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Evaluation of knowledge, attitudes, and behaviors of non-physician healthcare professionals about breast cancer screening program

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Abstract

Cancer screening programs are carried out worldwide and in our country to diagnose breast cancer in its early stage, before the disease shows any symptoms. In this study, we aimed to evaluate the knowledge, attitudes, and behaviors of non-physician healthcare professionals about breast cancer screening programs. This study was planned as a cross-sectional survey study, nurses and female non-physician hospital staff from different professions were included. In addition to primary demographic data, various questions were asked to the participants to evaluate their knowledge about breast cancer screening programs and compliance with breast cancer screening programs, and then the data were analyzed. A total of 332 volunteers were included in our study. 317 (95.5%) of them stated that they had heard of the Cancer Early Diagnosis, Screening, and Education Centers (KETEM) before. When asked whether cancer screenings were essential, 327 (98.5%) of the volunteers answered "Yes," considering it is essential, and thus it was thought that non-physician healthcare professionals had a high awareness of this issue. Fifty (15.1%) of the non-physician healthcare professionals stated that they regularly performed breast self-exams once a month, 83 (25.0%) did not do any breast examination, and 154 (46.4%) did it sporadically. Of the population, 66 people were 40 years and older. In this population, 33 (50.0%) of the participants answered "Yes" to the question "Have you ever had a mammogram?"; whereas 33 (50.0%) of them answered "No." In general, the awareness of the participants was high, but it was thought that their level of knowledge about breast cancer screening was insufficient. In addition, it was observed that the compliance rates to cancer screening programs were insufficient. Therefore, an absolute effort should be made to increase the knowledge and awareness of health professionals who play an essential role in public health.

Keywords: Breast cancer, cancer screening programs, healthcare professionals, mammography (MMG)

Introduction

Cancer is the leading cause of mortality worldwide, along with cardiovascular disorders. In addition, breast cancer is the most common cancer in women throughout the world and our country and is a major public health concern. Early diagnosis is crucial for the effective treatment of breast cancer and achieving a cure, which is the ultimate goal in cancer treatment. Unfortunately, according to 2017 Turkish cancer statistics, 11% of patients were diagnosed at the metastatic stage, and it was impossible to attain a cure [1]. Therefore, cancer screening programs are being carried

out throughout the world and in our country to diagnose breast cancer at an early stage, before the disease manifests symptoms [2,3].

Screenings for breast, cervical, and colorectal cancers constitute the essential cornerstone of cancer screening programs worldwide and in our country [3,4]. Although breast cancer screening, which is the subject of this article, may vary slightly in various countries, our country's national cancer screening programs propose monthly breast self-examinations (BSE) over the age of 20 years, clinical breast examinations (CBE) every

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2 years, and mammography (MMG) performed every 2 years between 40 and 69 years of age [3,5]. Among these screening programs, MMG’s effectiveness is unquestionable and very helpful in early diagnosis. In addition, many studies have been published in the literature, and an important meta-analysis study showed that MMG screening resulted in a 20% relative risk reduction in breast cancer-related mortality [6]. Although it has not been shown that breast self-examination and clinical breast examination, which is recommended to be performed by a physician, reduced cancer-related mortality, there is a consensus that breast self-examination should be considered within the framework of a screening program because it might help increase breast cancer awareness [5,7].

In clinical practice, it is observed that the frequency and awareness of breast cancer screening programs are low in our country, particularly in some regions with a low socio-cultural level. In addition, the awareness, knowledge level, and attitudes of healthcare professionals about cancer screening programs are crucial for public health and providing information to the public. Therefore, this study aimed to evaluate the knowledge, attitudes, and behaviors of all non-physician healthcare workers about breast cancer screening programs.

