Evaluation of knowledge and practice regarding mammography among a group of Turkish women attending a tertiary hospital

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ABSTRACT

Objective: Early detection is the most important cornerstone of breast cancer in determining treatment outcome and survival. In this study, it was aimed to investigate the level of knowledge, attitude, and practice of mammography in the early diagnosis of breast cancer in a group of women.

Material and Methods: Data of this descriptive study were collected under observation with the help of a questionnaire. Female patients over 40 years of age or over 30 years of age with a family history of breast cancer admitted to our general surgery outpatient clinic for a health problem other than breast were included.

Results: A total of 300 female patients with a mean age of 48.7 ± 10.9 years (min-max, 33-83 years) were included. Median frequency of correct answers among the women participating in the study was 83.7% (76.0-92.0). Mean score obtained by the participants from the questionnaire was 75.7 ± 15.8 (the median score 80; 25th-75th centiles, 73.3-86.7). Slightly more than half of the patients (159 patients, 53%) had at least one mammography scan before. The level of mammography knowledge was negatively correlated with age and the number of previous mammographies, and positively correlated with education level (r=-0.700, p<0.001; r=-0.419, p<0.001 and r=0.643, p<0.001, respectively).

Conclusion: Although the level of knowledge about breast cancer and early diagnosis methods in women was at a satisfactory level, it is obvious that mammography screening practice of women without any breast symptoms is very low. Therefore, it should be aimed to increase women’s awareness of cancer prevention and compliance with early diagnosis methods and to promote participation in mammography screening.

Keywords: Breast cancer, mammography, screening, the level of knowledge

INTRODUCTION

Breast cancer is the most common type of cancer in women worldwide and is the second cause of cancer-related death after lung cancer (1). It has been reported that the incidence of breast cancer has increased in studies conducted since 1990 in all developing countries, including Türkiye (1,2). According to the cancer registry unit of the cancer control department’s cancer report 2015 data, it is reported that 17,183 women were diagnosed with breast cancer in 2015, and the incidence of breast cancer increased nearly twice (3). In a recent study evaluating 44 populations around the world between 1998 and 2012, it was reported that breast cancer increased in premenopausal women in high-income countries, whereas the increasing postmenopausal breast cancer burden was most notable in countries undergoing socioeconomic transitions (4). In addition, breast cancer death rates are reported to decrease over time in most high-income countries but continue to increase in many low-middle income and low-income countries (5).

It is known that the probability of a woman developing breast cancer in her lifetime is remarkable. In order to reduce cancer deaths in the community, cancer must be detected at an early stage. Therefore, early diagnosis is extremely important in facilitating the treatment of breast cancer and reducing mortality (6). Early diagnosis of breast cancer can be achieved by educating women well and applying screening programs. The aim of screening programs is to detect breast-related pathologies at an early stage in women with no complaints by various methods (clinical breast examination, mammography, and breast self-examination). According to the breast

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cancer early diagnosis guideline, after the age of 40, women should have annual or biennial mammography, clinical breast examination and regular monthly breast self-examination. Although breast self-examination is a very effective method for early detection of breast cancer by patients themselves, it is not used enough among women (7). Apart from this, mammography, which is an inexpensive, easily applicable and safe imaging method, is a very useful test in the screening of breast cancer. Many international studies have shown that mammography screening reduces breast cancer mortality by 15-20% (8,9).

It is well-known that sufficient levels of knowledge of breast cancer have a positive effective factor on having mammography screening. Studies conducted in recent years have reported that the level of knowledge of women about breast cancer and mammography screening has increased significantly compared to previous years, but it has not reached a satisfactory level (3,7). In addition, the knowledge level of breast cancer and mammography screening practice have been shown to be associated with age, education level, family history of breast cancer, and economic status (10-12).

