Review Article

Facilitating Factors and Barriers of Women's Cancer Screening in Iran: A Systematic Review

Abstract

Low uptake of women's cancer screening and its facilitating factors and barriers in Iran has been studied so far but no consensus on factors affecting this low uptake has been stated previously. Nevertheless, facilitating factors and barriers of breast cancer and cervical cancer have been reviewed. In this systematic review, Web of Science, PubMed, EMBASE, Scopus, and Google Scholar were the preferred search engines. In addition, the Persian database of Magiran and SIDs and ISC indexed journals were searched with different combinations of Persian keywords compatible with English search. A hand search of key Iranian journals was also accomplished. Through 964 primarily searched articles, finally, after duplicates being removed, the screen of records, and full-text articles assessed for eligibility, only 12 articles were included in the review. Barriers observed mostly were screening not advised by a physician, having no relevant problems or disease, having no knowledge about the procedure, fear from pain or cancer detection, shame from the procedure, and forget to have screening. Facilitators were less focused than barriers and frequently were identified as advised by healthcare professionals, the perceived necessity for screening, and the important identified risk of cancer acquire. Almost all studies focused on individual and interpersonal barriers and facilitators for screening instead of a holistic view on the utilization of screening programs. In future studies on women's cancer screening, facilitating factors and barriers of both supply (health system provision and policy implications) and demand-side (individual and interpersonal factors) of healthcare provision has been strongly recommended.

Keywords: *Iran, mass screening, review, women*

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Introduction

In developing countries, breast cancer and cervical cancer account for 882,900 and 444,500 new cases, respectively and together accounted for 114,000 (97,000–131,000) deaths in the reproductive age women in 2010.[1,2]

In Iran, breast cancer is the first and cervical cancer is the fifth most common cancers (apart from skin cancer) of women.[3] The incidence of breast and cervical cancer in women is estimated to 22 per 100,000[4] and 6 per 100,000 in the order already mentioned.[5]

Using preventive modalities, in the era of increasing cancer incidence, is of utmost importance.[6-8] It is accepted in developed countries that cervical and breast cancer mortality could be prevented by screening programs. The screening program may be organized or opportunistic. The main difference between these two methods is that in organized screening, the manner in which the clients are invited is through centralized population registers while opportunistic screening depends on clients or on their health advisors to recommend screening. Organized screening includes timely call, recall, follow-up of early detected cases, and surveillance systems.[9]

Organized screening program which is implemented mostly in developed countries, often considers key factors for effective screening (quality assurance indicators, number of detected cases, number of false positive, etc). Organized breast cancer screening programs in 22 developed countries had coverage less than 25 to 100%[10] and for cervical cancer screening of European countries, there were differences in coverage from below 50 to 82%.[11] The effectiveness of opportunistic vs organized screening has been studied elsewhere. In Hong Kong, opportunistic cervical cancer screening in place was less effective and less efficient than expected

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organized screening and also there was some problem with over or under the screening of a minority of women.[12] As a result of limited healthcare resources in developing countries, there should be a context adopted screening program that is affordable.[13] Presently, most low-income countries have inefficient screening for breast cancer and low coverage documented (less than 5%) cervical cancer opportunistic screening.[14]

Currently, in Iran, breast and cervical cancer screening are not organized. There is only an opportunistic screening of breast and cervical cancer which is integrated into the SABA health service program (Iranian Women's Health Record) since 2012. In SABA, eligible women in primary healthcare settings undergo Pap smear and are referred to perform mammography. However, the uptake of SABA is not well documented until now. Health care providers of other settings, rather than primary healthcare settings, only may encourage patient to perform mammography or Pap smear. In some cases, clients demand mammography or Pap smear from their physicians.

The accomplishment of the mammography and report of Pap smear results in SABA is not free of charge. Moreover, the cost of breast and cervical cancer screening in other situations is not covered by all insurance (since there are various types of insurance with different coverage, cost of screening may differ) subsequently, no follow-up is defined for true or false, and for positive or negative screening results. Continuity of care is not defined due to a lack of surveillance systems.[15] To our knowledge, there is no documented evaluation for the effectiveness and quality of ongoing screening of breast and cervical cancer in Iran.