Material and Methods

Our study was designed as a cross-sectional survey study to be conducted in a Public Hospital in Bitlis in Turkey between September 15 and October 15, 2022. The questionnaire form titled ‘Evaluation of Knowledge, Attitudes, and Behaviors of Healthcare Personnel About Breast Cancer Screening Program,’ which was prepared by us considering the literature data, was applied online to nurses and female non-physician hospital staff from different professions over 18 years who agreed to participate in the study. This questionnaire form, which was applied after receiving the ethics committee approval, consisted of 28 questions, and the volunteers’ identity information was not questioned. Therefore, in addition to the participants’ primary demographic data, various questions were asked and recorded to assess their knowledge levels about breast cancer screening programs and their compliance with them.

The SPSS 25 software was used for statistical analysis. Descriptive statistics were presented as frequency distribution and percentage. The chi-square or Fisher’s Exact tests were used to compare independent categorical variables. In this study, two-way statistical analyses were performed, and $p<0.05$ was considered statistically significant.

Our study was conducted according to the guidelines for good clinical practice and was planned to be conducted after obtaining the Van Training and Research Hospital Ethics Committee’s approval (Ethics Committee Approval Date September 07, 2022, and #2022/19-05).

Results

In total, 332 volunteers were included in our study. Of the

participants, 176 (53.0%) were nurses, 50 (15.1%) were medical secretaries, 36 (10.8%) were janitorial staff, 6 (1.8%) were emergency medical technicians, 3 (0.9%) service personnel and 61 (18.4%) other healthcare personnel. When the educational status of all participants was analyzed, 9 participants (2.7%) were master’s degree graduates, 233 (70.2%) were university graduates, and 73 (22.0%) were high school graduates; almost 95% of them were high school graduates at least, and their overall socio-cultural status was considered to be good. In this study which evaluated the awareness of breast cancer screening, 75 (22.6%) of the participants had first or second-degree relatives diagnosed with breast cancer. The participants’ essential demographic characteristics are summarized in Table 1.

Table 1. Primary demographic characteristics of participants

Total Number of Participants: 332		Number (%)
Age (years)	Between 18-25	112 (33.7)
	Between 26-35	140 (42.1)
	Between 36-45	55 (16.6)
	Between 46-65	25 (7.6)
Occupation	Nurse	176 (53.0)
	Medical Secretary	50 (15.1)
	Janitorial Personnel	36 (10.8)
	Emergency Medicine Technician	6 (1.8)
	Support Services Personnel	3 (0.9)
	Other	61 (18.4)
Place of Birth	Diyarbakır	34 (10.2)
	Mardin	83 (25.0)
	Batman	34 (10.2)
	Bitlis	28 (8.4)
	Siirt	16 (4.8)
	Other	137 (41.3)
Marital Status	Married	162 (48.8)
	Single	166 (50.0)
	Other	4 (1.2)
Educational Status	Primary School Graduate	10 (3.0)
	Secondary School Graduate	7 (2.1)
	High School Graduate	73 (22.0)
	University Graduate	233 (70.2)
	Master's Degree/PhD	9 (2.7)
History of Breast Cancer in the Family	Present	75 (22.6)
	Absent	257 (77.4)

232 (69.9%) of the volunteers participating in the study stated that they had heard of cancer screening programs before, whereas 317 (95.5%) of the volunteers said that they had previously been also aware of the Cancer Early Diagnosis Screening and Education Center (KETEM). In response to the question about whether cancer screenings were important, 327 (98.5%) of the volunteers answered ‘Yes,’ indicating that non-physician health workers had a high awareness of cancer screening. The participants’ overall knowledge levels regarding awareness of cancer screening are detailed in Table 2.

Table 2. Participants' overall awareness of cancer screening

Total Number of Participants: 332		Number (%)
Have you ever heard of cancer screening programs?	Yes	232 (69.9)
	No	100 (30.1)
Have you ever heard of KETEM*?	Yes	317 (95.5)
	No	15 (4.5)
Do you think that cancer screenings are important?	Yes	327 (98.5)
	No	0 (0)
	Indecisive	5 (1.5)

