Araştırma Makalesi
(Research Article)

EGEHFD, 2025, 41(3): 563-574
DOI: 10.53490/egehemsire.1591584

The Investigation of Risk Factors and Awareness of Breast Cancer Among Syrian Immigrant Women

Suriyeli Göçmen Kadınların Meme Kanserine Yönelik Risk Faktörleri ve Farkındalıklarının İncelenmesi

Tuba YILMAZ BULUT[1]
Orcid: 0000-0001-7850-7723
Birsen ALTAY[2]
Orcid: 0000-0001-5823-1117

[1]Kocaeli Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Kocaeli, Türkiye
[2]Ondokuz Mayıs Üniversitesi, Sağlık Bilimleri Fakültesi, Samsun, Türkiye.

Corresponding Author (Sorumlu Yazar):
Tuba YILMAZ BULUT

tuba_yilmaz1991@hotmail.com

Gönderilme Tarihi: 27 Kasım 2024 **Kabul Tarihi:** 23 Haziran 2025

Anahtar Sözcükler:

Erken tanı; farkındalık; göç; meme kanseri.

Keywords:

Early diagnosis; awareness; migration; breast cancer

ABSTRACT

Objective: The study aims to determine the risk factors and awareness of breast cancer among Syrian immigrant women, who are a disadvantaged group.
Methods: This descriptive study was completed with 400 women selected using the random sampling method. The data were collected with the Personal Information Form, the Breast Cancer Awareness Measure-Arabic, and the Breast Cancer Risk Assessment Form. Percentage, mean, and median analyses, the Kruskal Wallis Test, and the Mann-Whitney U Test were used to analyze the data.
Results: The mean age of the women participating in the study was found to be 41.85±8.67. 45.8% of the participants in the study had a high body mass index. It was determined that 95% of the Syrian immigrant women did not have a mammogram, 92.8% did not perform a breast self-examination, and 68.5% did not know the early diagnosis methods of breast cancer. The total breast cancer risk of the women participating in the study was found to be 162.35 (50-675). This means that the risk of developing breast cancer in Syrian immigrant women over the age of 18 is moderately high. The awareness level of the women participating in the study regarding breast cancer was found to be 8.1 (0-27). It was determined that the breast cancer screening awareness levels of Syrian immigrant women aged 41-50 were higher than those of women aged 30-40. It was also found that the higher the level of education of the participants, the higher their awareness levels regarding breast cancer symptoms.

Conclusions: It was found that the awareness of breast cancer among the participants was low. In this context, training programs should be implemented for Syrian immigrant women so that they can learn about breast cancer risks and their awareness can be increased

ÖZ

Amaç: Bu çalışmanın amacı Suriyeli göçmen kadınların meme kanserine yönelik risk faktörlerini ve farkındalıklarını belirlemektir.
Yöntem: Tanımlayıcı türde olan araştırma, 2021 yılı Eylül-Ekim ayları arasında yapılmıştır. Rastgele örnekleme yöntemiyle araştırma kapsamında yapılan güç analizine göre araştırma 400 kadın ile tamamlanmıştır. Veri toplama aracı olarak araştırmacılar tarafından literatür doğrultusunda hazırlanan kişisel bilgi formu, 'Meme Kanseri Farkındalık Ölçeği-Arapça formu' ve 'Meme Kanseri Risk Değerlendirme Formu' kullanılmıştır. Verilerin değerlendirilmesinde yüzde, ortalama, medyan, Kruskal Wallis Testi ve Mann-Whitney U analizleri kullanıldı.
Bulgular: Araştırmaya katılan kadınların yaş ortalaması 41.85±8.67 olarak bulundu. Çalışmaya katılan katılımcıların %45.8'inin vücut kitle indeksi yüksek bulundu. Suriyeli göçmen kadınların %95'inin mamografi çektirmediği, %92.8'inin kendi kendine meme muayenesi yapmadığı ve %68.5'inin meme kanseri erken tanı yöntemlerini bilmediği belirlendi. Araştırmaya katılan kadınların toplam meme kanseri riski 162.35 (50-675) olarak bulundu. Bu da 18 yaş üstü Suriyeli göçmen kadınların meme kanserine yakalanma riskinin orta derecede yüksek olduğu anlamına gelmektedir. Araştırmaya katılan kadınların meme kanserine yönelik farkındalık düzeyleri 8.1(0-27) olarak bulunmuştur. 41-50 yaş arası Suriyeli göçmen kadınların meme kanseri tarama farkındalık düzeylerinin 30-40 yaş grubundaki kadınlara göre daha yüksek olduğu belirlendi. Ayrıca katılımcıların eğitim düzeyi ne kadar yüksekse meme kanseri belirtilerine ilişkin farkındalık düzeylerinin de o kadar yüksek olduğu bulunmuştur.
Sonuç: Araştırma sonuçlarına göre elde edilen bulgular dikkate alındığında: Kadınların meme kanserine ilişkin farkındalıklarının düşük olduğu bulunmuştur. Araştırmaya katılan kadınların eğitim düzeyi ile meme kanseri farkındalıklarının ters orantılı olduğu bulundu. Ayrıca kadınların çoğunun meme kanseri erken tanı uygulamalarını bildiği, ancak uygulamadığı belirlendi. Bu kapsamda dezavantajlı bir grup olan Suriyeli göçmen kadınların meme kanseri risklerini öğrenmeleri ve farkındalıklarını artırmaları için eğitim programları uygulanmalıdır.

How to cite: Yılmaz, Bulut, T., Atalay, B. (2025). The Investigation of Risk Factors and Awareness of Breast Cancer Among Syrian Immigrant Women. *JEUNF, 41*(3), 563-574 DOI: 10.53490/egehemsire.1591584.
Kaynak gösterimi: Yılmaz, Bulut, T., Atalay, B. (2025). Suriyeli Göçmen Kadınların Meme Kanserine Yönelik Risk Faktörleri ve Farkındalıklarının İncelenmesi. *EGEHFD, 41*(3), 563-574 DOI: 10.53490/egehemsire.1591584.

INTRODUCTION

Breast cancer (BC) is the second cancer-related death in all women worldwide (WHO, 2018; Sun et al., 2017). According to the World Health Organization (WHO), 15% of all women with cancer died from BC in 2018 (WHO, 2019). Breast cancer screenings reduce mortality and increase survival rate (Cancer Research UK, 2018). These screenings include breast self-exam (BSE), clinical breast examination (CBE), and mammography (American Cancer Society, 2014; Husna et al., 2019; Ministry of Health, 2020).

