**Original Article/Özgün Araştırma**

# Knowledge, Attitudes and Practices of Female Healthcare Providers Regarding Breast Cancer

## Kadın Sağlık Çalışanlarının Meme Kanseri Konusunda Bilgi, Tutum ve Davranışları

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**ABSTRACT**

Objective: This study was planned to determine the level of knowledge about breast cancer (BC) and attitudes and practices towards BC in female healthcare providers. Thereby, it was aimed to identify the level of awareness, which is intended to be improved in the community, among female healthcare providers; the topics of failure; attitudes and practices towards screening programs; and factors involved in these areas. Method: The study sample consisted of 266 female healthcare providers. In all participants, a 29-item questionnaire was completed by the face-to-face interview method. The questionnaire included items about sociodemographic characteristics, and level of knowledge, attitudes and practices in BC. Each correct answer was rated as one point while no score was assigned to incorrect answers which were excluded. Data were analyzed by SPSS version 22.0 (SPSS Inc., Chicago, IL, USA). Results: The mean age was 30.29 ± 0.55 years. Of subjects, 47.7% (n=127) were physicians, 48.1% (n=128) were nurses while 4.2% (n=11) were other healthcare providers. Significant differences were found in the level of knowledge according to marital status, educational level and age. Of the factors affecting participation in screening programs, marital status, educational level, age, and duration of a professional career. It was found that the level of knowledge regarding BC was high while the participation rate for screening programs was low among subjects.Conclusion: It was found that knowledge level was high while the participation rate for screening programs were rather low among female healthcare providers. This shows that there should be studies in order to increase the participation of female healthcare providers in screening programs.

**Keywords:** Healthcare providers, breast cancer, knowledge, attitude, practice

**ÖZET**

Amaç: Bu çalışma, kadın sağlık çalışanlarının meme kanseri ile ilgili bilgi düzeyi, meme kanserine karşı tutum ve davranışlarını belirlemek amacıyla planlanmıştır. Böylece toplumda oluşturulmak istenen meme kanseri konusundaki bilincin öncelikle ne kadarının kadın sağlık çalışanlarında mevcut olduğu, hangi konularda eksikliklerin bulunduğu, tarama programlarına karşı tutum ve davranışların ne düzeyde olduğu ve bunları etkileyen faktörlerin neler olduğu tespit edilmeye çalışıldı. Gereç ve Yöntem: Çalışmaya 266 kadın sağlık çalışanı katıldı. Tüm katılımcılara yüz yüze görüşme yöntemi ile 29 soruluk, araştırmacılar tarafından hazırlanan bir anket uygulandı. Anket formu; sosyodemografik bilgileri ve meme kanseri bilgi, tutum ve davranışlarını belirlemeye yönelik sorulardan oluşuyordu. Her bir doğru cevaba bir puan verilirken, yanlış cevaplar puanlandırılmadı. Veriler SPSS version 22.0 (SPSS Inc., Chicago, IL, USA) ile analiz edildi.Bulgular: Yaş ortalaması 30,29 ± 0,55 yıl idi. Katılımcıların %47,7 (n=127)'sini hekimler, %48,1 (n=128)'ini hemşireler, %4,2 (n=11)'sini diğer sağlık personelleri oluşturmaktaydı. Çalışmaya katılan kadın sağlık çalışanlarının meme kanseri ile ilgili bilgi düzeyleri ile medeni durum, eğitim seviyesi ve yaş arasında istatistiksel olarak anlamlı fark bulundu. Tarama programlarına katılımı etkileyen faktörler ise medeni durum, eğitim seviyesi, yaş ve meslekte geçen süre idi. Katılımcıların meme kanseri hakkında bilgi düzeyleri yüksek saptanırken, tarama programlarına uyumları oldukça düşük olarak tespit edilmiştir. Sonuç: Yaptığımız çalışmada kadın sağlık çalışanlarının genel olarak meme kanseri hakkında bilgi düzeyleri yüksek iken tarama programlarına katılımları oldukça düşük olarak tespit edildi. Bu durum kadın sağlık çalışanlarının tarama programlarına katılımını arttırmak için çalışmaların olması gerektiğini göstermektedir.