*Cancer Early Diagnosis, Screening, and Training Center

In our study, the participants, all of whom were non-physician female healthcare workers, were asked various survey questions to assess their knowledge about breast cancer screening programs and methods, how screening was performed, which imaging method was preferred, in what age range screening was recommended, and their level of knowledge about BSE and CBE. For example, when the question “Which imaging method is used for breast cancer screening?” was asked regarding awareness of MMG, the most effective screening method for breast cancer worldwide, 304 (91.6%) of the participants answered “MMG.” In addition, in response to the question “Which age group of women screening for breast cancer with mammography is recommended in our country?” one hundred eighty-four participants (55.4%) correctly identified the recommended age range for screening by answering “40-69 years of age”. For the question “What is the frequency of breast cancer screening with mammography recommended in our country?” one hundred forty-two participants (42.8%) replied correctly as “every two years.” On the other hand, regarding the question “Have you ever heard of breast self-examination and/or clinical breast examination?”, three hundred ten participants (93.4%) answered “Yes,” whereas 22 participants (6.6%) stated that they had never heard of it before. Participants were divided into 2 groups as over and under 40 years of age and their knowledge about breast cancer was evaluated. It was observed that awareness was statistically significantly higher in the elderly population (For the screening age question p: 0.02). Furthermore, as expected, it was observed that the level of knowledge on this subject was higher in those with higher education levels. It was noteworthy that the level of awareness was high among those whose marital status was married. In relation to the possible education level, the level of knowledge in nurses is also higher. Table 3 summarizes in detail the knowledge and awareness levels of non-physician healthcare workers about breast cancer screening.

Table 3. Participants' overall level of knowledge about breast cancer screening

Total Number of Participants: 332		Number (%)
By which imaging method is breast cancer screening recommended to be performed?	CT ^a	6 (1.8)
	MRI ^b	14 (4.2)
	MMG ^c	304 (91.6)
	Indecisive	8 (2.4)
At which age range is breast cancer screening with MMG recommended in Turkey?	30-65 years	89 (26.8)
	30-59 years	39 (11.7)
	40-69 years	184 (55.4)
	50-79 years	4 (1.2)
	Indecisive	16 (4.8)
What should be the recommended frequency of breast cancer screening with MMG in our country?	Once a year	151 (45.5)
	Every 2 years	142 (42.8)
	Every 5 years	22 (6.6)
	Indecisive	17 (5.1)
Do you think breast MRI is better than MMG for breast cancer screening?	Yes	72 (21.7)
	No	115 (34.6)
	Indecisive	145 (43.7)
Have you ever heard of BSE ^d and/or CBE ^e ?	Yes	310 (93.4)
	No	22 (6.6)
From what age are BSE and CBE recommended to be performed?	After 20 years of age	198 (59.6)
	After 30 years of age	76 (22.9)
	After 40 years of age	42 (12.7)
	Indecisive	16 (4.8)

^a Computed tomography, ^b Magnetic resonance imaging, ^c Mammography, ^d Breast self-examination, ^e Clinical breast examination

Among the non-physician health workers, 50 (15.1%) mentioned that they performed regular breast self-examinations once a month, 83 (25.0%) reported that they never performed breast examinations, and 154 (46.4%) reported that they performed them irregularly. In response to the question about clinical breast examination, 78 (23.5%) of the participants stated that they had been examined at least once by a physician. However, only 12 participants reported having undergone a breast examination for cancer screening without any complaints. For a question directed to the entire population, “Within the scope of the National Cancer Screening Programs, breast cancer screening with mammography is recommended for all women between the ages of 40-69 every two years. From now on, would you consider having regular mammograms for yourself/family members?” two hundred seventy respondents (81.3%) answered ‘Yes,’ 9 respondents (2.7%) said ‘No’ and did not want to have a mammogram, and 53 respondents (16.0%) were indecisive. To the question, “Have you ever had a mammogram?” 33 (50.0%) non-physician female health workers aged 40 years and over answered “Yes,” and 33 (50.0%) answered “No.” People over 40 years of age who had never or irregularly undergone MMG were questioned about their reasons and were allowed to choose more than one option in the relevant question. The most common answer to the question asked about the reasons for not having a mammogram was ' Since I have no complaints, I do not consider it necessary' (51 participants (%77.2).