Awareness practices for BC include BC early diagnosis practices (Husna et al., 2019). For example, BSE helps women to notice any abnormality in the size and shape of the breast in a timely manner (Akram, Iqbal, Daniyal and Khan, 2017). The studies in the literature have revealed that 69.7% of the women in Arab communities (Jahan, Al-Saigul and Abdelgadir, 2006), 92% of the women in Egypt (Boulos and Ghali, 2014), 72.3% of the women in Saudi Arabia (Rahman et al., 2019), and 89.7% of the women in India (Madhukumar, Thambiran, Basavaraju and Bedadala, 2017) do not perform BSE. In addition, religious and cultural differences have been identified as a reason for low screening practices (Islam et al., 2017). Mammography is also a widely used screening method in diagnosing BC, and studies have proven that it reduces mortality in women (Waks and Winer, 2019). A study conducted with Syrian refugees showed that the rate of women undergoing mammography is 6.7% (Racine, Andsoy, Maposa, Vatanparast and Fowler-Kerry, 2021). By actively participating in community outreach programs, nurses can better promote screenings and preventive health behaviors, effectively addressing disparities in breast cancer care (Bekteshi and Schootman, 2024).

Nurses play a role that goes beyond simply providing education; they also serve as an important source of support. Research has highlighted that emotional support from healthcare providers can help immigrant women feel more at ease when it comes to seeking mammograms (Morey et al., 2019). By building trusting relationships with patients, nurses can help alleviate the fear and anxiety often associated with cancer screenings. This emotional connection is especially vital, as many immigrant women may carry stigmas or fears surrounding cancer (Guruge et al., 2010). Fostering open conversations about health issues not only corrects misconceptions but also shows genuine empathy toward the patients' experiences.

Cancer Awareness Measurement is a method used to measure the awareness of individuals about the symptoms and risk factors of cancer and the barriers to early diagnosis (Cancer Research, 2021). Breast cancer is often diagnosed late due to lack of awareness, negative beliefs about cancer, ignorance about BC early diagnosis practices, denial, opting for complementary therapies, and cultural differences (Khan, Leong, Ming and Khan, 2015; Htay et al., 2020). Canadian Cancer Society has revealed that the level of cancer awareness is significantly associated with early detection of BC (Canadian Cancer Society, 2021). However, studies have also found that women's awareness of BC is very low (Radi, 2013; Boulos and Ghali, 2014; Madhukumar et al., 2017).

Another important marker for the development of BC is risk factors. Risk factors for BC include being female, advanced age, differences in living conditions, genetic factors, estrogen, and gene mutations (Waks and Winer, 2019). On the other hand, elderly and disadvantaged women with low socioeconomic status are more likely to delay the diagnosis of BC (Linsell et al., 2010). Since these risks increase in individuals who have migrated, it becomes difficult to prevent disease formation (Schliemann et al., 2018).

Immigrant women frequently face obstacles that can hinder their involvement in breast cancer screenings, such as cultural differences, language challenges, and limited understanding of healthcare services. As a result, nurses are essential in overcoming these barriers by providing culturally sensitive care and education. Studies on BC awareness among immigrant women, who are among the disadvantaged groups, are limited in Turkey. Therefore, this study aims to investigate BC risk factors and awareness level in Syrian immigrant women living in Turkey.

METHODS

Research Design

This study was carried out as a descriptive research.

Population and Sample

The study is a descriptive one and it was conducted between September-October 2021 with Syrian immigrant women under temporary protection and residing in a district of Istanbul. This district was chosen since it comprises the highest number of Syrians on this side (General Directorate of Migration Management, 2021).

The target population of the study consisted of 10,916 women over the age of 20 residing in the Turgut Reis District of Sultanbeyli in Istanbul (The Case of Sultanbeyli, 2018). The NCSS–PASS program was used to calculate the sample size. According to the power analysis performed within the scope of the research with the random sampling method, the study needed to include a minimum of 372 participants, with a 95% confidence level. The study was completed with 400 women.

Inclusion criteria

- Being between 20-65 years old
- Being a Syrian woman
- Agree to participate in the study

Exclusion criteria

- Pregnant,
- Illiterate
- Breastfeeding women
- Women with a history of BC
- Women who did not want to participate

Data Collection

Data were collected at the Migrant Health Center located in Sultanbeyli district of Istanbul. Participants' questions were answered by translators at the Migrant Health Center. The questionnaire and scales were prepared in Arabic. The Arabic validity and reliability of the scales were requested from the researchers. After the questionnaire was prepared, it was translated into Arabic by a sworn translator. The data was collected by the researchers face-to-face with an interpreter between September-October 2021. It takes a total of 15 minutes to collect a survey. After obtaining written permission from the authors who conducted the Arabic validity and reliability study of the scale, the original Arabic form was requested. The scale in Arabic form was applied to Syrian immigrant women.

Personal Information Form

The form consists of 28 questions developed by the researchers by reviewing the literature (Racine et al., 2021; Alawa et al., 2020; Esen et al., 2020; Waks and Winer, 2019). The questions are on the socio-demographic characteristics of women (age, educational status, etc.) and BC early diagnosis methods.

Breast Cancer Awareness Measure Arabic (BCAM-A)

The measure was developed by Cancer Research UK, King's College of London, and University College of London in 2009 to support BC care (Linsell et al., 2008). The Arabic validity-reliability study of the measure was conducted in 2016 by the College of Nursing-Sultan Qaboos University to measure BC awareness among Arab Muslim women (Al-Khasawneh et al., 2016). The measure includes four sections: BC symptoms, BC risk factors, BC screening program, and awareness about BSE. The questionnaire consisted of questions regarding knowledge of breast cancer signs and symptoms (11 items), breast cancer risk factors (9 items), barriers to breast cancer screening (4 items), knowledge of breast self-examination (4 items), knowledge of mammography and clinical breast examination-specific breast cancer screening programs (3 items). Knowledge of breast cancer was assessed using a categorical response scale (yes/don't know/no). The scale is calculated based on a total score. The Cronbach's Alpha coefficient of the scale is 0.81 (Linsell et al., 2008). The Cronbach alpha value in this study is 0.96.

Breast Cancer Risk Assessment Tool

The tool, developed by the American Cancer Society, is used to determine the risk of developing BC in women. It includes six sections and 21 sub-items. Risk levels according to the total score obtained from the tool are low (200 points and below), medium (201-300 points), high (301-400 points), and the highest (over 400 points) (Eroğlu, Eryılmaz, Cıvcık and Gürbiz, 2010; Aslan and Gürkan, 2007).

Data Analysis

The data were analyzed using the SPSS 20.0 package program (IBM Corporation, 2011). Percentage, mean, standard deviation, median, and minimum-maximum tests were conducted. The conformity of the data to normal distribution was examined with the Kolmogorov-Smirnov test. Since the data were not normally distributed in the

study, non-parametric tests were used. Mann Whitney U test and Kruskal Wallis analysis tests were used for the statistical tests of the data. Statistical significance level was set at $p<0.05$.

Ethical Considerations

The study was conducted in accordance with the Declaration of Helsinki Ethical Principles in Medical Research involving Human Subjects. In order to conduct the study, ethical approval was obtained from a local University research ethics committee (Date 25/06/2021 and decision number 2021-538), and written permission was obtained from the General Directorate of Migration Management (Date 08/07/2021 and decision number E6210364900033145). The participants were informed about the aim of the research; their verbal consent was obtained and voluntary participation was ensured. In addition, written consent was obtained from all participants with an interpreter.