**Anahtar Kelimeler:** Sağlık çalışanları, meme kanseri, bilgi, tutum, davranış

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## INTRODUCTION

Breast cancer is the most common type of cancer seen in women. It accounts for 23% of all cancers and 14% of cancer-related deaths among women. It is the second most common cause of cancer-related deaths following lung cancer; however, it is the primary cause of cancer-related deaths in women at fifth and sixth decades.[1] It is estimated that invasive BC will develop in one of eight women in a lifetime.[2]

Given that BC is significant morbidity and mortality according to epidemiological data, Turkish Health Ministry recommends implementing a screening program for breast cancer.[3] In order to implement such a program, all healthcare providers should have sufficient knowledge and be equipped with early recognition and screening of BC and must inform all potential patients by accurate knowledge. The healthcare providers should support efforts for improving awareness in the community and implementing screening programs and be involved in attempts for reducing morbidity and mortality by early diagnosis and timely treatment.

Haji Mahmodi et al. conducted a similar study on 410 female healthcare providers in Iran. The authors found that the breast self-exam (BSE) rate was significantly correlated to age, educational level and history of breast disease. It was also found that 63% of participants had sufficient knowledge about how to perform BSE but only 6% regularly performed BSE monthly.[4] In another study, Çiçeklioğlu et al. measured level of knowledge, attitudes and practices among healthcare providers in 23 primary care facilities and attempted to identify changes in attitudes, and behaviors regarding BC after the one-day training program. Authors observed significant improvements in scores on level of knowledge, skills of BSE and practice of BSE in nurses and midwives after a training program.[5]

In our study, we attempted to determine the level of knowledge about BC and attitudes and practices against BC among female healthcare providers. Thereby, we attempted to identify the level of awareness, which is intended to be improved in the community, among female healthcare providers; the topics of failure; attitudes and practices towards screening programs; and factors involved in these areas.

## MATERIAL AND METHOD

In this descriptive, cross-sectional study, the study sample included female healthcare providers working in the medical and surgical departments of Istanbul Haydarpasa Numune Teaching and Research Hospital in October 2016.

The study was approved by Institutional Ethics Committee of Haydarpasa Numune Teaching and Research Hospital (approval #: HNEAH KAEK 2016/KK/86).

In this study, the target population consisted of 430 female healthcare providers including 220 female clinicians, 210 nurses and other healthcare providers (technicians, psychologists, and dieticians). The sample size was calculated as 251 within confidence interval of 95% and confidence level of 4%. Thus, the study included 266 female healthcare providers aged >18 years who voluntarily completed the questionnaire. The questionnaire included 2 domains: first domain has 6 items on demographic data and the second domain has 23 items on level of knowledge, attitudes, and practices regarding BC. Of items, 6 were close-ended questions while remaining were open-ended questions rated by 3-points Likert scale. The correct answers regarding the level of knowledge were defined according to data at www.kanser.gov.tr. Each correct answer was rated by one point while no score was assigned to incorrect answers. Data were compared according to demographics.

Data were analyzed by using SPSS version 22.0 (SPSS Inc., Chicago, IL, USA). Quantitative data are presented as mean ± standard deviation while categorical data are presented as count (percent). The distribution of quantitative data was assessed by the Kolmogorov-Smirnov test. Logarithmic transformation was performed to continuous data with skewed distribution. The Student's t-test was used for comparisons between 2 groups while one-way ANOVA was used to compare more than 2 groups. When a significant difference was found in one-way ANOVA, Bonferroni corrected t-test was used for binary comparisons. Pearson's correlation analysis was used to assess associations between quantitative data. Chi-square test was used to compare categorical data. A p value<0.05 was considered as statistically significant.