In the present situation of cervical and breast cancer screening, we have to identify the barriers and facilitators for performing screening which of course could help us have a better understanding of the need of clients. Factors affecting the uptake of these screening tests have been investigated in several single primary studies on Iranian women.[16-28] But there is no comprehensive view on the barriers and facilitators of screening tests in Iran.

In this study, we reviewed the articles on the barriers and facilitators of breast and cervical cancer screening in Iran.

Materials and Method

This systematic review was conducted according to the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guideline statement.[29] The review protocol was written before the start of the study. The proposal was approved by the scientific review board of Shiraz University of Medical Sciences.

Search strategy

We employed a very broad search strategy to identify uptake barriers for performing mammography, self-breast exam (SBE), clinician breast exam (CBE), and Pap smear test in Iranian women. Medical subject headings (MeSH), free-text words, and Emtree thesaurus were used to detect the relevant terms. We searched through Web of Science, PubMed, EMBASE, and Scopus. To achieve the grey literature and unpublished findings, Google Scholar was searched manually through page 30. Also, the Persian database of Magiran and SIDs and ISC indexed journals were searched with different combinations of Persian keywords compatible with English search (supplementary material). A hand search of key Iranian journals including International Journal of Preventive Medicine (IJPM), Iranian Journal of Public Health (IJPH), The Iran Journal of Nursing (IJN), Iranian Quarterly Journal of Breast Diseases, Iranian Journal of Obstetrics, Gynecology, and Infertility (IJOGI) was also accomplished.

The time limit was set for publication after 2000 till the date of the last search (1st day of November 2019) and no language restrictions were applied.

We scanned reference lists of relevant references to retrieve as much relevant information as possible. In our search strategies, we believe that to combine indexing terms and text words can achieve high sensitivity and specificity. Databases were searched with the alternative keywords which could be found in the supplementary material of this article (supplementary material).

Eligibility criteria

We enrolled in quantitative observational studies which include women with compatible age for screening. However studies which include ever-married women of any age through 70 years for Pap smear, > =20 years for SBE and CBE and > =40 years for mammography were eligible for this review, mounting the sensitivity of findings, we accepted studies on facilitators and barriers of Pap smear of ever-married women through 65 years.[30] In this study, articles in which reported barriers and/or facilitators of breast and cervical cancer in Iran were included. Any impediments that directly prevent, or make participation in screening difficult for women and any factor that encourages or persuade women to perform screening regarded as barrier or facilitator of screening, respectively. Studies in which barriers and/or facilitators were found through statistical modeling or correlated to the practice or participation of screening were not included. Studies on barriers and facilitators for breast and cervical cancer screening in specified limited women's population (for example, healthcare workers, nurses, teachers, students, etc.) were excluded to decrease the risk of potential biases in selected articles.

Study selection

S. Ghahramani and H. Kasraei, independently identified which study to include based on the prespecified protocol. Disagreements were resolved by discussion or by consulting a third researcher (KBL). Duplicated articles from different

databases were omitted and abstracts of the remaining articles were scanned. Full-text of articles assessed for eligibility. None relevant studies were excluded. Around 22 items STROBE checklist was used for assessment of the quality of the final included full texts (n = 12). The methodological criteria included description of study design, setting, participants and variables, data sources/ measurement, bias, study size, quantitative variables, and statistical methods. Quality assessment was rated independently by the two abovementioned authors and inconsistencies were resolved by consensus or by consulting a third researcher.

Data collection process and Data items

S. Ghahramani and H. Kasraei independently extracted methodological and outcome data. Extracted data were entered in a data collecting form which included name of author and date of publication; province and study setting, language of study; number of studied women; mean (standard deviation) age of participants, design of study; type of screening (mammography, self-breast exam (SBE), clinician breast exam (CBE) or Pap smear); barriers and facilitating factors related to screening and details of questionnaire which was used for data collection. The data of main outcomes (barriers and facilitators of breast and cervical cancer screenings) in Iran was qualitative in essence, so we could not perform a meta-analysis on the results of included studies.