Participants were divided into two groups according to the presence of breast cancer in the family, and then, their knowledge and attitudes about breast cancer screening programs were re-evaluated. As mentioned above, 75 (22.6%) participants had a first or second-degree relative with breast cancer. 67 (89.3%) of the participants in the group with a family history of breast cancer answered the question “Which imaging method is used for breast cancer screening?” correctly by saying “MMG,” whereas 237 (92.2%) of the participants in the group with no family history of cancer answered this question correctly. No statistically significant difference was found between the two groups (p=0.446). Moreover, both groups answered the questions about the frequency of MMG and age range correctly at similar rates, and there were no statistically significant differences between the groups. For example, to the question, “Within the context of the National Cancer Screening Programs, all women between the ages of 40-69 are recommended to undergo periodic breast cancer screening with mammography every 2 years. From now on, will you consider having regular mammograms for yourself/family members?” 60 (80.0%) of the participants in the group with a family history of breast cancer replied ‘Yes,’ whereas 210 (81.7%) participants with no family history of breast cancer answered “Yes.” There was no significant difference between the groups regarding the opinion of having an MMG (p=0.565). Similarly, 11 (52.4%) females above 40 years of age with a family history of breast cancer had regular MMGs, compared to 22 (48.9%) in the group with no breast cancer. No statistically significant difference was observed between the two groups (p=0.792).

Discussion

Breast cancer is the commonest cancer among women worldwide and in our country and is a significant cause of morbidity and mortality, particularly in women. Similar to other cancers, the probability of treatment success and cure is relatively high in patients diagnosed early. Thus, the detection of breast cancer at an early stage with screening programs before symptoms develop is one of the most important goals. For this reason, our study aimed to draw attention to this issue and to evaluate the non-physician female healthcare workers' awareness, knowledge, and attitudes about breast cancer screening programs.

Awareness of KETEM is one of the most significant steps for cancer screening programs to meet their goals. More than half of our study's 332 participants were nurses, and almost 95% were at least high school graduates. The number of people familiar with KETEM was 317 (95.5%), and almost all participants (98.5%) expressed that they considered cancer screening important. However, when asked about the availability of cancer screening programs in our country, 100 (30.1%) participants answered that they had never heard of them before. In a study conducted in March 2016 with only nurses working in Aydın province, 19.2% of the participants stated that they had never previously heard of KETEM [8]. In another study conducted in our country by Kaya et al. with healthcare workers, including physicians, the rates of healthcare workers who were aware that breast, colon, and cervical cancer were included in routine screening programs were 86.8%, 78.1%, and 85.4%, respectively [2]. In light of these results, our study suggests that the awareness of KETEM in our country has increased to a high level over the years among non-physician female healthcare workers, and the importance of cancer screening is known. However, cancer screening awareness is still considered to be insufficient.

Within the context of our country's national cancer screening programs carried out in all provinces through KETEM centers, breast cancer screening is performed by breast self-examination once a month and clinical breast examination every 2 years over the age of 20 years, and mammography every 2 years between the ages of 40 and 69 years [3,5]. Questions were asked to our study population about how breast cancer screening was performed, how often it should be performed, and in which age groups it was recommended. Of the participants, 304 (91.6%) responded as MMG. On the other hand, the question about in which age range MMG should be performed was answered correctly by 184 participants (55.4%). Moreover, 142 (42.8%) participants correctly answered the question about the screening frequency as 2 years. Various studies conducted with physicians and non-physician healthcare workers in the literature have reported awareness rates of breast cancer screening with MMG ranging from 49.5% to 86.8% and 93.2% [2,8,9]. However, in a survey study by Heena et al. on breast cancer awareness among healthcare workers, mainly nurses, in the Kingdom of Saudi Arabia, the awareness was relatively low, with 26.8% of the participants [9]. As can be seen from the figures, even though

the majority of non-physician female healthcare workers had a high awareness of breast cancer screening with MMG and were knowledgeable about this issue, their knowledge level about from what age and at what frequency screening should be performed was found insufficient. In this regard, it is crucial to increase the knowledge of healthcare professionals who are essential societal role models.