**RESULTS**

Mean age was 30.29 ± 0.55 years. Of 266 female healthcare providers, 48.5% (n=129) were married whereas 51.5% (n=137) were single (unmarried or widow). Of subjects, 12.4% (n=33) were senior physicians; 35.3% (n=94) were residents; and 48.1% (n=128) were nurses. The minority of participants were technicians (1.9%; n=5) and other healthcare providers including dieticians, psychologists, and physiotherapists (2.3%; n=6).

When duration of a professional career was assessed, it was found to be 0-9 years in 72.6% (n=193), 10-19 years in 15.8% (n=42), 20-29 years in 8.3% (n=22) and >30 years in 3.4% (n=9). The educational level was assessed, 72.9% (n=194) had a bachelor's degree; 10.5% (n=28) had associate degree, and 16.5% had a high school degree. Of subjects, 169 (63.5%) were working in medical departments while 97 (36.5%) were working in surgical departments.

There was a family history of BC in first-degree relatives in 9.8% (n=26) and in second- or third-degree relatives or surroundings in 39.1% (n=104) of subjects. The history of a breast disease was assessed, 75.6% (n=201) of subjects reported that they did never experience breast-related problem while 24.4% (n=65) reported history of benign breast disease. None of the subjects reported history of BC.

When subjects were compared regarding correct answers in questions about general information, symptoms and risk factors of breast cancer, it was found that knowledge level was significantly higher in married than single subjects ((p<0.01; p<0.01; and p<0.001, respectively); however, no significant difference was found regarding screening methods. The subjects were stratified as physicians, nurses and other healthcare providers; however, other female healthcare providers were not included in the comparison according to their profession due to smaller sample size (n=11). When knowledge level was compared, it was found to be significantly higher among physicians than nurses (p<0.001, p<0.001, p<0.001 and p<0.001, respectively). When the knowledge level was compared according to duration of professional career, no significant difference was found among groups. When knowledge level was compared according to education level, significant difference was found between those with bachelor's degree and those with associate degree or high school degree while no significant difference was found between those associate degree and high school degree (p<0.001, p<0.001, p<0.001 and p<0.001, respectively). The knowledge level regarding symptoms of BC and screening methods was found to be significantly higher in female healthcare providers working in medical departments than those working in surgical departments (p<0.001 and p<0.001, respectively) but no significant difference was detected regarding general information and risk factors for BC between these groups. No significant difference was found in knowledge level according to a family history of BC in first- and/or second-degree relatives of subjects. The knowledge level about general information and risk factors for BC was increased by advancing age (p<0.001) but there was no such relationship regarding knowledge level about symptoms of BC and screening methods (Table 1).

When the proportion of correct answers in questions regarding BSE and mammography was compared according to demographic data, it was found that the proportion of correct answers were significantly higher in married than single subjects (t/p=2.85/0.005 and 4.66/0.000, respectively); in physicians than nurses (t/p=3.01/0.000 and 5.07/0.000, respectively); and in those with bachelor's degree than those with associate degree or high school degree (f/p=12.29/0.000 and 15.69/0.000, respectively). No significant difference was found in knowledge level between subjects with or without a history of breast disease.

Of subjects, 93.2% reported that they know how to perform BSE while only 9.4% reported that they regularly perform BSE every month. When we asked most common cause for not performing regular BSE, the most frequent answer was "I neglect" by 74.3% (Figure 1).

