

## ORIGINAL ARTICLE

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# Analysis of the health situation of women referring to breast cancer screening in Poland

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## Summary

**Purpose:** To analyze the health situation of women referring to breast cancer screening.

**Methods:** The study was conducted at "Certus" Medical Center in Myslenice (Malopolska Province). A total of 808 women aged 51-69 years were enrolled. The protocol of the study was approved by the administration of the medical center where it was conducted. The survey consisted of 24 descriptive and single/multiple choice questions referring to health behaviors related to breast cancer prevention.

**Results:** Most often the women received information about breast cancer prevention from specialist physicians [24%]. Only 14% of the participants reported radio, press and Internet as an important source of information. Only 12% of the respondents declared that they self-examined their breasts systematically every month, and 35% stated that

their breasts had been examined by a physician during recent years. A statistically significant relationship was found between the primary source of information about breast cancer prevention and the educational level of the study participants ( $p=0.0008$ ).

**Conclusions:** Considering the Polish Central Statistical Office estimates, according to which the proportion of persons older than 65 years is projected to grow up to 22.3% by 2030, we may expect further increase in breast cancer incidence. Improvement of the epidemiological situation in Poland, which is worse than in other European countries, requires continuation of multidirectional activities, among them population-based education and active screening.

**Key words:** breast cancer, screening, women, Poland

## Introduction

Breast cancer is the most commonly diagnosed malignancy in females and the second leading cause of cancer mortality in women in Poland. The incidence of breast cancer tends to increase, and this malignancy poses a serious threat to women's health and life [1,2]. According to the Polish National Cancer Registry, the number of new breast cancer cases has increased by approximately 10,000 during the last two decades. In 2013, breast cancer constituted 21.9% of all malignant neoplasms diagnosed in Polish women [3]. Similar to global statistics, the incidence of breast cancer

in Poland is the highest among women older than 50 years, with nearly 50% of the cases diagnosed in patients between 50 and 69 years of age. The risk of breast cancer increases with age up to the mid-seventh decade of life and then decreases [4]. The most evident increase in breast cancer risk is observed among 50- to 69-year-old women [5]. While younger women less often have breast cancer, progressive increase in life expectancy is associated with a higher likelihood of reaching the age at which diagnosis of this malignancy is most likely [6].

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After a temporary stabilization of breast cancer incidence among Polish women in the 1980s, the occurrence of this malignancy again tends to increase. This may be associated with changes in the demographic structure of Polish population, namely, a constant increase in the proportion of women who reach the age at which the likelihood

of breast cancer is the highest, as well as with better detection of the disease resulting from the implementation of mass screening programs [7]. Poland already belongs to the group of countries with relatively high breast cancer risk. With no doubt, this risk is going to increase even further due to the progressive aging of the Polish population [8].

Polish prophylactic programs cover the entire female population. The screening tests include breast palpation, also self-exam, starting at 40 years of age, and mammography. Breast ultrasonography is an adjunct test.

**Table 1.** Sociodemographic characteristics of the study participants

Characteristics	n (%)
Education	
Incomplete primary	4 (0.5)
Primary	67 (8)
Vocational	261 (32)
Secondary	330 (41)
Incomplete higher	36 (4.5)
Higher	110 (14)
Age, years	
Mean (standard deviation)	58.33 (5.550)
Range, (%)	40 (50-69)
Up to 50	5 (5)
51-55	251 (31)
56-60	226 (28)
61-65	178 (22)
more than 65	113 (14)
Place of residence - Malopolska Province	
Town/city	273 (34)
Countryside	535 (66)
Occupational activity	
Retirement/disability pensioner	379 (47)
Blue-collar worker	158 (19.5)
White-collar worker	147 (18)
Farmer	70 (8.5)
Other	54 (7)

## Methods

The study was based on a diagnostic survey with a dedicated questionnaire and analysis of the results of mammographic screening. The survey was conducted between January and December 2017. Participation in the study was voluntary and anonymous. The protocol of the study was approved by the administration of the medical center where it was conducted.

The survey consisted of 24 descriptive and single/multiple choice questions referring to health behaviors related to breast cancer prevention.