Even though many national and international guidelines and publications have not shown that they improved survival, 310 (93.4%) participants stated that they had heard of BSE and CBE, which are advised to be performed from the age of 20 to increase breast cancer awareness. However, similar to MMG awareness, only 198 (59.6%) participants correctly answered the question about the age at which they should be performed. Therefore, although awareness of this issue was also present, the health workers' level of knowledge was considered insufficient. In a similar study, the awareness rates of BSE and CBE were around 80-90%, and the level of knowledge about the age at which they should be performed was quite insufficient [9]. Therefore, informing society, especially healthcare workers, on this subject is also very important.

In this survey study conducted among female healthcare workers, the participants' participation in cancer screenings according to the relevant age groups was also analyzed. As a result, the prevalence of regular monthly BSE, CBE, and biennial MMG over 40 was 15.1%, 3%, and 50%, respectively. Therefore, it was determined that the practice of BSE and CBE was inferior among healthcare workers, a significant sector of society, and the frequency of regular MMG was considerably lower than acceptable. In a study conducted by Şeker et al. in which the frequency of nurses working in a tertiary health care institution to undergo MMG regularly was evaluated, this rate was found to be 45.4% [8]. Likewise, Shaheen et al., in their survey study involving physicians, nurses, and pharmacists, found the frequency of compliance with breast cancer screening programs to be 38% [10]. In our country, it has been reported that compliance rates with and participation in breast cancer screening programs were 30-35%, according to the data of the Ministry of Health [11]. Özçam et al. showed in their study on female healthcare workers, including physicians, that the frequency of undergoing MMG was low [12]. As is seen, the compliance rate to breast cancer screening is relatively low in our country and various countries in general, and in our study, it was noted that one out of two people in the target group had not undergone screening. Even though healthcare professionals were aware of this issue, their knowledge and attitudes were unfortunately inadequate. When participants were asked about the reasons for not having or irregularly undergoing an MMG after the age of 40, the most common reasons were that they did not have any breast-related complaints, thought that their age was young for screening, they were busy with work, and they thought that it was a painful procedure. For this reason, although we believe that screening has been implemented well

in recent years, we think that emphasizing screening as a method performed in the absence of complaints, announcing the target group information more clearly, and increasing the screening centers and opportunities are essential regarding public health.

Healthy individuals with a family history of breast cancer are expected to have higher breast cancer awareness. For example, Haber et al. showed that the perception of breast cancer was higher in people with a family history of breast cancer, and the frequency of having an MMG was also increased [13]. Another study evaluated 899 healthy individuals (aged 40 years and older) from different races and revealed that a family history of breast cancer increased the perception of breast cancer risk, the importance of early diagnosis, and compliance with MMG [14]. 75 (22.6%) of our study participants had a family history of breast cancer in their 1st or 2nd-degree relatives. When the participants were divided into two groups according to the presence of family history, no statistically significant difference was found between the groups regarding awareness, knowledge, and compliance with breast cancer screening programs.

The fact that our study was a cross-sectional survey study, the results were obtained as a result of the declaration of individuals, and the number of participants over 40 years of age, the target group for MMG in cancer screening, was relatively low can be considered as the study's limitations. Nevertheless, healthcare professionals play an essential role in cancer screening in the community, and investigating their awareness and knowledge levels on this issue can be considered its strengths.

Conclusion

In conclusion, this study aimed to evaluate the awareness, knowledge, and attitudes of non-physician female healthcare workers on breast cancer screening programs. Participants generally had a high level of awareness, but their knowledge about breast cancer screening programs was considered inadequate. Besides, their compliance rate with cancer screening programs was also insufficient. Therefore, efforts should be exerted to increase healthcare professionals' knowledge and awareness on this issue, who play an essential role in public health. Thus, increasing non-physician healthcare professionals' awareness, particularly nurses, will also increase public awareness.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

For this study, the ethics committee's approval was obtained from the Van Training and Research Hospital Clinical Research Ethics Committee with decision # 2022/19-05 and the date September 7, 2022.

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