RESULTS

The study, which was conducted to investigate BC risk factors and awareness level in Syrian immigrant women living in Turkey, included 400 participants. The mean age of the participants was 41.85±8.67, and 79.2% of the participants had 3 or more children. It was revealed that the total risk of BC for the participants was 162.35±97.25 (50-675), and 21 participants were found to have a very high risk of BC.
Insert table 1.

Table 1. Distribution of Women's Mean BC Risk Score (n=400)

	Risk Score	n (%)	BC Risk Score	SD
Age (years)				
Under 30	10	8(2)	66.87	16.46
30-40	30	208(52)	124.49	68.67
41-50	75	120(30)	205.04	110.64
51-60	100	54(13.5)	203.05	72.15
Over 60	125	10(2.5)	294.00	152.93
Family history of breast cancer				
Non	-	311(77.8)	137.21	67.95
An aunt/aunt or grandmother	50	63(15.8)	228.57	120.74
Mother or sister	100	20(5)	285.50	126.79
Mother and sister	150	5(1.3)	361.00	176.40
Mother and two sisters	200	1(0.3)	350.00	
Personal breast cancer history				
No history of BC	-	378(94.5)	142.81	53.28
Yes history of BC	300	22(5.5)	497.95	62.30
Age of giving birth				
First birth before age thirty	-	355(88.8)	156.95	94.50
First birth after age thirty	25	10(2.5)	233.50	144.95
No children	50	35(8.8)	196.71	97.11
Menstrual history				
Age of Onset of 15 and Above	15	35(8.8)	106.71	36.013
Age of Onset of 12-14	25	192(48)	143.22	93.37
Age of onset of 11 and under	50	173(43.3)	194.82	99.51
Body Mass Index				
Underweight	15	28(7)	141.42	92.54
Normal	25	189(47.3)	133.88	77.86
Overweight	50	183(45.8)	194.94	105.95

SD: Standard deviation; BC: Breast Cancer

It was found that as the age of the Syrian participants increased, their BC risk levels also increased. In addition, when BC risk levels were examined according to familial BC history, it was determined that the women whose mother and/or sister have BC have higher BC risk levels (Table 1).
Insert Table 2.

The BCAM-A scores revealed that the level of awareness among the participants of the symptoms of BC, risk factors, screening programs, and BSE was quite low. The total BCAM-A score of the participants was also found to be low [8.1 (0 - 27)] (Table 2).

Table 2. ***Comparison of BCAM-A and Socio-Demographic Characteristics of the Participants***

		Awareness levels for BC				
	n (%)	Symptoms Of BC	Risk Factors	Screening Programs	BSE	Total BCAM-A
Mean (Min-max)		5.7 (0 - 11)	1.3 (0 - 9)	0.4 (0 - 3)	0.7 (0 - 4)	8.1 (0 - 27)
Age (years)						
Under 30	8(2)	3.9 ± 2.1	1.1 ± 0.6	0.1 ± 0.4ab	0.5 ± 0.5ab	5.6 ± 3.1
30-40	208(52)	5.7 ± 3.5	1.4 ± 1.3	0.2 ± 0.6a	0.5 ± 0.8a	7.9 ± 4.6
41-50	120(30)	6.1 ± 3.5	1.4 ± 1.5	0.7 ± 1.1b	1.1 ± 1.4b	9.2 ± 5.5
51-60	54(13.5)	4.8 ± 3.6	1 ± 1.4	0.4 ± 0.8ab	0.8 ± 1ab	7.1 ± 4.6
Over 60	10(2.5)	4.3 ± 2.3	1.6 ± 1.2	0.3 ± 0.7ab	1.2 ± 1.4ab	7.4 ± 3
		$\chi2$=9.49	$\chi2$=13.38	**$\chi2$=24.6**	**$\chi2$=13.38**	$\chi2$=8.57
		*p=0.05	p=0.07	**p<0.001	*p=0.01	p=0.07
Body Mass Index						
Normal	56(14)	5.5 ± 3.2	1.6 ± 1.5	0.2± 0.7	0.4 ± 0.8	7.7 ± 4.6
Overweight	344(86)	5.7 ± 3.5	1.3 ± 1.3	0.4± 0.8	0.8 ± 1.1	8.2 ± 4.9
		U=10272	U=8244	U=10569	**U=12049**	U=10149
		p=0.42	p=0.07	p=0.09	*p=0.01	p=0.51
Educational Status						
Not attend school	139(34.8)	4.2 ± 3.6a	1.2 ± 1.3	0.3± 0.8	0.7 ± 1.1a	6.4 ± 5.1a
Primary school	167(41.8)	6.5 ± 3.3b	1.5 ± 1.4	0.4± 0.8	0.7 ± 1b	9 ± 4.7b
Secondary school	6.5 ± 3.1	1.1 ± 1.1b	0.5 ± 0.9	0.9± 1.1	9 ± 4.2b	6.5 ± 3.1b
High school	11(2.8)	6.4 ± 1.6ab	1.1 ± 0.9	0.3± 0.6	1.4 ± 1.4ab	9.1 ± 3.2ab
University	3(0.8)	3.3 ± 4.9ab	2 ± 1	0 ± 0	0.3 ± 0.6ab	5.7 ± 5.5ab
		$\chi2$=34.43	$\chi2$=8.29	$\chi2$=2.50	**$\chi2$=10.92**	**$\chi2$=27.74**
		**p<0.001	p=0.08	p=0.64	*p=0.02	**p<0.001
Marital Status						
Married	289 (72.3)	5.6 ± 3.4	1.3 ± 1.2	0.2± 0.7	0.6 ± 0.9	7.8 ± 4.5
Single	22 (5.5)	5.6 ± 3.8	1.2 ± 1.1	0.2± 0.5	0.7 ± 0.8	7.6 ± 4.7
Divorced	89 (22.3)	5.9 ± 3.8	1.4 ± 1.8	0.8± 1.2	1.2 ± 1.5	9.3 ± 5.9
		$\chi2$=1.007	$\chi2$=1.521	**$\chi2$=25.17**	**$\chi2$=11.143**	$\chi2$=4.214
		p=0.604	p=0.467	**p<0.001	*p=0.004	p=0.122
Smoking						
Using	159 (39.8)	6.3 ± 3.5	1.1 ± 1.4	0.6± 1.1	1.2 ± 1.3	9.2 ± 5.2
Not using	241 (60.2)	5.2 ± 3.4	1.5 ± 1.3	0.2± 0.6	0.5 ± 0.8	7.4 ± 4.5
		U=15324	**U=24240**	**U=15539**	**U=11955**	**U=15390**
		p=0.001	**p<0.001**	**p<0.001**	**p<0.001**	**p=0.001**
Family history of breast cancer						
Yes	104 (26)	7.1 ± 3.6	1.6 ± 1.9	0.9± 1.2	1.6 ± 1.5	11.2 ± 5.8
No	296 (74)	5.1 ± 3.3	1.2 ± 1.1	0.2± 0.5	0.4 ± 0.7	7 ± 4
		U=10169	U=14673	**U=10344**	**U=8082**	**U=8535**
		p<0.001	p=0.460	**p<0.001**	**p<0.001**	**p<0.001**

*p<0.05; **=p<0.000; U:Mann Whitney U testi; $\chi2$:KruskalWallis; BC: Breast Cancer; BSE: Breast Self-Exam; BCAM-A: Breast Cancer Awareness Measure Arabic; Letters (a. b) There is no difference between groups with the same letter.