The study was conducted at "Certus" Medical Center in Myslenice (Malopolska Province).

A total of 808 women aged 51-69 years were enrolled (Table 1). The enrollment criteria were as follows:

1. referral for mammographic screening in 2017.
2. age between 50 and 69 years [women from this age group are eligible for mammographic screening within the framework of the Population-Based Program for Early Detection of Breast Cancer].
3. consent for participation in the prophylactic screening for early detection of breast cancer.
4. consent for personal information processing, as required by current legislation.

**Table 2.** Selected elements of medical histories of the study participants

Variables	Response	n (%)
Menstruation	No	787 (97)
	Yes	21 (3)
Childbirth	No	62 (8)
	Yes	746 (92)
BRCA mutation	No	799 (99)
	Yes	9 (1)
Breast cancer in family members	No	685 (85)
	Yes	123 (15)
Breast ailments/lesions	No	563 (70)
	Yes	245 (30)
Hormone replacement therapy	Not at all	617 (76)
	In the past	66 (8)
	For more than 5 years	46 (6)
	Currently	79 (10)

### Statistics

The threshold of statistical significance for all tests was set at  $p \leq 0.05$ . The results were analyzed with the Kruskal-Wallis test and chi-square ( $\chi^2$ ) test; moreover, Spearman's rank coefficients of correlation were calculated. The database was managed in Microsoft Office Excel environment, and the statistical analyses were carried out with STATISTICA 10.0 software.

## Results

Medical histories the study participants are summarized in Tables 2 and 3. The vast majority of the study women reported birth to at least one child, were post-menopausal at the time of the study and tested negatively for mutations in BRCA genes.

The study women most often received information about breast cancer prevention from specialist physicians (24%). Only 14% of the participants reported radio, press and Internet as an important source of information in this matter (Table 4).

Only 12% of the respondents declared that they self-examined their breasts systematically every month, and 35% stated that their breasts had been examined by a physician during a recent year.

A statistically significant relationship was found between the primary source of information about breast cancer prevention and the educational

level of the study participants ( $p=0.0008$ ). For the least educated women, the main source of information were primary physicians and other (unidentified) media. Women with vocational education obtained information about breast cancer prevention from specialist physicians and personal invitations delivered to them by mail, and women with secondary education, from both primary and specialist physicians. Women with higher education, either incomplete or complete, pointed to personal invitations delivered by mail as the primary source of information about breast cancer prevention.

Furthermore, the primary source of the respondents' knowledge of breast cancer prevention depended on their occupational status ( $p=0.0389$ ). In the group of women who received disability/retirement pension or had other (unspecified) occupational status, primary sources of the information were specialist physicians and invitations delivered by mail. In other professional groups, the information on breast cancer prevention originated primarily from specialist physicians. A considerable proportion of white-collar workers obtained information about breast cancer prevention from press, radio, television and the Internet.

The significance of relationships between the frequency of breast self-examination and selected demographic characteristics of the study participants was tested with the Kruskal-Wallis test. The