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**Table 1: Comparison of demographic data and history of breast cancer with level of knowledge**

| | Level of knowledge regarding breast cancer | | | |
|---|---|---|---|---|
| | **General Knowledge** | **Symptoms** | **Risk factors** | **Screening methods** |
| **Marital status** | | | | |
| Married (n=129) | 9.97±0.16 | 6.26±2.11 | 5.62±0.08 | 3.84±0.08 |
| Single (n=137) | 9.40±0.16 | 5.62±0.17 | 5.12±0.11 | 3.70±0.08 |
| **p \*** | **<0.01** | **<0.01** | **<0.01** | 0.22 |
| **Profession** | | | | |
| Physician (n=127) | 10.23±0.14 | 5.87±0.04 | 7.18±0.14 | 4.46±0.07 |
| Nurse (n=128) | 9.18±0.17 | 4.92±0.12 | 4.76±0.18 | 3.17±0.04 |
| **p \*** | **<0.01** | **<0.01** | **<0.01** | **<0.01** |
| **Duration of professional career** | | | | |
| 0-9 years (n=193) | 9.55±0.14 | 5.96±0.16 | 5.30±0.09 | 3.82±0.07 |
| 10-19 years (n=42) | 9.78±0.26 | 5.76±0.33 | 5.52±0.14 | 3.78±0.16 |
| 20-29 years (n=22) | 10.22±0.38 | 5.68±0.50 | 5.59±0.21 | 3.45±0.15 |
| ≥30 years (n=9) | 10.55±0.70 | 5.44±0.70 | 5.44±0.33 | 3.22±0.14 |
| **p \*\*** | 0.20 | 0.82 | 0.54 | 0.11 |
| **Educational status** | | | | |
| High school (n=44) | 8.36±0.28 | 4.00±0.26 | 4.45±0.22 | 3.15±0.08 |
| Associate degree (n=28) | 9.28±0.42 | 4.57±0.39 | 5.10±0.23 | 3.17±0.08 |
| Bachelor degree (n=194) | 10.04±0.12 | 6.51±0.14 | 5.60±0.06 | 3.99±0.07 |
| **p \*\*** | **<0.01[a]** | **<0.01[a]** | **<0.01[a]** | **<0.01[a]** |
| **Department employed** | | | | |
| Medical departments (n=169) | 9.80±0.13 | 6.33±0.15 | 5.43±0.08 | 3.94±0.07 |
| Surgical departments (n=97) | 9.47±0.21 | 5.12±0.24 | 5.23±0.12 | 3.47±0.08 |
| **p \*** | 0.17 | **<0.01** | 0.18 | **<0.01** |
| **Family history of breast cancer (first-degree relatives)** | | | | |
| No (n=240) | 9.68±0.12 | 5.87±0.14 | 5.37±0.76 | 3.77±0.06 |
| Yes (n=26) | 9.65±0.41 | 6.07±0.47 | 5.30±0.24 | 3.76±0.19 |
| **p \*** | 0.93 | 0.66 | 0.79 | 0.99 |
| **Family history of breast cancer (second- or third-degree relatives)** | | | | |
| No (n=162) | 9.64±0.14 | 5.80±0.18 | 5.35±0.09 | 3.76±0.07 |
| Yes (n=104) | 9.75±0.20 | 6.02±0.21 | 5.38±0.11 | 3.77±0.09 |
| **p \*** | 0.65 | 0.44 | 0.82 | 0.91 |
| **History of breast disease** | | | | |
| No (n=201) | 9.58±0.13 | 5.86±0.16 | 5.36±0.08 | 3.72±0.06 |
| Yes (n=65) | 10.00±0.23 | 6.00±0.27 | 5.35±0.13 | 3.92±0.12 |
| **p \*** | 0.12 | 0.66 | 0.93 | 0.14 |

[a]*binary comparison: bachelor's degree/high school p<0.05; bachelor's degree/associate degree p<0.05. high school/associate degree p>0.05*