When the age of the participants and the BCAM-A sub-sections were evaluated, a difference was observed between the 'Screening Programs' and 'BSE' awareness level mean scores and the mean scores for the ages 30-40 and 41-50. It was seen that the level of awareness increased as age increased (p<0.05).

The participants with a high body mass index were found to have high levels of awareness of BSE (p<0.05). When the education levels of the participants and their level of awareness of BC were compared, it was found that the primary and secondary school graduates had higher levels of awareness about BC symptoms and BSE and higher total awareness levels compared to those who did not attend school (p<0.05).

The comparison of the family BC history and the BCAM-A sub-sections revealed that the participants with a family history of BC had higher awareness level mean scores for the 'Symptoms', 'Screening Programs', and 'BSE' sub-sections of the BCAM-A, compared to those without a family history of BC. In addition, the participants with a family history of BC were found to have higher awareness of BC than those without a family history of BC. This finding is also statistically significant (p<0.001) (Table 2).
Insert Table 3.

When the age of the first menstrual period of the participants and their status of having regular menstruation were compared with the BCAM-A, a statistically significant difference was found between all sub-sections of the BCAM-A, the 'Total Awareness' mean score, and the age of the first menstruation. The participants who had their first menstruation at age 15 and older and age 12-14 were found to have higher mean scores for the 'Risk Factors' sub-section of the BCAM-A than those who had their first menstruation at age 11 and younger, which is statistically significant ($p<0.05$) (Table 3).

Table 3. ***Comparison of BCAM-A and Obstetric Characteristics of the Participants***

		Awareness levels for BC				
	n (%)	**Symptoms Of BC**	**Risk Factors**	**Screening Programs**	**BSE**	**Total BCAM-A**
Menstrual history						
15 and Above	35 (8.8)	5.1 ± 2.8	1.5 ± 0.9b	0.6 ± 0.6a	0 ± 0.2ab	7.2±2.9ab
12-14	192 (48)	5.3 ± 3.7	1.4 ± 1.2b	0.5 ± 1a	0.2 ± 0.7a	7.5 ± 4.9a
11 and under	173 (43.2)	6.2 ± 3.4	1.2 ± 1.5a	1 ± 1.2b	0.6 ± 1b	9 ± 5b
Statistics		**χ2=7.06**	**χ2=12.70**	**χ2=28.878**	**χ2=27.07**	**χ2=8.642**
		***p=0.029**	***p=0.002**	****p<0.001**	****p<0.001**	***p=0.013**
Regular menstrual cycle						
Yes	242 (60.5)	5.4 ± 3.6	1.3 ± 1.1	0.2 ± 0.6	0.5 ± 0.9	7.4 ± 4.4
No	158 (39.5)	6.1 ± 3.4	1.3 ± 1.7	0.6 ± 1	1.1 ± 1.3	9.2 ± 5.4
Statistics		**U=21711**	**U=16921**	**U=22523**	**U=24238**	**U=22162**
		***p=0.02**	***p=0.04**	****p<0.001**	****p<0.001**	***p=0.007**
State of being in menopause						
Yes	90 (22.5)	5.6 ± 3.7	1.4 ± 1.7	0.6 ± 1.1	1.1 ± 1.4	8.8 ± 5.7
No	310 (77.5)	5.7 ± 3.4	1.3 ± 1.2	0.3 ± 0.7	0.6 ± 1	7.9 ± 4.6
Statistics		U=13838	U=14464	**U=11602**	**U=11465.5**	U=13119
		p=0.907	p=0.579	****p<0.001**	***p=0.004**	p=0.387
Breast disease						
Yes	89 (22.3)	7.3 ± 3.5	1.4 ± 1.7	1 ± 1.3	1.7 ± 1.5	11.5 ± 5.7
No	311 (77.8)	5.2 ± 3.4	1.3 ± 1.2	0.2 ± 0.5	0.5 ± 0.7	7.1 ± 4.1
Statistics		**U=8797**	U=14566	**U=8411.5**	**U=7104.5**	**U=7288.5**
		****p<0.001**	p=0.431	****p<0.001**	****p<0.001**	****p<0.001**
Knew how BC was diagnosed						
Yes	126 (31.5)	6.9 ± 2.5	1.2 ± 1.5	0.9 ± 1.2	1.6 ± 1.4	10.6 ± 4.8
No	274 (68.5)	5.1 ± 3.7	1.4 ± 1.3	0.1 ± 0.4	0.4 ± 0.6	7 ± 4.5
Statistics		**U=12844**	U=20295	**U=10369**	**U=6889**	**U=10806**
		****p<0.001**	*p=0.003	****p<0.001**	****p<0.001**	****p<0.001**
Chance of surviving cancer increases with early detection						
Yes	348 (87)	5.9 ± 3.4	1.4 ± 1.3	0.4 ± 0.9	0.8 ± 1.1	8.5 ± 4.8
No	52 (13)	4.2 ± 4.1	1 ± 1.5	0.1 ± 0.3	0.5 ± 0.8	5.7 ± 5
Statistics		**U=6942.5**	**U=6880**	**U=7403**	U=7822	**U=6207**
		p=0.006	***p=0.004**	***p=0.002**	p=0.080	**p<0.001**
Status of knowing the early signs of breast cancer						
Yes	136 (34)	6.9 ± 2.4	1.1 ± 1.5	0.8 ± 1.1	1.4 ± 1.4	10.3 ± 4.8
No	264 (66)	5 ± 3.8	1.4 ± 1.2	0.1 ± 0.5	0.4 ± 0.6	7 ± 4.5
Statistics		**U=13234.5**	**U=21905**	**U=12037**	**U=9054**	**U=12234**
		****p<0.001**	****p<0.001**	****p<0.001**	****p<0.001**	****p<0.001**

*P<0.05; **=p<0.000; U:Mann Whitney U testi; χ2:Kruskal Wallis; BC: Breast Cancer; BSE: Breast Self-Exam; BCAM-A: Breast Cancer Awareness Measure Arabic; Letters (a. b) There is no difference between groups with the same letter.

The 'Symptoms', 'Screening Programs' and 'BSE' sub-sections and 'Total Awareness' mean scores of the participants with a breast disease were found to be higher than those without a breast disease. This finding is also statistically significant ($p<0.001$).

The mean scores for the 'Symptoms', 'Screening Programs' and 'BSE' sub-sections and the mean 'Total Awareness' score were found to be higher in the participants who knew how BC was diagnosed, which is a statistically significant finding ($p<0.001$).

The mean scores for the 'Symptoms', 'Risk Factors' and 'Screening Programs' sub-sections of the BCAM-A were found to be higher in the participants who believe that the chance of surviving cancer increases with early detection than women who do not ($p<0.05$).