**Table 3.** Characteristics of age at menarche, menopause and first childbirth in the study group

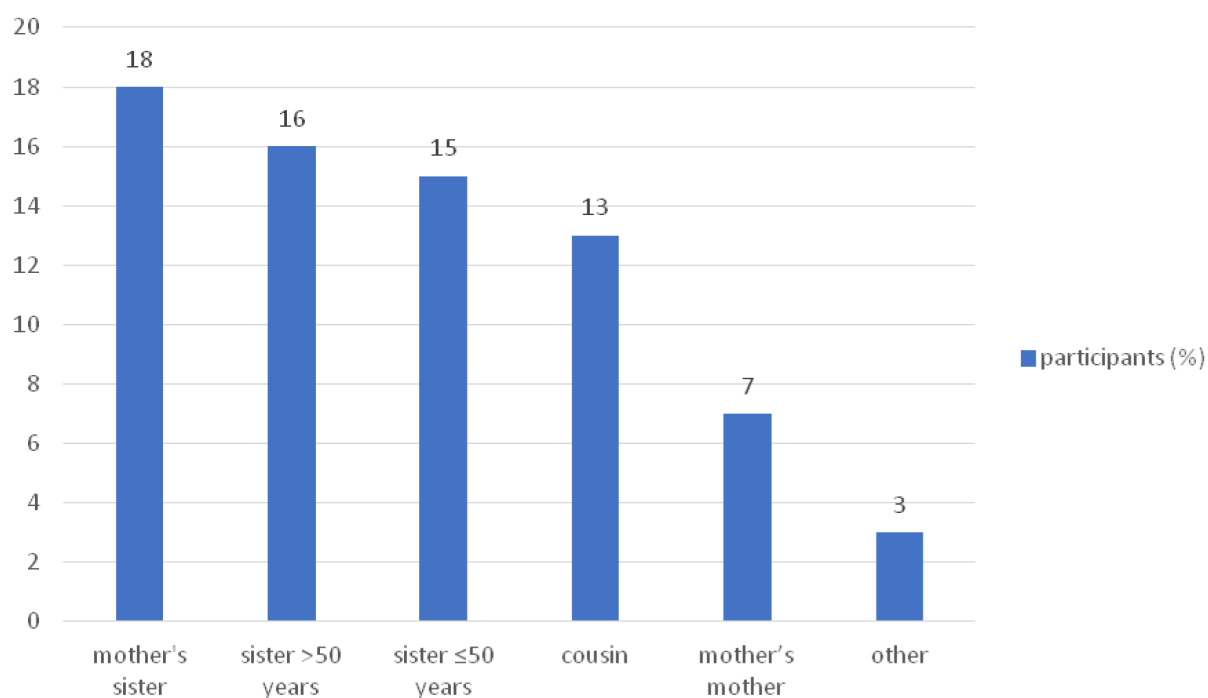
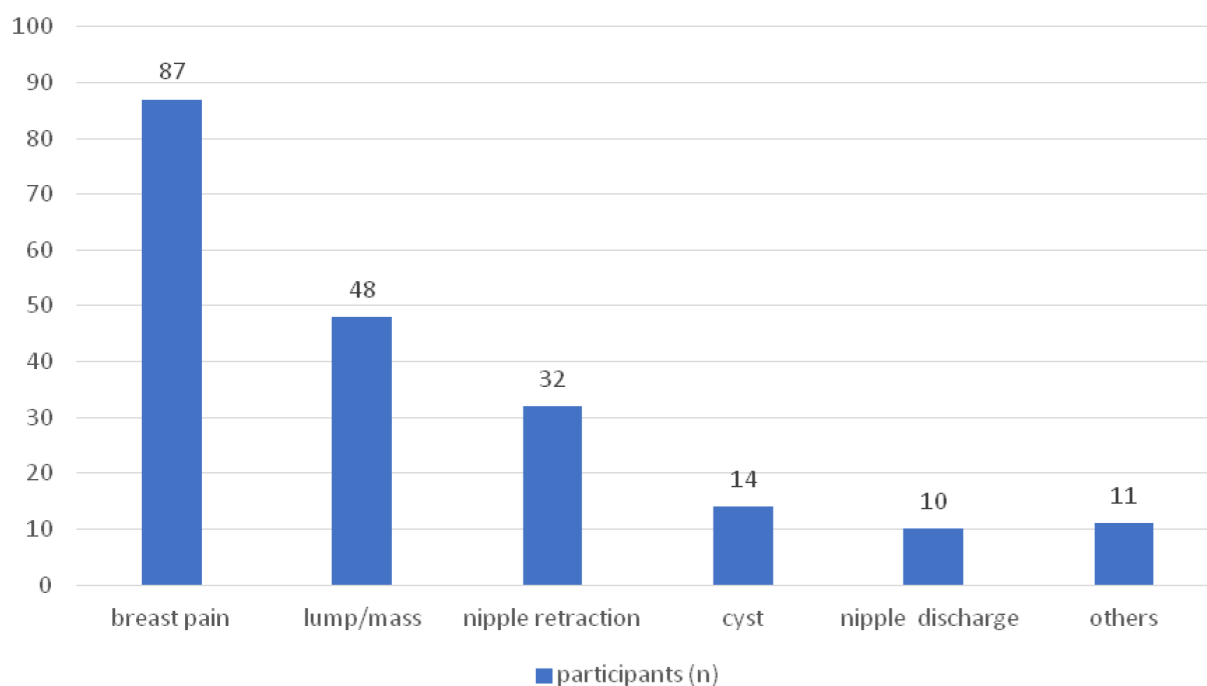
Characteristics	n	mean	median	minimum	maximum	SD
Menarche (years)	808	14.31	14	9	20	1.607
Menopause (years)	787	50.35	50	28	60	3.881
First childbirth (years)	746	23.54	23	17	42	3.712