Despite the nationwide organized screening programs carried out in our country in recent years to raise awareness, it has been reported that the frequency of mammography screening is not sufficient, and the delay in the diagnosis of breast cancer continues to be a problem (3,7,10). In this study, we aimed to investigate the level of knowledge, attitude, and practice of mammography in the early diagnosis of breast cancer in women who applied to the our general surgery outpatient clinic for a health problem other than the breast.

**MATERIAL and METHODS**

This study was conducted between November 2020 and September 2021. Informed consent was obtained from all participants included in the study. This study was approved by the local ethics committee. Data of this descriptive study were collected under observation with the help of a questionnaire between November 2020 and September 2021. The questionnaire form consisted of 15 questions compiled by the researchers after the literature review on the subject and was applied to women over 40 years of age or over 30 years of age with a family history of breast cancer who admitted to our general surgery outpatient clinic for a health problem other than the breast. Before the questionnaire, sociodemographic characteristics of the women, such as age, family history and education level, were noted. In addition, it was recorded whether the women had mammography screening before and if they did, how many times they underwent mammography. The questionnaire consisted of 15 questions measuring the level of knowledge of the participants about the mammography method used in the early diagnosis of breast cancer and are answered as true or false (dichotomous scale). A total of 100 points is obtained as a result of correctly answering all 15 questions related to mammography. The participant was scored 6.7 points for each correct answer (100/15) and zero points for each incorrect answer.

SPSS 27.0 (IBM Corporation, Armonk, New York, United States) program was used in the analysis of the variables. Distribution of the data was evaluated with Shapiro-Wilk francia test. Mann-Whitney U with Monte Carlo tests were used together in comparing quantitative data of two independent groups. While Jonckheere-Terpstra test and Monte Carlo test were used together to compare more than two groups with each other according to quantitative data, Dunn’s test was used for post hoc analysis. Spearman’s rho test was used to evaluate the correlations of the variables. Quantitative variables were expressed as mean (standard deviation), median (minimum/maximum or 25th percentile/75th percentile), while categorical variables were shown as number (n) and frequency (%). The variables were analyzed at 95% confidence level, and a p value less than 0.05 was considered as significant.

**RESULTS**

A total of 300 women with a mean age of 48.7 ± 10.9 years (median age 44 years; min-max, 33-83 years) were included in the study. Of these women, 4.7% were illiterate, 16.0% were primary school graduates, 17.7% were secondary school graduates, 34.0% were high school graduates, and 27.7% were university graduates. Only 13.7% of the cases had a family history of breast cancer. One hundred and forty-one (47%) patients did not have mammography before. Slightly more than half of the patients (159 patients, 53%) had at least one mammography scan before (Table 1).

More than 90% of the participants knew very well that mammography should be done in the week after the end of the menstruation, the breasts should be gently compressed between two plates during mammography, mammography reduces breast cancer deaths, and that a person with a breast mass should undergo mammography and/or ultrasonography after the examination. On the other hand, the questions with the lowest level of knowledge were as follows: Q1. Mammography screening is a life-saving method, Q7. Cosmetic materials such as deodorant, talcum powder and lotion should not be used before mammography, Q14. It is possible to detect all types of breast cancer with mammography. Median frequency of correct answers among women participating in the study was 83.7% (76.0-92.0) (Table 2). Mean score obtained by the participants from the questionnaire was 75.7 ± 15.8 (median score 80; 25th-75th centiles, 73.3-86.7).
Table 1. Educational level, family history of breast cancer, mammography practice and age distribution characteristics of the women included in the study

| Educational level            | Number | %    | Age (years) Median (25th-75th centiles) |
|------------------------------|--------|------|----------------------------------------|
| Illiterate                   | 14     | 4.7% | 74 (67-80)                             |
| Primary school               | 48     | 16.0%| 57 (52-67)                             |
| Secondary (middle) school    | 53     | 17.7%| 46 (40-56)                             |
| High school                  | 102    | 34.0%| 42 (40-46)                             |
| University                   | 83     | 27.7%| 40 (40-45)                             |