Table 4. ***Comparison of Some Characteristics of The Participants Regarding BCAM-A and BC Early Diagnosis Applications***

		Awareness levels for BC				
	n (%)	**Symptoms Of BC**	**Risk Factors**	**Screening Programs**	**BSE**	**Total BCAM-A**
Status of received information about early diagnosis						
Yes	79(19.8)	7 ± 3.3	1.7 ± 1.9	1.3 ± 1.3	1.9 ± 1.7	12 ± 6
No	321(80.3)	5.3 ± 3.5	1.2 ± 1.2	0.1 ± 0.4	0.5 ± 0.6	7.2 ± 4
Statistics		**U=9683**	U=11047	**U=6628.5**	**U=6639**	**U=6933**
		***p=0.001**	p=0.065	****p<0.001**	****p<0.001**	****p<0.001**
Source of information on early diagnosis of breast cancer						
Healthcare worker	21(5.3)	5.2 ± 2.4a	1.6 ± 0.9	0.3 ± 0.9a	0.7±1.2a	7.8 ± 3.4a
From your friends	31(7.8)	8.4 ± 3.3b	2.1 ± 2.6	2.3 ± 1b	3.5 ± 1b	16.3 ± 5.6b
From social media	27(6.8)	5.2 ± 3.1a	1.4 ± 1.2	0.6 ± 0.9c	0.8±1.2a	8.1 ± 4.4a
Not informed	321(80.3)	5.5 ± 3.5a	1.2 ± 1.2	0.2 ± 0.5a	0.5±0.6a	7.3 ± 4.2a
Statistics		**χ2=21.00**	χ2=4.812	**χ2=137.499**	**χ2=92.56**	**χ2=56.243**
		****p<0.001**	p=0.186	****p<0.001**	****p<0.001**	****p<0.001**
Mammography status						
Yes	20 (5)	7.2 ± 4.6	2.2 ± 2.6	1.8 ± 1.5	2.5 ± 1.9	13.6 ± 9.2
No	380 (95)	5.6 ± 3.4	1.3 ± 1.2	0.3 ± 0.7	0.7 ± 1	7.8 ± 4.4
Statistics		**U=2718.5**	U=3264	**U=1878**	**U=74390**	**U=2453**
		***p=0.030**	p=0.268	****p<0.001**	****p<0.001**	***p=0.007**
Frequency of BSE						
Once a month	14 (3.5)	8.7 ± 4.1a	2.9 ± 3	2.5 ± 1.1a	3.4 ± 1.5a	17.6 ± 7a
At irregular intervals	15 (3.8)	8.4 ± 3.5a	1.7 ± 2.2	1.9 ± 1.3a	3 ± 1.5a	15.1 ± 6.4a
Who did not	371 (92.8)	5.4 ± 3.4b	1.3 ± 1.2	0.2 ± 0.6b	0.6 ±0.8b	7.5 ± 4.1b
Statistics		**χ2=21.44**	χ2=5.084	**χ2=93.275**	**χ2=60.46**	**χ2=44.789**
		****p<0.001**	p=0.079	****p<0.001**	****p<0.001**	****p<0.001**
Reason for not having mammography with CBE						
Shame	4 (11)	5.8 ± 2.6ab	0.9 ± 0.9a	0.4 ± 0.9ab	0.9 ± 1a	8 ± 3.7ab
Did not know where	141(35.3)	6.8 ± 2.9a	1.3±1.4ab	0.2 ± 0.4a	0.5±0.6ab	8.9 ± 3.6a
Unaware of the necessity	31(7.8)	4.7 ± 3b	1.7±0.9b	0 ± 0.2a	0.2 ± 0.5b	6.6±3.4ab
Afraid of cancer	40(10)	3.8 ± 3.1b	1.1± 1ab	0.2 ± 0.5ab	0.5±0.9ab	5.6 ± 3.8b
Neglect	12(3)	2.5 ± 3.3b	1.4 ±1ab	0.4 ± 0.8ab	0.8±1.4ab	5.2±5.2ab
Afraid of mammography	12(3)	4 ± 3.3ab	1.2±0.9ab	0.5 ± 1ab	1.1 ± 1a	6.8±3.8ab
Had no disabilities	120(30)	5.6 ± 4.1ab	1.5±1.6ab	0.7 ± 1.2b	1.1 ± 1.5a	9 ± 6.5a
Statistics		**χ2=39.36**	**χ2=14.242**	**χ2=18.040**	**χ2=23.71**	**χ2=27.446**
		****p<0.001**	**p=0.027**	***p=0.006**	***p=0.001**	****p<0.001**

*P<0.05; **=p<0.000; U:Mann Whitney U testi; χ2:Kruskal Wallis; BC: Breast Cancer; CBE: Clinical Breast Examination; BSE: Breast Self-Exam; BCAM-A: Breast Cancer Awareness Measure Arabic; Letters (a. b) There is no difference between groups with the same letter.

The participants who received information about early diagnosis were found to have higher mean scores for the 'Symptoms', 'Screening Programs', and 'BSE' sub-sections of the BCAM-A and a higher 'Total Awareness' mean score than those who did not receive information, which is statistically significant (p<0.001) (Table 4).

Another statistically significant finding is that the participants who had mammography were found to have higher 'Symptoms', 'Screening Programs', and 'BSE' sub-section mean scores and 'Total Awareness' mean score than those who did not.

The participants who knew where mammography was applied had higher mean scores for the 'Symptoms', 'Screening Programs' and 'BSE' sub-sections of the BCAM-A and a higher 'Total Awareness' mean score compared to those who did not. This finding is also statistically significant (p<0.001).

A statistically significant difference was observed between the 'Symptoms', 'Screening Programs' and 'BSE' sub-section mean scores, the 'Total Awareness' mean score, and the frequency of BSE. The awareness level of the participants who performed BSE once a month or at irregular intervals was found to be higher than those who did not (p<0.001).

It was found that the participants who did not know where mammography is performed in CBE the had higher awareness level regarding the "Symptoms" of BC. These participants were followed by those who had no disabilities, who were afraid of cancer, and who were unaware of the necessity of having mammography with CBE. All these comparisons are statistically significant (p<0.001).

DISCUSSION

Our study revealed that the participants' risk score for BC was 162.35±97.25 (50-675), and 21 participants were found to be at high risk for BC. This finding is similar to study conducted with immigrant women (Hazra et al., 2023). In a study, the BC risk score of the participants was determined as 146.5±63.9 (50-580), and it was found that 26 women had a high risk for BC (Esen, Taş, Öztürk and Toprak, 2020). Our study was conducted with immigrant women, which may be the reason why our finding is different from those in the literature.

In our study, 52% of the participants are between the ages of 30-40 and their ORP is 124.49+68.67. It was observed that the risk of BC increased with age. This finding coincides with the findings in the literature (Aslan and Gürkan, 2007; Sun et al., 2017; Yeung, Chan, Wong, Yip and Cheung, 2019; Esen et al., 2020).