Results

Study selection

The process of the search and screening for the present systematic review is illustrated in the PRISMA flow diagram [Figure 1]. The initial search strategy resulted in a total number of 964 articles. After removing the duplicates, 537 studies were remained and screened. The screening was performed based on the title and abstract and 69 studies were selected for full-text assessment. Lastly, 12 cross-sectional studies were considered in the final assessment.

Description of studies

Detailed characteristics of the included studies are described in Table 1. All included studies were cross-sectional. Studies were performed in 8 provinces out of 31 provinces of Iran. Kashan, Tehran, Hormozgan, and Hamadan provinces each one with two eligible studies[20,22,31-36] and Kerman, Chaharmahal and Bakhtiari, West Azarbayjan, and Isfahan provinces,[37-40] each comprise one study. The publication date of the included studies ranged from 2006 to 2018. The mean age of participants in each study ranged

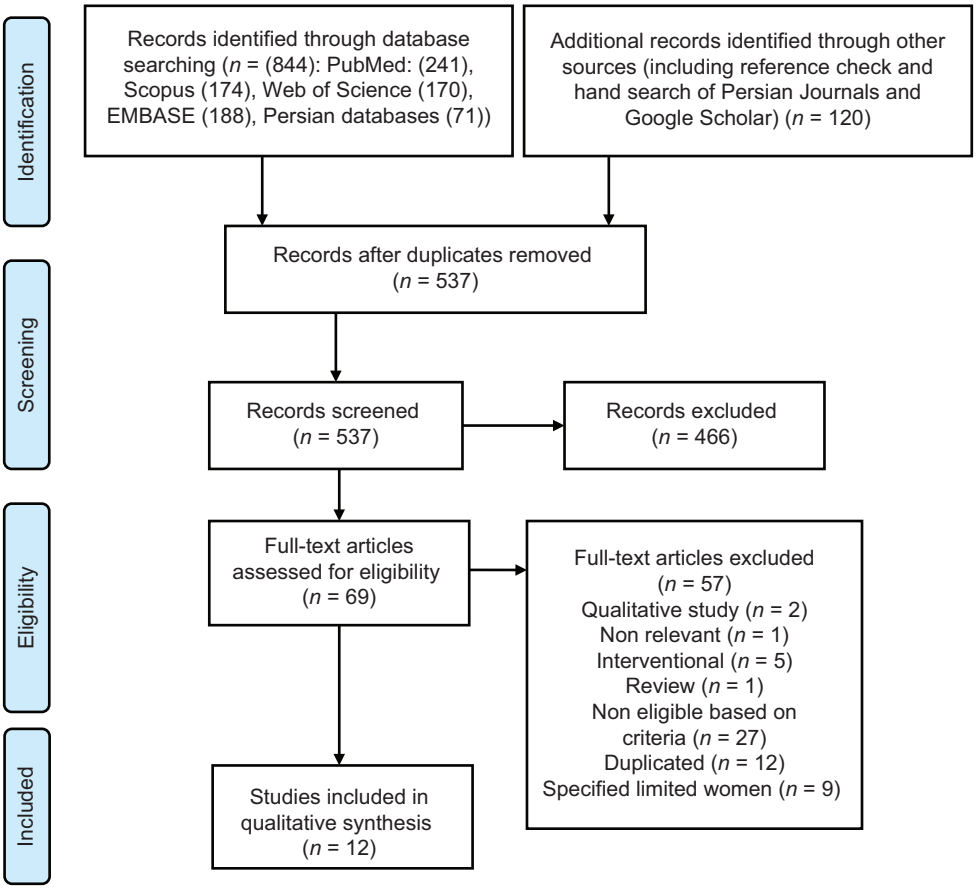

Figure 1: PRISMA flowchart of the selection process

Table 1: Studies characteristics

Article number	Author (Year)	Province	Population, Setting	Questionnaire	Sample size	Mean (SD[a]) age of participants	Type of screening	Adherence to screening[b] (percent/total)
1	Soltanahmadi (2010)	Kerman	Ever married women, referred to selected healthcare centers of Kerman	Researcher-made questionnaire	200	30.6 (7.9)	SBE[c], CBE[d] and Pap smear	22.5 (SBE) 21.5 (CBE) 27 (Pap smear)
2	Sadatjediarani (2015)	Kashan	Ever married women, referred to selected urban and rural healthcare centers of Kashan	Researcher-made questionnaire	851	Was not reported	SBE, Mammography and Pap smear	22.2 (SBE) 5.9 (Mammography) 43.7 (Pap smear)
3	Ghaoomi (2016)	Tehran	Ever married women, 20 to 65 years old , referred to Firoozgar Hospital, Tehran	Researcher-made questionnaire	90	Was not reported	Pap smear	-
4	Hajializadeh (2013)	Hormozgan, Bandar Abbas	Ever married women referred to selected healthcare centers of Bandar Abbas	Prepared by the researcher, using the valid questionnaires	727	34 (-)	Pap smear	31.8
5	Jalilian (2011)	Hamadan	Married women 20 to 70 years old , referred to selected healthcare centers of Hamadan	Researcher-made using a standard questionnaire	400	32.3 (-)	Pap smear	28.3
6	Saberi (2012)	Kashan	Ever married women, 15 to 75 years old , referred to selected healthcare centers of Kashan	Researcher-made questionnaire	1000	36.3 (10.4)	Pap smear	11.3