| Family history of breast cancer | Number | %    | Age (years) Median (25th-75th centiles) |
|---------------------------------|--------|------|----------------------------------------|
| No                              | 259    | 86.3%| 44 (40-55)                             |
| Yes                             | 41     | 13.7%| 42 (37-56)                             |

| Number of previous mammographies | Number | %    | Age (years) Median (25th-75th centiles) |
|----------------------------------|--------|------|----------------------------------------|
| None                             | 141    | 47.0%| 40 (40-41)                             |
| 1                                | 64     | 21.3%| 45 (43-50)                             |
| 2                                | 37     | 12.3%| 52 (48-61)                             |
| 3                                | 39     | 13.0%| 55 (52-66)                             |
| 4≤                               | 19     | 6.3% | 60 (57-65)                             |

Table 2. The questionnaire applied to the participants in the study and the frequency of correct/incorrect answers

| Incorrect Answer n (%) | Correct Answer n (%) |
|------------------------|----------------------|
| 1. Mammography screening is a life-saving method | 98 (32.7) | 202 (67.3) |
| 2. Mammography is taken using X-rays at a slightly higher dose than a chest X-ray, but within non-hazardous limits | 67 (22.3) | 233 (77.7) |
| 3. It is preferred to perform mammography in the week following the end of the menstrual period, when the breasts are least sensitive | 4 (1.3) | 296 (98.7) |
| 4. Mammography is performed by gentle compression of the breasts between two plates | 3 (1.0) | 297 (99.0) |
| 5. In the examinations performed by the physician, only 1.5-2 cm and large-sized masses can be detected, while masses below 0.5 cm in the breast can also be detected with mammography | 48 (16.0) | 252 (84.0) |
| 6. Mammography is the best choice for breast cancer screening | 55 (18.3) | 245 (81.7) |
| 7. Cosmetic materials such as deodorant, talcum powder and lotion should not be used before mammography | 228 (76.0) | 72 (24.0) |
| 8. Mammography screening is a reliable method for early detection of breast cancer | 49 (16.3) | 251 (83.7) |
| 9. Every woman should have a mammogram screening annually or biennially after the age of 40 | 72 (24.0) | 228 (76.0) |
| 10. Mammography is the diagnostic method that best shows irregular micro-calcification, which is the earliest sign of breast cancer | 33 (11.0) | 267 (89.0) |
| 11. Previously taken mammograms (evaluation report, if any) should also be taken while going to perform mammography | 7 (2.3) | 293 (97.7) |
| 12. Mammography screening can also be performed in 20s | 58 (19.3) | 242 (80.7) |
| 13. Breast cancer death rates decreased with mammography screening | 25 (8.3) | 275 (91.7) |
| 14. It is possible to detect all types of breast cancer with mammography | 165 (55.0) | 135 (45.0) |
| 15. A patient presenting with a breast mass should first be examined by a physician and, if necessary, mammography and/or breast ultrasound should be performed | 26 (8.7) | 274 (91.3) |
| Overall (%)                  | 16.3 (8.3-24.0) | 83.7 (76.0-92.0) |
It was determined that the level of knowledge about mammography was significantly higher in those with a high education level and a family history of breast cancer (p < 0.05) (Table 3). The level of mammography knowledge was negatively correlated with age and the number of previous mammographies, and positively correlated with education level ($r = -0.700$, $p < 0.001$; $r = -0.419$, $p < 0.001$ and $r = 0.643$, $p < 0.001$, respectively).

Mean age of the women who did not undergo a mammography before was $43.1 \pm 9.7$ years (median 40 years), and mean
knowledge score was 80.4 ± 13.6 (median 80; 25th-75th centiles, 80-86.7). While the level of knowledge of women who did not undergo a mammography before was the lowest in the uneducated group, it was highest in women who were university graduates. In addition, women with a family history of breast cancer had a significantly higher level of knowledge about mammography (p< 0.05) (Table 4).