Our findings also revealed an increase in the BC risk scores of women when there is a family history or a personal history of BC, when the person is overweight, and when there is a late or early menstrual history". These findings also coincide with those in the literature (Sun et al., 2017; Esen et al., 2020; American Cancer Society, 2021).

The women whose age at first birth is 30 and over are at higher risk of BC than those who were younger at first birth (American Cancer Society, 2021; Canadian Cancer Society, 2021). A study revealed that 60.9% of the participants gave their first birth before the age of 30 and these participants had lower risk for BC (Aslan and Gürkan, 2007). It has been reported that having the first pregnancy at a late age increases the risk of BC (Siegel, Miller and Jemal, 2017), and each additional birth reduces the risk of BC between 5% and 10% (Dall and Britt, 2017). Our study showed that 88.8% of the immigrant women were below the age of 30 at first birth and their ORP was 156.95+94.50. This means that these participants had a low risk of BC. In addition, it was found that the number of children the participants have is high, the age of marriage is low and the age of birth is low, which is attributed to cultural differences.

The total BCAM-A score of the participants was found to be low. A study conducted in China with 1000 participants revealed that 62.6% of the participants were not sure whether they would notice a change in the breast (Yeung et al., 2019). Furthermore, a study conducted with Saudi women in Jedda showed that the BC awareness level of the participants was very low (Radi, 2013). This may be attributed to the fact that the women in the study had a low level of education and had to immigrate during war, which may negatively affect the implementation of preventive health behaviors.

The awareness level score of the participants for BC 'Risk Factors' was found to be 1.3 (0-9). In other studies, this rate was found to be 4.7 (Qadire, Aljezawi and Al-Shdayfat, 2017), 4.2 (Alawa, Hamade, Alayleh, Fayad and Khoshnood, 2020) and 5.2 (Sama et al., 2017). This finding may be due to the fact that the majority of women do not have enough information about the risk factors for BC.

The BC awareness level of the Syrian immigrant women with higher education levels was found to be higher than those with low education level. Similar results were found in other studies (Güzel and Bayraktar, 2019; Alawa et al., 2020; Babaoğlu, Büyüközmen and Can, 2021; Radi, 2013). These findings once again reveal that the level of education plays an important role in health knowledge and awareness. The fact that individuals with a higher level of education are more conscious and proactive against health risks is an important factor that should be taken into consideration in order to increase the effectiveness of health policies and education programs.

Our findings revealed that the participants with a familial history of BC were found to have higher awareness of BC than those without a familial history of BC. A study which evaluated BC risk factors in a 10-year period specified familial BC history as a BC risk factor (Poehls et al., 2019). Other studies also indicate that a family history of BC increases the risk of BC in women (Sama et al., 2017; Rahman et al., 2019). A study showed that women with a familial history of BC had a higher rate of mammography than those who did not (Babaoğlu et al., 2021). Having a family member with BC may increase the sensitivity of an individual to the disease.

Our study revealed that the BC 'Risk Factors' awareness level of the women who had menstruation before age 11 is higher than those who had their first menstruation after age 11. This finding coincides with the findings in the literature (Sun et al., 2017; Sama et al., 2017; Güzel and Bayraktar, 2019). Early menarche may have different effects on hormonal changes and health awareness processes, which suggests that special strategies should be developed for different age groups in health education programs.

Awareness of BC was found to be higher in the women who believe that the chance of surviving cancer will increase with early diagnosis compared to the women who do not. Other study in the literature has revealed that the awareness of immigrant Muslim women about BC and screening methods is low (Zorogastua et al., 2017). The study conducted by Radi (2013) showed that 71.5% of the women were aware of BC screening programs, but only 20.5% had BC screening. These results show that awareness of early detection and screening methods plays an important role in the fight against cancer. However, the low levels of awareness in some groups, especially immigrant women, indicate that health education should be implemented in a more customized and culturally sensitive manner. In addition, the low participation rates in screening programs indicate that difficulties in accessing health services and accessing information should be taken into account.

Our study revealed that the women who knew BC screening methods had higher levels of awareness than those who did not. Similar results were found in the study by Alsaraireh and Darawad (2017). In addition, our study showed that 68.5% of the Syrian immigrant women were not aware of the BC screening methods. Another study revealed that 46.1% of the immigrant Syrian immigrant women were not aware of the BC screening methods (Alawa et al., 2020). It is important to determine the BC knowledge level of disadvantaged women and to support them with trainings.

The BCAM-A score of the participants who received information about the BC screening methods was found to be higher than those who did not. Studies conducted with immigrant Muslim women revealed that they have insufficient knowledge about BC (Silbermann et al., 2016; Racine et al., 2021). These results highlight the importance of educational interventions and culturally sensitive awareness programs aimed at increasing health awareness. It is understood that the barriers to accessing health services and accessing information, especially for socially and culturally marginalized groups such as immigrant women, should be eliminated so that these groups can learn more about vital health issues such as breast cancer.

Our study showed that 95% of the participants did not have mammography and the BC awareness level of the women who had mammography was higher than those who did not. Mammography is a screening method used to detect BC, and it helps reduce mortality (Alhomsi, 2020). A study revealed that 70% of the participants did not know about mammography (Omar, Bakr and Ibrahim, 2020). Studies have found that the rate of women not having a mammogram was 88% (Güzel and Bayraktar, 2019) and 74.7% (Saçıkara and Koçoğlu Tanyer, 2021). These findings can be attributed to language problems, culture, living conditions, beliefs, and socioeconomic conditions.

Our findings revealed that the biggest obstacle in having screening is not knowing the place where screening is performed. Other studies listed the factors that prevent screening as follows: pain while having a mammogram (Omar et al., 2020), not wanting to be examined by a male health professional (Alatrash, 2020), lack of health insurance (Qadire et al., 2017; Alawa et al., 2020), and lack of knowledge (Babaoğlu et al., 2021). These findings point to the importance of informing immigrant women in detail about screening practices.

CONCLUSIONS

It was found that the awareness level of the participants about BC was low. It was further revealed that the education level of the participants and their BC awareness levels were inversely proportional. In addition, it was determined that most of the women knew about BC early diagnosis practices, yet do not apply them.

The Syrians are the highest number of immigrants worldwide. BC among Muslim women is increasing at an alarming rate in the Arab world, including Syrian immigrant women. There are very few studies on the BC awareness levels of the disadvantaged women who have migrated from Syria. For this reason, this study is believed to make an important contribution to the literature.

It is recommended that informative activities be implemented in Arabic in order to raise the awareness of Syrian immigrant women about BC and BC screening practices. Women should be informed about the disease and the diagnosis methods in public places such as schools, mosques, associations, and shopping centers to increase their awareness. It is recommended to organize training programs on risk factors for BC, which may encourage the immigrant women in the disadvantaged group to increase their healthy lifestyle behaviors.

Author Contributions

Concept and design: T.Y.B., B.A. Data collection: T.Y.B. Data analysis and interpretation: T.Y.B., B.A. Writing manuscript: T.Y.B., B.A. Critical review: T.Y.B., B.A.