7	Allahverdipour (2011)	Hamadan	women, 40 to 73 years old, selected healthcare centers of Hamadan	Champion's revised HBM Scale (HBMS) and Champion's Health Belief Model Scale (CHBMS)	414	45.7 (SD 5.6)	Mammography and SBE	-
8	Banaeian (2006)	Chaharmahal and Bakhtiari	Women more than 20 years old referred to healthcare centers of Borujen	Researcher-made questionnaire	400	31.1 (SD 8.6)	Mammography, CBE, and SBE	4.5 (SBE)
9	Hasani (2011)	Hormozgan,	Women referred to selected healthcare centers of Bandar Abbas	Champion's Health Belief Model Scale (CHBMS)	240	37.2 (6.1)	SBE	7.1 (SBE)
10	Mokhtari (2014)	West Azarbayjan	Women, more than 20 years old referred to selected healthcare centers of Khoy	Champion's Health Belief Model Scale (CHBMS)	162	29.2 (7.5)	Mammography and SBE	8.6 (SBE)
11	Rejali (2018)	Isfahan	Door to door interview with women of 20 to 65 years old in both rural and urban area of Isfahan	Researcher-made questionnaire	9591	37.6 (11.7)	Mammography, CBEd, and SBE	63.4 (SBE)

Contd...

Table 1: Contd...

Article number	Author (Year)	Province	Population, Setting	Questionnaire	Sample size	Mean (SD[a]) age of participants	Type of screening	Adherence to screening[b] (percent/total)
12	Rezaee Ghazdehi (2013)	Tehran	women aged ≥40 referred to selected clinics of Tehran University of Medical Sciences, never had mammography	Researcher-made questionnaire	900	54.9 (9.9)	Mammography	-

[a]SD: Standard deviation, [b]based on individual study definition, [c]Self-breast exam, [d]clinician breast exam

from 29.2 to 54.9 years. In these studies, a total of 14975 subjects participated. Regarding the type of screening, six studies were focused on breast cancer screening methods, four studies Pap smear, and two studies considered both cancer screenings. Three studies were in the English language[20,22,32] and other studies were in Persian. Except for three studies[32,35,39] which used the Champion's health belief model scale (CHBMS) questionnaire, the other one used researcher-made questionnaires. Quality assessment is described in detail in supplementary Table 1. Almost all of the included studies had "Good" and "Fair" quality. Only one study had "poor" quality.[36]

Outcomes

Out of 12 included studies, two studies focused on barriers and facilitators of both cervical and breast cancer screening, six and four studies focused on barriers and facilitators of breast and cervical cancer screenings, respectively.

