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Breast Cancer Early Detection Program Among Working Women in Academic Center for Education, Culture and Research (ACECR) of Khuzestan

Masoumeh Tehrani*[1], Mohammad Mehdi Aghakouchak[2], Zeinab Bahrami[3], Zahra Baji[4]

1. Master's degree in Nutrition Sciences, Health Education Research Department, Academic Center for Education, Culture and Research (ACECR)-Khuzestan, Ahvaz, Iran.
2. PhD of Management, Academic Center for Education, Culture and Research (ACECR)-Khuzestan, Ahvaz, Iran .
3. PhD of Public Health in Preventive Services, Department of Preventive Service, Graduate School of Medicine, School of Public Health, Kyoto university, Japan.
4. Master's degree in Health Education, Health Education Research Department, Academic Center for Education, Culture and Research (ACECR)-Khuzestan, Ahvaz, Iran

*Corresponding author: Masoumeh Tehrani, . Master's degree in Nutrition Sciences, Health Education Research Department, Academic Center for Education, Culture and Research (ACECR)-Khuzestan, Ahvaz, Iran

Email: masoumeh.tehrani2024@gmail.com

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Abstract

Background and Objective: Given the paramount importance of early diagnosis of breast cancer, this study investigated the process of implementing an early detection program of breast cancer in women working in Academic Center for Education, Culture and Research (ACECR) of Khuzestan, Iran.

Methods: This cross-sectional study was carried out among women working in ACECR. The women were divided into two groups: (1) women aged 40 years and older who were referred for mammography (n = 70), and (2) women under 40 years of age who were advised to seek midwifery care (n = 106). Based on the clinical findings, some women were subsequently referred for ultrasound to undergo further evaluation. Appropriate recommendations were provided according to the physician's assessment and the Breast Imaging Reporting and Data System (BI-RADS) classification.

Findings: A total of 54.5% of the women participated in breast cancer screening. The mean age of participants was 39.29 ± 7.23 years. Of the women, 30% were single and 70% were married. The average body mass index (BMI) was 25.73 ± 4.00. The mean age at menarche was 13.01 ± 1.76 years. Based on ultrasound findings evaluated according to BI-RADS criteria, 5 women were classified as BI-RADS 1, 16 as BI-RADS 2, and 20 as BI-RADS 3. These women were referred to a general surgeon for further assessment. No participant showed strong evidence of breast cancer.

Conclusion: Promoting breast cancer screening among women, particularly working women, and implementing targeted educational interventions to increase awareness of its importance are essential.

Keywords*:* Breast Cancer, Early Detection

Introduction

Breast cancer is one of the alarmingly worrisome factors currently threatening women's health. It is defined as changes in the uncontrolled growth of cells in the breast tissue. Today, more than 40% of breast cancers diagnosed in the world are related to Asian countries. In Iran, breast cancer accounts for 21.4% of all women's cancers and is considered the most common malignancy among women (1-3). Although the incidence of breast cancer worldwide has increased by about 2% every year since 1980, the death rate from this disease has remained almost constant over the past 40 years. This may be attributed to the early detection of the disease and the availability of effective treatment options. Early diagnosis of the disease includes primary and secondary prevention of the disease. Primary prevention of cancer includes knowing the risk factors that cause the disease and providing solutions to avoid them. Secondary prevention includes screening and timely treatment of cancer. Screening is defined as performing diagnostic tests in the asymptomatic population, and its purpose is to identify people before the onset of the disease or those with suspicious symptoms (1). Breast cancer screening mainly includes: breast self-examination, clinical examination by a doctor or a midwife, and mammography. Ultrasound and, in some cases, MRI are additional breast cancer screening modalities that may be used, primarily as complementary methods when indicated. However, in Iran, women still go for screening in the later stages, and nearly 70% of Iranian women subsequently die due to late diagnosis of breast cancer (2). Although screening tests for women are provided at health centers in accordance with the policies of the Ministry of Health and Medical Education, the rate at which women attend for recommended screening behaviors and tests remains unsatisfactory, despite the availability and proven effectiveness of these programs (4–7). Moreover, health and preventive behaviors within any society—or even within specific regions—are influenced by the prevailing social and cultural context. Therefore, examining the implementation of such programs within smaller communities, such as employed women in a particular organization or office with its own organizational culture, may provide valuable insights. When these programs are supported financially and morally by workplace managers and when screening services are readily accessible, they may encourage greater participation. Such experiences can offer useful guidance for the design and development of broader organizational and public policies related to breast cancer screening and early detection. Furthermore, previous studies (8) have shown that negligence, forgetfulness, heavy workloads, and lack of time are among the factors contributing to women's non-participation in cancer screening programs. Therefore, implementing early detection and screening programs within organizations during working hours may facilitate women's participation in such initiatives. In Khuzestan Province, breast cancer is one of the most common cancers among women. Accordingly, this study aimed to promote women's health by examining the implementation of a workplace-based breast cancer early detection program (including primary and secondary prevention), conducted during working hours with the financial and moral support of the organization. In addition, the study sought to identify the challenges associated with implementing such initiatives at ACECR in Khuzestan, in line with the future vision of expanding employee screening programs similar to those established for prostate cancer in men and other occupational health initiatives.