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: The authors declared that this study has received no financial support

KAYNAKLAR

Akram, M., Iqbal, M., Daniyal, M., & Khan, A.U. (2017). Awareness and current knowledge of breast cancer. *Biol Res, 50*, 33. https://doi.org/10.1186/s40659-017-0140-9

Al-Khasawneh, E., Leocadio, M., Seshan, V., Siddiqui, S., Khan, A., & Al-Manaseer, M. (2016). Transcultural adaptation of the Breast Cancer Awareness Measure. *International Nursing Review, 63*(3), 445–454. https://doi.org/10.1111/inr.12265

Alatrash, M. (2020). Prevalence, perceived benefits, and perceived barriers regarding breast cancer screening among three Arab American women subgroups. Journal of Transcultural Nursing: Official *Journal of the Transcultural Nursing Society, 31*(3), 242–249. https://doi.org/10.1177%2F1043659619859058

Alawa, J., Hamade, O., Alayleh, A., Fayad L., & Khoshnood, K. (2020). Cancer Awareness and Barriers to Medical Treatment Among Syrian Refugees and Lebanese Citizens in Lebanon. *J Canc Educ, 35*, 709–717. https://doi.org/10.1007/s13187-019-01516-3

Alhomsi, K. (2020). Breast Cancer Screening Campaign of 2018 and 2019 at Al-Mouwasat University Hospital in Damascus. *Syria Chemistry Research Journal*, *5*(6), 6-12. Available from: https://aspu.edu.sy/site/english/index.php?node=55190&cat=77596&First=11&Last=176&CurrentPage=11&wid=1136&refBack=

Alsaraireh, A., & Darawad, M.W. (2017). Breast cancer awareness, attitude and practices among female university students: A descriptive study from Jordan. *Health Care for Women International,* 1-13. https://doi.org/10.1080/07399332.2017.1368516

American Cancer Society. (2014). Breast Cancer Prevention and Early Detection. Available from: URL:http://www.cancer.org/cancer/breastcancer/moreinformation/ breastcancerearlydetection/index.

American Cancer Society. (2021). Breast Cancer. Available from: https://www.cancer.org/cancer/breast-cancer/risk-and-prevention/breast-cancer-risk-factors-you-cannot-change.html.

Aslan, F.E., & Gürkan, A. (2007). The Risk Of Breast Cancer At The Women. *The Journal Of Breasth Health, 3* (2), 63-68. Available from: https://cms.galenos.com.tr/Uploads/Article_42688/ejbh-3-63-En.pdf

Babaoğlu, A.B., Büyüközmen, E., & Can, F.E. (2021). Awareness of Cancer Screening Tests in the Community in Izmir and Factors Affecting the Participation of Individuals in Cancer Screening Tests. *Med J West Black Sea, 5*(2), 173-181. https://doi.org/10.29058/mjwbs.853692

Bekteshi, V., & Schootman, M. (2024). Bridging gaps in breast cancer screening: a comparative study of mexican women in u.s. rural and urban areas. *Journal of Primary Care & Community Health,* 15. https://doi.org/10.1177/21501319241295916

Boulos, D. N., & Ghali, R.R. (2014). Awareness of breast cancer among female students at Ain Shams University, Egypt. *Glob J Health Sci, 6*, 154. https://doi.org/10.5539/gjhs.v6n1p154

Canadian Cancer Society. (2021). Early detection and screening for breast cancer. Available from: https://www.cancer.ca/en/region-selector-page/?url=%2fen%2fabout-us%2fpage-not-found%2f.

Canadian Cancer Society. (2021). Causes of Breast Cancer. Available from: http://www.cancer.ca/.

Cancer Research. (2021). The Cancer Awareness Measures. Available from: https://www.cancerresearchuk.org/health-professional/awareness-and-prevention/the-cancer-awareness-measures-cam.

Eroğlu, C., Eryılmaz, M.A., Cıvcık, S., & Gürbiz, Z. (2010). Breast Cancer Risk Assessment: 5000 Cases. *International Journal of Hematology-Oncology, 20*(1), 27-33. Available from: https://www.uhod.org/pdf/PDF_389.pdf

Esen, E.S., Taş, B.G., Öztürk, G.Z., & Toprak, D. (2020). Determination of breast cancer risk level in women 18 years of age or older. *Turkish Journal of Family Practice, 24*(1), 32-40. https://doi.org/10.15511/tahd.20.00132

General Directorate of Migration Management. (2021). Strategic Plan 2017-2021. Available from: https://www.goc.gov.tr/kurumlar/goc.gov.tr/evraklar/Stratejik-Yonetim/Stratejik-Planlar/yeni/Stratejik-Plan-2017_2021.pdf

Guruge, S., Hunter, J., Barker, K., McNally, M., & Magalhães, L. (2010). Immigrant women's experiences of receiving care in a mobile health clinic. *Journal of Advanced Nursing, 66*(2), 350-359. https://doi.org/10.1111/j.1365-2648.2009.05182.x

Güzel, N., & Bayraktar, N. (2019). Determining Women's Awareness and Practices for Early Diagnosis of Breast Cancer. *HUHEMFAD, 6*(2), 101-110. Available from: https://dergipark.org.tr/en/download/article-file/773957

Hazra, A., Ullrich, A., & Nimri, O. (2023). Disparities in breast cancer characteristics among Syrian migrants and jordanian women in the jordan cancer registry from 2010 to 2016. *Jama Network Open,* 6(7), e2325197. https://doi.org/10.1001/jamanetworkopen.2023.25197

Htay, M.N., Donnelly, M., Schliemann, D., Loh, S.Y., Dahlui, M., Tamin, N.S.B., Somasundaram, S., & Su, T.T. (2020). Translation and Validation of the Breast Cancer Awareness Measurement Tool in Malaysia. *Asian Pac J Cancer Prev, 21*(1), 217–223. https://doi.org/10.31557/APJCP.2020.21.1.217

Husna, P.H., Marni Nurtanti, S., Handayani, S., Ratnasari, N.Y., Ambarwati, R., & Susanto, T. (2019). Breast self-examination education for skill and behavior. *Educ Health (Abingdon), 32*, 101–2. https://doi.org/10.4103/efh.EfH_226_18

IBM Corporation. (2011). *IBM SPSS Statistics for Windows, Version 20.0*. IBM Corporation.