In studies by Soltanahmadi *et al*.[37] and Sadatjediarani *et al*.[31] were focused on barriers and facilitators of both breast and cervical cancer screening in Iran. Adherence to screening was reported as SBE: 22.5%, CBE: 21.5%, and Pap smear: 27%[26] and SBE: 22.2%, mammography: 5.5% and Pap smear: 43.7%, although only Soltanahmadi *et al*.[26] clearly provided a definition for the adherence to screening. Soltanahmadi *et al*. stated that the main barriers for SBE, CBE, and mammography screening were lack of screening recommendation by a physician, lack of knowledge about the procedure, and negative history of previous related disease. Whereas Sadatjediarani *et al*. found that besides the negative history of the previous related disease and lack of knowledge about the probability of acquiring cancer; fear from cancer occurrence was a barrier for women's cancer screening in their study population.

In six studies in which evaluated the barriers and facilitators of breast cancer screening methods in Iran, adherence to screening only was reported for SBE by 4 studies and ranged between 4.5 to 63.4%. One study[32] reported both facilitators and barriers for breast cancer screening and other studies focused on barriers. The main facilitator of breast cancer screening was identified as recommendation from a healthcare professional (cue to action)[32] barriers of breast cancer screening though differed for different screening method but in brief include: have no problem or pain in breasts, fear of pain, trouble remembering to get a mammography, lack of knowledge about procedure, and shame. Detailed information is provided in Tables 2 and 3.

Adherence to cervical cancer screening (by means of Pap smear) in Iran ranged between 11.3 to 31.8%. Information provided by physicians and recommendation of the physician were main facilitators of Pap smear in reviewed studies and barriers briefly include shame, fear (from the pain of Pap smear, cancer detection), and inadequate knowledge and information about the necessity of performing screening.

Details of barriers and facilitators of Pap smear in Iran are provided in Table 3.

Discussion

This study aimed to find facilitating factors for uptake and barriers of adherence to a screening of cervical and breast cancer in Iran. To our knowledge, this is the first comprehensive systematic review on this issue in Iran.

Through reviewed studies, main barriers for women's cancer screening in Iran include failure of physician to recommend for screening, lack of knowledge of participants about the screening procedure and the probability of acquiring cancer, negative history of previous related disease, fear from pain or cancer detection, shame from the procedure, and forget to have screening. Most of these barriers were stated in a systematic review of barriers of breast cancer screening behavior on Persian language articles published in 2015[41] however, the present systematic review had a broader view on both cervical and breast cancer screening with no language limit.

Adherence to women's cancer screening in Iran was reported to be less than 50% by most studies. Low adherence to screening has been reported in Iran, previously[42-44] however, there are two common flaws in this regard. Firstly, the adherence to screening should be clearly defined[37] and secondly, it is better to adjust the adherence to mammography and Pap smear screening based on the age of the participants.[44] In included articles

Table 2: Barriers and facilitators for breast cancer, breast cancer, and cervical cancer screening (both cancers) in eligible articles of Iran

Author (Year)	Barriers	Facilitators
Soltanahmadi (2010)	For SBE, CBE[a]: -Was not recommended by a physician - Have no knowledge about the procedure -No history of previous breast disease -Neglect For Pap smear: - Was not recommended by a physician - Have no knowledge about the procedure - No history of genital disease previously -Shame	For SBE, CBE[a]: - Informed about the necessity of performing the screening -Early detection of cancer -Advised by midwife -Presence of disease in relatives For Pap smear: - Early detection of cancer - Informed about the necessity of performing the screening - Advised by midwife - presence of previous genital disease
Sadatjediarani (2015)	For SBE, Pap smear and Mammography -Have no problem or disease - Have no knowledge about the probability to have cancer - Fear from cancer occurrence	For SBE, Pap smear and Mammography -the seriousness of the risk of cancer occurrence -advised by healthcare providers -access to the healthcare center
Allahverdipour (2011)	- Fear of pain -Trouble remembering to get a mammography -Lack of time to get a mammogram	-recommendation from a health care professional (cue to action)
Banaeian (2006)	-Don't know how to perform SBE -Have no problem	
Hasani (2011)	-Shame - The procedure is time-consuming -Forget -No suitable place for SBE - Process of SBE is difficult	
Mokhtari (2014)	For SBE: - No suitable place for SBE For mammography: - Trouble remembering the time to get a mammography	
Rejali (2018)	For SBE: -Have no problem or pain in breasts -Don't know how to perform SBE For CBE: -Have no problem in breasts, For mammography: -Have no problem in breasts -High cost -Fear of pain	
Rezaee Ghazdehi (2013)	-Have no symptom of breast cancer -Not concerned about breast cancer -Not concerned about breast cancer because of no family history -Feeling no necessity for performing mammography -Not concerned about health status -Believe in fate -None of the friends had mammograms	