*\*\* variance analysis*

*\* student t test*

**Figure 1:** The distribution of frequency in BSE practice
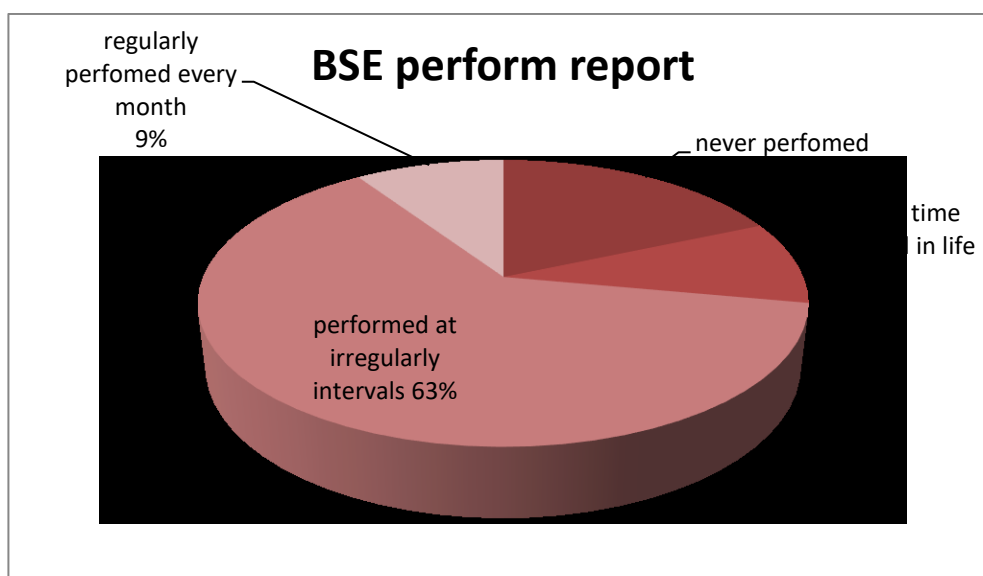


*BSE, breast self-exam*

When all subjects performing BSE were assessed, it was found that the rate of BSE was significantly higher in married than single subjects; in those with a bachelor's degree or associate degree than those with high school degrees. There was no significant difference in performing BSE according to the history of breast disease (Table 2).

The clinical breast examination (CBE) rate was assessed, it was found that married subjects had significantly higher CBE rate than single subjects. The CBE rate was increased by increasing the duration of professional career and educational level. It was found that family history of BC did not increase CBE rate while CBE rate was significantly higher in patients with a history of BC (Table 2).

**Table 2:** Comparison of participation rate for screening programs and demographic data

| | BSE status | | CBE status [c] | Mammography status | |
|---|---|---|---|---|---|
| | Regular BSE monthly [a] | BSE (regularly or irregularly) [b] | | All | Subjects aged <40 years |
| **Marital status** | | | | | |
| Married (n=129) | % 9.3 | % 90.7 | % 40.3 | % 18.6 | % 73.3 |
| Single (n=137) | % 9.5 | % 73.0 | % 16.8 | % 5.1 | % 50.0 |
| **p \*** | 0.95 | **< 0.01** | **< 0.01** | **< 0.01** | 0.17 |
| **Profession** | | | | | |
| Physician (n=127) | % 7.9 | % 85.0 | % 33.1 | % 7.1 | % 53.3 |
| Nurse (n=128) | % 11.7 | % 81.3 | % 24.2 | % 15.6 | % 75.0 |
| **p \*** | 0.59 | 0.52 | 0.15 | 0.05 | 0.29 |
| **Duration of professional career** | | | | | |
| 0-9 years (n=193) | % 7.3 | % 78.8 | % 20.2 | % 1.0 | % 0.0 |
| 10-19 years (n=42) | % 9.5 | % 85.7 | % 38.1 | % 9.5 | % 30.0 |
| 20-29 years (n=22) | % 22.7 | % 95.5 | % 59.1 | % 72.7 | % 71.4 |
| ≥30 years (n=9) | % 3.4 | % 88.9 | % 77.8 | 100.0 | % 100.0 |
| **p \*** | 0.06 | 0.20 | **< 0.01** | **< 0.01** | **<0.01** |
| **Education status** | | | | | |