Methods

This cross-sectional study was conducted on a population of women working in ACECR of Khuzestan, Iran. All stages of the present study were approved by the Ethics Committee for Research at the Avicenna Research Institute of ACECR (IR.ACECR.AVICENNA.REC.1401.012). The present study was a census study in which the study population comprised 176 female employees working at ACECR of Khuzestan. We divided these women into two groups based on their age: (1) women aged 40 years and older who were referred for mammography (n = 70), and (2) women under 40 years of age who were advised to seek midwifery care (n = 106). Women were informed through the office automation messaging system and mobile SMS. Each participant received information about her scheduled appointment time at the Khuzestan ACECR medical center. To encourage participation in the breast cancer screening program, additional text messages were sent to raise awareness about the importance of breast cancer screening. The present study was conducted over a six-month period. Both groups of women received training related to primary prevention in the breast cancer early detection program. Each participant was trained in early detection methods for breast cancer, predisposing risk factors, and protective factors in a 30-minute, face-to-face session, which included practical demonstrations when necessary. The data collection tools included a mammography machine (model MXS-50MoH-Switzerland) and an ultrasound machine (model DC-8 -China) located in the medical centers of Khuzestan-ACECR.

Findings for women in the secondary prevention stage were reviewed. Subsequently, only those with

abnormal clinical examination and/or mammography results were referred for sonography for further evaluation. Necessary recommendations were then provided based on the physician's assessment and the Breast Imaging Reporting and Data System (BI-RADS). Data were analyzed using SPSS software, version 26, employing descriptive statistical tests (mean and standard deviation for quantitative data, and frequency and percentage for qualitative data).

Results

Out of the total number of employed women in Khuzestan-ACECR, only 96 women participated in the breast cancer early detection program. The average age of the women was 39.29±7.23. Of these women, 30% were single and 70% were married. The average body mass index was 25.73±4.00, and the average age of first menstruation was also reported to be 13.01±1.76. The participation rate of women is shown in Table 1 which shows the participation rate of women in clinical breast examination (women under 40) and the participation rate of women in mammography screening (women 40 years and older).

Table 2 shows the number of women who performed regular breast self-examination (BSE). Table 3 summarizes the ultrasound findings according to the BI-RADS classification. The table includes data from 41 women in total, comprising both age groups (those under 40 and those aged 40 or older) who were referred for sonography following clinical examination or mammography results and upon their physician's recommendation.

Table 1: The women's participation rate in the early breast cancer detection program in Khuzestan-ACECR

	Total (person)	Participation rate (person)	Participation rate (percentage)
Women 40 years and older	70	41	% 58/5
Women under 40 years	106	55	% 52
The total number of women	176	96	% 54/5

Table 2: Breast Self-Examination rate

	Total number of women participating in the study (Number of People)	Breast Self-Examination (Number of People)	
		(people)	(%)
Women aged 40 and older	41	27	%66
Women younger than 40	55	39	%71
Total	96	66	%69

Table 3: Ultrasound findings based on BIRADS

	BIRADS						
	BIRADS:0	BIRADS:I	BIRADS:II	BIRADS:III	BIRADS:IV	BIRADS:V	BIRADS:VI
Number	0	5	16	20	0	0	0
The total number of women referring for ultrasound	41						

Discussion

This study investigated the implementation of the early breast cancer detection program among women working in ACECR of Khuzestan, and evaluated their participation in this program. The study was also aimed to investigate the problems of implementing such programs at an organizational level.

Based on findings, the participation rate of women in the mammography was 58.5% and the participation rate of women in the clinical breast examination was 53%. In general, consistent with previous studies (9), female participation in mammography screening has been low. According to these studies, the reasons for low female participation in mammography have been reported as: not observing any specific breast problem, having no family history of breast cancer, lower education level, not prioritizing their health, and the high cost of mammography (9). In Bashirian et al.'s study, similar to the present study, older women had a higher probability of participating in the breast cancer screening program and undergoing mammography compared to younger women. In other words, it can be said that older women have greater participation in early detection and breast cancer screening programs compared to younger women. Nevertheless, it is recommended that future qualitative studies investigate the reasons for participation and non-participation of women across different age groups in early breast cancer detection programs. On the other hand, based on previous studies, the most common reasons for women under 40 years of age who refused to participate in clinical breast examinations have been reported as shame and embarrassment regarding the breast examination and the fear of cancer diagnosis (6). Overall, the rate of women's participation in screening programs has been reported differently in

different studies. For example, in Mohaghegh et al. (6), the women's participation rate in breast cancer screening was reported to be 38.53%. In Naqhibi et al. (8), this rate was reported to be 38.5%, exclusively related to breast clinical examination by a midwife/physician and 13.7% related to mammography. The discrepancies between the results of the present study and those of other studies could be attributed to the fact that in our study, breast cancer early detection program was done in an organization whereas in other studies, a large population of women had been investigated at a city or village level. Another reason for the higher participation rate in our study, compared with similar studies, is that all associated costs were fully covered by the organization. These included expenses related to education on breast cancer risk factors, training in breast self-examination, clinical breast examinations performed by midwives, as well as the costs of mammography and ultrasound. As a result, no financial burden was placed on the participants in this study.