[a]SBE and CBE, Self-breast exam and clinician breast exam respectively

Table 3: Barriers and facilitators for cervical cancer screening in eligible articles of Iran

Author (Year)	Barriers	Facilitators
Ghaoomi (2016)	-Shame	- Information provided by a physician
	-Fear from cancer occurrence (detection)	
Jalilian (2011)		- physicians' recommendation
Saberi (2012)	-Lack of information about the necessity of performing the screening	
	-Shame	
	- performing the test makes me anxious	
Hajializadeh (2013)	-Fear of the test	
	-Painful Pap smear test	
	-Forgetting	
	-Time-consuming, have no time	
	-Inadequate knowledge	
	-Shame	
	-Lack of physician recommendation and health personnel	

of this review, facilitators were less focused than barriers and frequently were identified as advice by healthcare professionals, the perceived necessity for screening, important identified risk of cancer acquire, early detection of cancer, and presence of cancer in relatives. The essence of identified facilitators beside unacceptable percentages of adherence to screening program and recommendations of primary studies for improving uptake of screening motivate researchers for future interventional studies. It seems reasonable that future investigation should concentrate on the effect of increased awareness and knowledge of women and more educational and counseling efforts by healthcare professionals to facilitate screening uptake.[42,45-50] In the situation of no organized screening method for cancer screening of women in Iran, more competence of healthcare professionals combined with increase women awareness by socioculturally acceptable messages could be a good suggestion.[51,52]

Because of the diversity of barriers and facilitators, we can categorize them for a better understanding of four socioecological factors including individual, interpersonal, health system, and policy factors. The first two factors could be attributed to demand for healthcare, while the latter is identified as the supply of healthcare. Results showed more focus on barriers and facilitators in individual and interpersonal levels and limited geographic distribution in primary studies of breast and cervical cancer screening in Iran.

Focus on individual and interpersonal (the demand side for receiving service) factors lead to a lack of comprehensive and holistic view (both demand and supply side) on facilitating factors and barriers for the utility of screening of breast and cervical cancer. Healthcare provision may be introduced through developing a surveillance system and national policy and guidelines for full coverage of women's cancer in Iran.[15]

It is recommended in the situation of suffering from scarcity of resources,[50,51] health system has to implement the screening program in a small geographical area on the high-risk group with a sensitive program and attempt should be made to study if the program is effective or not. Resources should be sought to prepare the infrastructures, adequate trained human resources, and planned surveillance that cares about the follow-up of positive and negative cases before the expansion of the program.[13]

This study reviewed the studies on facilitating factors and barriers for the uptake of women's cancer in Iran but the possibility of the presence of facilitating factors and barriers for screening that are not stated in these primary studies should be kept in mind. Besides holistic view studies, research on the effectiveness of the current screening in places in Iran is also recommended.

Conclusion

Barriers of women's cancer screening in Iran mostly were failure of the physician to recommend for screening, lack of knowledge of participants about the screening procedure and the probability of acquiring cancer, negative history of the previous related disease, fear from pain or cancer detection, shame from the procedure, and forget to have screening. Facilitators were less focused than barriers and frequently were identified as advice by healthcare professionals, the perceived necessity for screening, important identified risk of cancer acquire. Almost all studies focused on demand-side barriers for screening service with a telescopic view on individual and interpersonal factors instead of a holistic view on the utilization of screening programs. In future studies on the women's cancer screening, facilitating factors and barriers of both supply (health system provision and policy implications) and demand-side (individual and interpersonal factors) of healthcare provision is strongly recommended.

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Conflicts of interest

There are no conflicts of interest.

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