| | % 10.8 | % 65.9 | % 11.4 | % 6.8 | % 59.1 |
|---|---|---|---|---|---|
| High school (n=44) | % 10.8 | % 65.9 | % 11.4 | % 6.8 | % 59.1 |
| Associate degree (n=28) | % 0.0 | % 82.1 | % 21.4 | % 39.3 | % 78.6 |
| Bachelor's degree (n=194) | % 9.1 | % 85.1 | % 33.0 | % 8.8 | % 75.0 |
| **p \*** | 0.18 | **<0.01** | **<0.01** | **<0.01** | 0.45 |
| **Department employed** | | | | | |
| Medical departments (n=169) | % 8.3 | % 83.4 | % 27.8 | % 10.7 | % 66.7 |
| Surgical departments (n=97) | % 11.3 | % 78.4 | % 28.9 | % 13.4 | %68.8 |
| **p \*** | 0.41 | 0.38 | 0.96 | 0.50 | 0.89 |
| **Family history of breast cancer (first-degree relatives)** | | | | | |
| No (n=240) | % 8.8 | % 82.9 | % 27.9 | % 11.3 | % 66.7 |
| Yes (n=26) | % 15.4 | % 69.2 | % 30.8 | % 15.4 | % 75.0 |
| **p \*** | 0.27 | 0.08 | 0.75 | 0.53 | 0.73 |
| **Family history of breast cancer (second- or third-degree relatives, surroundings)** | | | | | |
| No (n=162) | % 7.4 | % 79.6 | % 22.8 | % 9.9 | % 75.0 |
| Yes (104) | % 12.5 | % 84.6 | % 36.5 | % 14.4 | %62.5 |
| **p \*** | 0.16 | 0.30 | **<0.01** | 0.259 | 0.40 |
| **History of breast disease** | | | | | |
| No (n=201) | % 9.0 | % 79.6 | % 16.4 | % 8.0 | % 60.0 |
| Yes (n=65) | %10.8 | % 87.7 | % 64.6 | % 23.1 | % 80.0 |
| **p \*** | 0.66 | 0.14 | **< 0.01** | **< 0.01** | 0.19 |

[a]*Percent CBE indicates those performing CBE regularly (monthly)*
[b] *Percent CBE indicates those performing CBE (regularly or irregularly)*
[c]*At least once*
*\* Chi-square test*

The clinical breast examination (CBE) rate was assessed, it was found that married subjects had significantly higher CBE rate than single subjects. The CBE rate was increased by increasing the duration of professional career and educational level. It was found that family history of BC did not increase CBE rate while CBE rate was significantly higher in patients with a history of BC (Table 2).

In questions regarding mammography, 71.1% of subjects correctly answered the question regarding age of first mammography. Of the subjects (mean age: 30.29±0.55 years), 88.3% never had mammography while 7.1% (n=19) underwent

mammography within the prior 2 years. Of subjects aged >40 years (n=40), 32.5% (n=13) never had a mammography. The causes of not undergoing mammography were questioned, the most frequent answer was "I neglect" by 46.2%.

A significant correlation was not found between mammography rates and education level, occupation, history and family history in subjects aged>40 years (Table 2).

Age was positively correlated with both BSE and mammography knowledge levels (Table 3).

| **Table 3:** Correlation analysis of participation rate for screening programs and age | | |
|---|---|---|
| | **Age** | |
| | r | p |
| BSE knowledge | **0.14** | **0.022** |
| Mammography knowledge | **0.32** | **0.000** |

*BSE, Breast self-exam*

## DISCUSSION

Although BC is more commonly seen in developed countries, the mortality rate is higher in developing countries where BC incidence is lower.[1] In patients with BC, it has been reported that 5-years overall survival rate is 83% in developed countries whereas 53% in developing countries.[6] This significant difference can be explained by higher education level and awareness of community, and early diagnosis and timely treatment options due to mammography screening as a result of placing emphasis to screening programs on health policies.

The subjects were asked to complete a questionnaire about general information, symptoms, risk factors and screening methods in BC. Majority of female subjects (82.3%) had knowledge that breast cancer is the most common cancer type among women; however, only 59% was aware that breast cancer can be seen in one of 8-10 women in a lifetime.