DISCUSSION

Screening women for breast cancer with various methods and at regular intervals after a certain age is vital for early diagnosis and treatment. Determining the knowledge, attitudes and behaviors of women on this issue is indispensable for the success of the screening programs. In the current study, we evaluated the knowledge levels and attitudes about mammography screening in women over 40 years of age or over 30 years of age with a family history of breast cancer. In addition, the relationship of the knowledge level of the participants with age, education level, and numbers of previous mammographies were investigated. In studies conducted in our country 15-20 years ago, it was reported that women had insufficient or incorrect information about the importance of breast cancer screening and early diagnosis (11,12). However, in recent years, as a result of educational activities regarding breast cancer screening and early diagnosis (informative meetings, TV programs, brochure, and social media sharing, etc.) carried out by both the ministry of health and non-governmental organizations, a significant increase in the knowledge level of women about breast cancer and mammography screening has been reported in various studies (7,13-15) but still has not reached a satisfactory level. In our study, mean score of the participants in the questionnaire prepared about mammography, a method used in the early diagnosis of breast cancer, was 75.7 ± 15.8 and median score was 80 (25th-75th centiles, 73.3-86.7). Although this score seems far above the level of knowledge 15-20 years ago, it is clear that it is not sufficient and must be increased further. The women included in the study were well aware that mammography reduces breast cancer mortality rates, mammography is performed by gently compression of the breasts between two plates, and that it is more appropriate to apply mammography one week after menarche. However, the knowledge that some cosmetic products, which complicates the assessment of mammography, should not be used before the screening, was insufficient among the participants. Therefore, it is necessary to provide more effective educational program on early diagnosis and screening of breast cancer with various audio-visual tools, and in this way, the level of knowledge of women about mammography should be increased.

Mammography is an effective and reliable method that can show the masses that are too small to be detected on physical examination or ductal carcinoma in situ, which is a noninvasive form. Detection of breast cancers at an early stage positively affects the clinical course of the disease and has been shown to reduce mortality in various studies (16). In general, in our country and worldwide, women are recommended to have a mammography screening every one or two years after the age of 40. In addition, there is a prevailing opinion that this screening should be started at an earlier age in those with a family history of breast cancer. Most of the participants in our study had a good level of knowledge that mammography screening is reliable in the diagnosis of breast cancer and that it has a life-saving aspect by providing early diagnosis. In addition, most of the participants in our study were aware that mammography screening should be done after the age of 40. However, despite the high level of awareness, 53% of the participants in our study underwent a mammography at least once before, while the remaining 47% did not perform mammography. Mean age of the women who had no previous mammography practice was 43.1 ± 9.7 years (range, 35-82 years). The wide age range shows that although the women included in the study were aware of the importance of breast cancer screening such as mammography, they could not reflect it on their behavior and frequently ignored it. Similarly, in many studies conducted in different countries around the world, including our country, it has been reported that the frequency of regular mammography screening is very low (11,14,15,17-21). Interestingly, even in health care professionals, who are in the best position to provide health education, the rate of having a regular mammography screening is low (39.4%) as shown in the study of Akpınar et al. (22). Although it is known that early diagnosis of breast cancer is of vital importance, the rate of mammography screening remains low due to lack of time, ignoring, forgetting, economic reasons (cost), no complaints about the breast, fear of being diagnosed with cancer, and being young (7,23). In order to be successful in mammography screening program, it is necessary to promote knowledge and behavior change in both women and health professionals.

Knowledge about mammography is known to be affected by various factors. In many studies, it has been reported that the level of knowledge about breast cancer and mammography screening is associated with age, the level of education and economic status (14,19,23,24). In our study, in line, the level of knowledge of women regarding mammography was found to be associated with the level of education and age. As expected, the level of knowledge was positively associated with the level of education and family history of breast cancer, but, interestingly, it was negatively associated with age and the number of previous mammographies. This can be explained by the fact that women with lower education levels had higher age (or vice versa) in our study. On the other hand, in the study of Koçyiğit et al. (24), unlike our study, it has been reported that mean knowledge score of women about breast cancer and mammography
increases with age. The authors tried to explain this by the fact that younger women thought that breast cancer occurred in older women and that they were not at risk for breast cancer. Moreover, in many studies, similar to our study, it has been reported that women with a family or friend’s history of breast cancer have a higher knowledge score than those without (24,25).