Islam, N., Patel, S., Brooks-Griffin, Q., Kemp, P., Raveis, V., Riley, L., Gummi, S., Queano Nur, P., Ravenell, J., Cole, H., & Kwon, S. (2017). Understanding barriers and facilitators to breast and cervical cancer screening among Muslim women in New York City: Perspectives from key ınformants. *S.M. Journal of Community Medicine, 3* (1): 1–11. https://pubmed.ncbi.nlm.nih.gov/29629435/

Jahan, S., Al-Saigul, A.M., & Abdelgadir, M.H. (2006). Breast cancer. Knowledge, attitudes and practices of breast self examination among women in Qassim region of Saudi Arabia. *Saudi Med J, 27*, 1737-41. https://pubmed.ncbi.nlm.nih.gov/17106553/

Khan, T.M., Leong, J.P., Ming, L.C., & Khan, A.H. (2015). Association of knowledge and cultural perceptions of Malaysian women with delay in diagnosis and treatment of breast cancer: a systematic review. *Asian Pac J Cancer Prev, 16*, 5349–57. https://doi.org/10.7314/apjcp.2015.16.13.5349

Linsell, L., Burgess, C.C., & Ramirez, A.J. (2008). Breast cancer awareness among older women. *Brit J Cancer, 99*, 1221-1225. https://doi.org/10.1038/sj.bjc.6604668

Madhukumar, S., Thambiran, U.R., Basavaraju, B., & Bedadala, M.R. (2017). A study on awareness about breast carcinoma and practice of breast self-examination among basic sciences' college students, Bengaluru. *J Family Med Prim Care, 6* (3), 487–490. https://doi.org/10.4103/2249-4863.222026

Morey, B., Gee, G., Ehrenstein, O., Shariff-Marco, S., Canchola, A., Yang, J., … & Gomez, S. (2019). Higher breast cancer risk among immigrant asian american women than among us-born asian american women. *Preventing Chronic Disease,* 16. https://doi.org/10.5888/pcd16.180221

Omar, A., Bakr, A., & Ibrahim, N. (2020). Female medical students' awareness, attitudes, and knowledge about early detection of breast cancer in Syrian Private University, Syria. *Heliyon, 6*(4), e03819. https://doi.org/10.1016/j.heliyon.2020.e03819

Poehls, U., Hack, C.C., Wunderle, M., Renner, S.P., Lux, M.P., Beckmann, M.W., Fasching, P.A., & Nabieva, N. (2019). Awareness of breast cancer incidence and risk factors among healthy women in Germany: an update after 10 years. *European Journal of Cancer Prevention, 28*(6), 515-521 https://doi.org/10.1097/CEJ.0000000000000500

Racine, L., Andsoy, I., Maposa, S., Vatanparast, H., & Fowler-Kerry, S. (2021). Examination of Breast Cancer Screening Knowledge, Attitudes, and Beliefs among Syrian Refugee Women in a Western Canadian Province. *Canadian Journal of Nursing Research, 54 (2), 177-189*. https://doi.org/10.1177/08445621211013200

Radi, S.M. (2013). Breast Cancer Awareness among Saudi Females in Jeddah. *Asian Pacific Journal of Cancer Prevention, 14*(7), 4307–4312. https://doi.org/10.7314/apjcp.2013.14.7.4307

Rahman, S.A., Al–Marzouki, A., Otim, M., Khayat, N.E.H., Yousef, R., & Rahman, P. (2019). Awareness about Breast Cancer and Breast Self-Examination among Female Students at the University of Sharjah: A Cross-Sectional Study. *Asian Pac J Cancer Prev, 20*(6), 1901–1908. https://doi.org/10.31557/APJCP.2019.20.6.1901

Qadire, M.A., Aljezawi, M., & Al-Shdayfat, N. (2017). Cancer awareness and barriers to seeking medical help among Syrian refugees in Jordan: a baseline study. J Cancer Educ, *34*, 19-25. https://doi.org/10.1007/s13187-017-1260-1

Saçıkara, Z., & Koçoğlu-Tanyer, D. (2021). Participation and Knowledge of Rural Women in Cervical and Breast Cancer Screening. *Journal of Continuing Medical Education, 30* (1), 43-52. https://doi.org/10.17942/sted.652657

Sama, C.B., Dzekem, B., Kehbila, J., Ekabe, C.J, Vofo, B., Abua, N.L., & Angwafo, F.A. (2017). Awareness of breast cancer and breast self-examination among female undergraduate students in a higher teachers training college in Cameroon. *Pan African Medical Journal, 28*. https://doi.org/10.11604/pamj.2017.28.91.10986

Schliemann, D., Donnelly, M., Dahlui, M., Loh, S.Y., Ibrahim, N.S., Somasundaram, S., Donnelly, C., & Su, T.T. (2018). The 'Be Cancer Alert Campaign': protocol to evaluate a mass media campaign to raise awareness about breast and colorectal cancer in Malaysia. *BMC Cancer, 18*, 881. https://doi.org/10.1186/s12885-018-4769-8

Siegel, R.L., Miller, K.D., & Jemal, A. (2017). Cancer statistics. *Cancer J Clin, 67*, 7-30. https://doi.org/10.3322/caac.21387

Silbermann, M., Daher, M., Kebudi, R., Nimri, O., Al-Jadiry, M., & Baider, L. (2016). Middle eastern conflicts: implications for refugee health in the European Union and middle eastern host countries. *J Glob Oncol, 2*(6), 422–430. https://doi.org/10.1200/JGO.2016.005173

Stewart, B.W., & Wild, C.P. (2014). World Cancer Report 2014. Cenevre, İsviçre: WHO Press. https://doi.org/10.3945/an.116.012211

Sun, Y.S., Zhao, Z., Yang, Z.N., Xu, F., Lu, H.J., Zhu, Z.Y., Shi, W., Jiang, J., Yao, P.P., & Zhu, H.P. (2017). Risk Factors and Preventions of Breast Cancer. *Int J Biol Sci, 13*(11), 1387-1397. https://doi.org/10.7150/ijbs.21635

Example of Sultanbeyli. (2018). Syrians in Turkey in their 6th Year. Available from: https://www.raporlar.org/wp-content/uploads/2018/04/6-yilinda-Turkiyedeki-suriyeliler-sultanbeyli-ornegi.pdf 11-14.

T.C. Ministry of Health, General Directorate of Public Health, Department of Cancer. (2020). Breast Cancer Screening Program National Standards. Available from: https://hsgm.saglik.gov.tr/tr/kanser-tarama-standartlari/listesi/meme-kanseri-tarama-program%C4%B1-ulusal-standartlar%C4%B1.html.

Zorogastua, K., Sriphanlop, P., Reich, A., Aly, S. Cisse, A., & Jandorf, L. (2017). Breast and cervical cancer screening among U.S. and non-U.S. born African American Muslim women in New York City. *AIMS Public Health, 4*(1), 78–93. https://doi.org/10.3934/publichealth.2017.1.78

Yeung, M.P.S., Chan, E.Y.Y., Wong, S.Y.S., Yip, B.H.K., & Cheung, P.S.Y. (2019). Hong Kong female's breast cancer awareness measure: Cross-sectional survey. *World J Clin Oncol, 10*(2), 98-109. https://doi.org/10.5306/wjco.v10.i2.98

Waks, A.G., & Winer, E.P. (2019). Breast Cancer Treatment: A Review. *JAMA, 321*(3), 288–300. https://doi.org/10.1001/jama.2018.19323.

World Health Organisation. (2018). 10 Facts About Cancer. Available from: http://www.who.int/features/factfiles/cancer/en/.

World Health Organization. (2019). Breast cancer: Early diagnosis and screening. https://www.who.int/cancer/prevention/diagnosis-screening/breast-cancer/en/