Symptoms of BC were better known than risk factors. However, symptoms develop after the onset of disease while some risk factors can be modified before the onset of disease, resulting in decreased likelihood of disease development. Thus, the community should be informed better, and warned about modifiable risk factors such as obesity, hormone replacement therapy, lactation and regular exercise. Only 51.5% of subjects had knowledge that obesity, one of the most important problems in this era, is a risk factor for BC. In addition, 65% of subjects were aware that regular exercises are protective against BC. In a study by Nunez et al., it was shown that obesity is not only a risk factor for BC but also comprises risk for endometrial cancer in women and colon and prostate cancer in men.[7] On the other hand, physical activity is a protective factor against risk of several cancers.[8] Obesity is an important issue in all fields of preventive medicine in primary healthcare services.

In our study, it was found that knowledge level was significantly higher in subjects with a bachelor's degree than those with an associate or high school degree. No significant difference was detected in the knowledge level between subjects with associate degree and those with a high school degree. In a Polish study by Bogusz et al., knowledge level and education status were compared in perimenopausal women aged 50-69

years. The authors found significant difference between education level and the knowledge level.[9] In a cross-sectional study from Pakistan, Ahmed et al. investigated knowledge level in nurses working at training hospitals at Karachi distinct. Authors found that knowledge level was high in 35% of subjects and these had a higher educational level than other subjects included.[10] In a study on 215 nurses working in 23 primary care facilities at İzmir province, Çiçeklioğlu et al. determined knowledge level in subjects by a questionnaire about BC, imaging modalities and BSE and then all participants received one-day training program. In the re-assessment following training program, the authors found that the knowledge level was significantly improved whereas BSE rate was increased by improving level of awareness in subjects.[5] All these data indicate importance of education in improving knowledge level. It is apparent that we should preferably improve our knowledge level in order to enhance awareness in the community where education is one of the most important ways for this purpose.

When knowledge level was compared according to the profession, it was found that knowledge level was significantly higher in physicians than nurses and other healthcare providers. In a study from Bangui, Balekouzo et al. found that knowledge level regarding risk factors, diagnostic and therapeutic modalities of BC was significantly higher in physicians than other healthcare providers.[11] In a study at Erzurum province in Turkey, Canbulat et al. found similar findings.[12] This may be due to a longer duration and higher level of education in physicians when compared to nurses and other healthcare providers.

In our study, we attempted to determine whether knowledge level and attitudes and practices against screening methods differ in patients with history/family history of BC. It was found that knowledge level did not differ in patients with a history of breast disease, family history of BC in first-degree relatives or surroundings when compared to others. This may be due to a smaller rate of subjects with a history of BC. In these subjects, BSE rate showed no difference when compared to other subjects. Only subjects with the history of breast disease had significantly higher rates of CBE and mammography when compared to those without. This difference may represent that CBE and mammography were performed for

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diagnostic purposes rather than screening. In a study on healthcare providers in Tehran, Haji-Mahmoodi et al. found that BSE frequency was significantly higher in patients with history of breast disease while there was no significant difference in those with positive family history.4 On the other hand, in a study on female healthcare providers in Ordu province, Avcı et al. found that BSE frequency was significantly higher in subjects with family history of BC.[13] In a study by Chan et al, cervical screening test rate was significantly higher in subjects with family history of cervix cancer.[14] Based on these data, it may be suggested that presence of history/family history of cancer leads to increased awareness; in fact, it is important to increase treatment probability by early recognition of these diseases. The screening methods should be explained and supported before experiencing the disease itself. In some individuals, insufficient knowledge about disease and screening procedures may be the cause for not undergoing screening tests despite the presence of positive family history for cancer. The healthcare providers have important roles in raising awareness in such high-risk individuals.