Furthermore, based on the findings, 69% of the women regularly performed breast self-examination BSE. This rate was observed to be higher compared to other studies (5, 7). According to the Khalili et al study (5), there is a direct relationship between the level of education, employment status, and the performance of breast self-examination. Therefore, the relatively high rate of breast self-examination among the women in the current study may be due to their employment status and attainment of education at various levels.

In this study, no woman had strong evidence for breast cancer. Most of the women were diagnosed with a cyst or fibroadenoma, and all of them were advised to perform an ultrasound again in 3-6 months and see a general surgeon for a more detailed examination. Two women were recommended to undergo cytological evaluation based on the diagnosis of the radiologist, and they were recommended to refer to a general surgeon as soon as possible for additional investigations. Based on subsequent follow-ups, a benign outcome was observed, and no issues regarding breast cancer incidence were noted.

One of the key organizational factors influencing women's participation in early detection and screening programs is access to these services. In order to improve access to preventive and diagnostic services, organizations can encourage women to engage in breast cancer screening behaviors, provide incentive leave for clinical examinations, mammography, or breast ultrasound, and establish a dedicated unit to monitor women's health and follow up on breast cancer screening.

One of the limitations of the present study is the lack of a qualitative assessment of the factors influencing women's participation or non-participation in the breast cancer early detection program. Therefore, it is recommended that future research identify the barriers affecting women's participation in early detection and screening programs for breast cancer using a qualitative study design. In addition, alongside appropriate cultural promotion among women, suitable educational strategies should be implemented to enhance their awareness, attitudes, and practices regarding early detection of breast cancer.

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Reference

1. Ministry of Health and Medical Education. Implementation instructions and educational content of the breast cancer prevention and early detection program. Bureau of Noncommunicable Diseases Management: Cancer Department. 2017.
2. Ministry of Health, Treatment and Medical Education. Breast cancer prevention and early detection program guidelines. National Cancer Management Secretariat: Cancer Administration. 2021.
3. Tahergorabi Z, Moodi M, Mesbahzadeh B. Breast Cancer: A preventable disease. *J Birjand Univ Med Sci*. 2014;21(2):126-141.
4. Akbari H, Jedi arani T, Gilasi H, Moazami A, Gharlipour Z, Alinaghipour A, et al. Study of motivational factors and causes of nonparticipation to breast and cervical cancer screening tests among women attending health centers in Kashan city. *J Ilam Uni Med Sci*. 2014;22(3):137–148.

5. Khalili AF, Shahnazi M. Breast cancer screening (breast self-examination, clinical breast exam, and mammography) in women referred to health centers in Tabriz, Iran. *Indian J Med Sci*. 2010;64(4):149–162. [PMID]

6. Mohaghegh P, Farahani M, Moslemi A, Ahmadi F, Nazari J. Participation Rate, Family Histories, Symptoms, and Incidence of Breast Cancer in the Screening Program for Breast Cancer in the Population Covered by Arak Health Centers. *Iran J Breast Dis*. 2021;14(2):41-49. https://doi.org/ 10.30699/ijbd.14.2.41
7. Saei Ghare Naz M, Mohaddesi H, Abed M, Darooneh T, Salmani F, Rashidi F, et al. Breast Cancer Screening Practice and its Relationship with Breast Cancer Screening Belief in Women Referred to Health Centers Affiliated to Shahid Beheshti University of Medical Sciences, Tehran, Iran. *J Isfahan Med Sch*. 2018;36(500):1234-1241.
8. Naghibi SA, Shojaizadeh D, Montazeri A, Yazdani-Cherati J. Evaluating the performance rate of breast cancer screening methods and its relationship with breast cancer risk factors in Mazandaran province, Iran. *J Mazand Univ Med Sci*. 2014;23(110):118-123.
9. Bashirian S, Barati M, Mohammadi Y, Moaddab Shoar L, Dogonchi M. The demographic and Psychological determinants of performing Mammography among the Employed Women in Medical Professions in western Iran: the Role of Threat Appraisal and Coping Appraisal. *Pajouhan Sci J*. 2019;18(1):57-63. https://doi.org/ 10.30699/ijbd.14.2.41