This study has some limitations that must be acknowledged. Since there is no internationally standardized questionnaire about breast cancer and mammography screening, we created a questionnaire measuring the level of knowledge about mammography in women as a result of the literature review, which is one of the most important limitations of our study. In this study, the knowledge level of women about mammography screening was questioned, but no evaluation was made in terms of the factors that caused the participants not to have regular mammography screening. In addition, this study was performed in the general surgery outpatient clinic of our tertiary hospital, so the findings of this study cannot be generalized to a particular region or to the whole of our country.

In conclusion, in this study, it was concluded that the majority of women had a fairly good level of knowledge about mammography screening; however, some topics need to be improved with various tools. In addition, it was shown that the level of knowledge related to mammography screening was positively correlated with education level and family history of breast cancer. As shown in our study and many studies conducted in different countries around the world, although the level of knowledge about breast cancer and early diagnosis methods in women is at a satisfactory level, it is obvious that the mammography screening practice of women is very low. For this reason, it should be aimed to increase women’s awareness of cancer prevention and compliance with early diagnosis methods and to promote participation in mammography screening.

**Ethics Committee Approval:** This study was approved by Istanbul Medipol University Non-invasive Clinical Research Ethics Committee (Decision number: 852, Date: 12.11.2020).

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Üçüncü basamak bir hastaneye başvuran bir grup Türk kadınının mamografi ile ilgili bilgi ve uygulamalarının değerlendirilmesi

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ÖZET

Giriş ve Amaç: Erken teşhis, meme kanserinin tedavi sonucusunu ve sağkalımı belirlemeye en önemli koşu taşırdır. Bir grup kadında meme kanserinin en kısa dönemde tanısında mamografi bilgi, tutum ve uygulama düzeylerini araştırmayı amaçladık.

Gereç ve Yöntem: Tanımlayıcı nitelikte olan bu çalışmanın verileri bir anket yardımıyla toplanmıştır. Genel cerrahi polikliniğe meme dışı bir sağlık sorunu ile başvuran, ailesinde meme kanseri öyküsü olan 40 yaş üstü ve 30 yaş üstü kadınlar dahil edildi.

Bulgular: Yaş ortalamağı 48,7 ± 10,9 (min-maks, 33-83) yıl olan toplam 300 kadın dahil edildi. Araştırma katılan kadınların ortanca cevap verme sıklığı %83,7 (76,0-92,0) idi. Katılımcıların anketten aldıkları puanın ortanca 75,7 ± 15,8 (57,0-102,0) idi (orta 80; 25.-75. yüzde, 73,3-86,7). Hastaların yarısından biraz fazlası (159 hasta, %53) daha önce en az bir mamografi çekti. Mamografi bilgi düzeyi yaş ve önceden mamografi alımı ile negatif, eğitim düzeyi ile pozitif korelasyon gösterdi (sirasıyla; r = -0,700, p < 0,001; r = -0,419, p < 0,001 ve r = -0,643, p < 0,001).

Sonuç: Kadınların meme kanseri ve erken tanı yöntemleri hakkında bilgi düzeyini tatin edici düzeyde olmasına rağmen, meme semptomu olan kadınların mamografi tarama uygulaması henüz çok düşük olduğu aştıkardır. Bu nedenle kadınların kanserden korunma ve erken tanı yöntemlerine uyum konusunda farkındalığını artırılması ve mamografi taramasına katılımın teşvik edilmesi hedeflenmelidir.

Anahtar Kelimeler: Meme kanseri, mamografi, tarama, bilgi düzeyi

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