Screening programs and awareness are improved by advancing age and increasing education level but not reach sufficient levels. In a study on female healthcare providers in Tehran, Haji-Mahmood et al. found that 63% of subjects had sufficient knowledge about how to perform BSE but only 6% performed BSE regularly (monthly). Authors also found that 44% of subjects never performed BSE and that BSE rate was associated with age, educational level and history of breast disease but not marital status or positive family history.[4]

In a study, Nahçıvan et al. stratified subjects according to BSE performance (those performing or not performing BSE) and compared demographic characteristics between groups. Authors found significant differences in age, marital status, and level of knowledge about BC.[15] These data emphasize the importance of education in improving awareness. However, BSE frequency was still below standard although it was greater in subjects with higher knowledge level than other subjects. Many female healthcare providers do not perform BSE although they know how to perform. Presumably, BSE rate is increased due to emerging concerns about the development of disease by advancing age. However, individuals should be informed that BC can be seen in women from all ages and that screening programs must be started at earlier ages; thus, women should be encouraged for regular BSE and participation to screening programs.

Of subjects aged>40 years (n=40), never having mammography was found to be associated with age and duration of professional career as expected. No association was found with other demographic data. This may be due to a smaller number of subjects aged>40 years who never underwent mammography. In a Turkish study on 1342 women aged 18 years, Gürsoy et al. found that mammography rate was associated with age, marital status and history/family history of cancer.[16] In a study on 363 women by Dişcigil et al., 40.6% previously had mammography; however, only half of these patients had regular mammography testing. Authors found that mammography rate was significantly associated to age and family history of BC but not education level.[17] In a study by Tilaki et al., only 12.1% of participants previously underwent mammography. Authors found that mammography rate was significantly associated with age and risk factors for breast cancer but not education level.[18] Given these data, concerns about the disease are enhanced by advancing age, resulting in increased participation in screening programs. However, the participation rate for screening programs is still low.

Vast majority of participants were aware of the negligence while most participants were unaware that these methods should be employed for early diagnosis before the onset of symptoms. Similarly, in a study on female healthcare providers, Nilaweera et al. investigated knowledge level and attitudes about breast and cervix cancer.[19] Based on these data, it is apparent that the knowledge level in healthcare providers is sufficient by school education and in-service pieces of training but there are failures in behaviors and attitudes towards use of knowledge in real-life conditions. This may be due to place emphasis on the above-mentioned diseases and an insufficient level of awareness. On the other hand, it is also possible that many female healthcare providers have the problem to keep time on themselves due to substantial workload involving day and night. Given the fact that healthcare providers, who work devotedly for health of individuals, neglect their

own health, family practitioners have important responsibilities in this issue.

There are some limitations and weaknesses of our study. The study was a single-center study, resulting in limited data; thus, it could not represent the general population. Further studies with more participants are needed to reflect the results of all health care providers.

It is thought that lack of history of breast cancer and limited number of participants with positive family history for breast cancer can compromise reliability of our data in this issue. In addition, the study design including healthcare providers from a single-center resulted in limited data and limitations in representing the general population. Thus, it is thought that it will more appropriate to include both healthcare providers and those not working in healthcare services in future studies.

## CONCLUSION

In our study, it was seen that education level and age are the most important factors affecting knowledge level about BC. In general, it was found that knowledge level was higher among subjects but the participation rate for screening programs was low. It is thought that increased concerns about disease development by advancing age or increased awareness after the onset of disease are factors that determine participation in screening programs. Vast majority of participants were aware of the negligence while most participants reported that they have no complaint. Thus, our primary goals are to improve knowledge level by training programs and to explain that screening programs mainly aim to detect the disease at early stages before the onset of symptoms. This awareness should be created in healthcare providers first; then, in the community via healthcare providers. In conclusion, family practitioners have important responsibilities in protection against and early diagnosis of BC which is an important public health issue in this era. Preferentially, individuals should be informed about risk factors and lifestyle changes regarding modifiable risk factors. Women of all ages should be informed about screening programs for early diagnosis and should be encouraged for screening programs.

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