regarding breast self-examination. *Health Care Women Int*, **38**, 786-95.
Sayed S, Ngugi A, Ochieng P, et al (2017). Training health workers in clinical breast examination for early detection of breast cancer in low-and middle-income countries. *Cochrane Database Syst Rev*, **10.**
Shahbazi S, Heidari M (2014). Assessment of the knowledge and attitudes of nursing and midwifery personnel about breast self-examination. *Iran J Obstet Gynecol Infertil*, **17**, 7-12.
Torre LA, Bray F, Siegel RL, et al (2015). Global cancer statistics, 2012. *CA Cancer J Clin*, **65**, 87-108.
Trupe LA, Rositch A, Dickerson L, et al (2017). Knowledge and attitudes about breast cancer in limpopo, South Africa. *J Glob Oncol Title*, **3**, 509-14.
Valipour AA, Mohammadian M, Ghafari M, et al (2017). Predict the future incidence and mortality of breast cancer in Iran from 2012-2035. *Iran J Public Health*, **46**, 579-80.
World Health Organization (2017). Breast cancer burden [Online]. Available: http://www.who.int/cancer/detection/breastcancer/en/index1.html.
Zadeh FK (2016). Analysis of the awareness and attitudes of female patients regarding breast self-examination in the gynecology clinic of shohahdaye kargar hospial of yazd (iran) in 2011-2012. *Int J Pure Appl Zool*, **4**, 61-4.