**Table 4.** Involvement of the study participants in breast cancer prevention

Variables	Response	n (%)
Source of information about breast cancer prevention	Specialist physician	191 (24)
	Personal invitation delivered by mail	147 (18)
	Primary physician	129 (16)
	Press, radio, television, Internet	114 (14)
	Midwife or community nurse	72 (9)
	Invitation delivered via text message	43 (5)
	Other	112 (14)
Frequency of breast self-exam	Not at all	115 (14)
	Sometimes	600 (74)
	Every month	93 (12)
Examination of breasts by a physician during a recent year	No	523 (65)
	Yes	285 (35)
Participation in mammographic screening	No	108 (13)
	Yes	700 (87)

**Table 5.** Breast ailments reported before mammography and lesions detected during the screening and qualified for further evaluation

Variables	Responses	n (%)
Breast ailments/lesions	No	563 (70)
	Yes	245 (30)
Lesions qualified for further evaluation	No	715 (88)
	Yes	93 (12)

**Figure 1.** Family history of breast cancer – relationship with the affected family members.**Figure 2.** Types of breast ailments/lesions reported by the study participants.

**Table 6.** Results of the Kruskal-Wallis test for the relationship between the mammographic evidence of breast lesions that required further evaluation and age of the study participants

Dependent variable: Age		Kruskal-Wallis ANOVA; Age Independent (grouping) variable: Breast lesion qualified for further evaluation Kruskal-Wallis test: $H(1, n=808)=11.70388, p=0.0006$		
	Code	Valid (n)	Rank sum	Mean rank
No	101	715	296450,0	414,6154
Yes	102	93	30386,0	326,7312

frequency of self-examination was not significantly associated with the age of the study participants ( $p=0.8023$ ), their education ( $p=0.4709$ ), place of residence ( $p=0.1042$ ) and occupational activity ( $p=0.6394$ ).

Also, participation in mammographic screening did not depend on the place of residence ( $p=0.3218$ ) and educational level of the study participants ( $p=0.4709$ ). However, the referrals for mammography differed significantly ( $p=0.000$ ) depending on the participants' age, as shown by significantly lower median age of women who did not participate in this form of breast cancer screening.

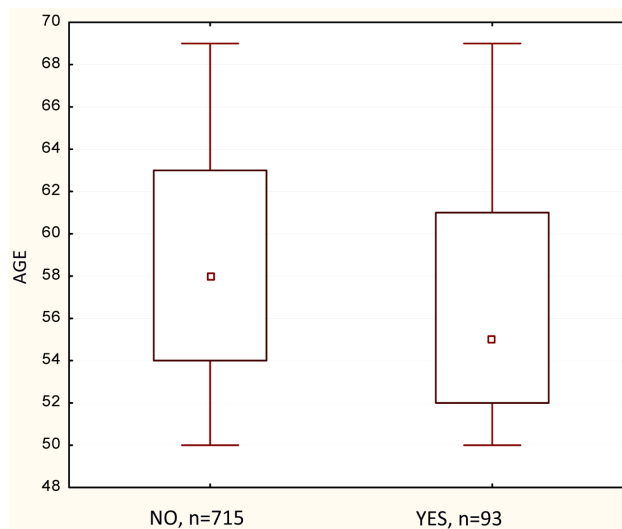
Another analyzed factor was the occurrence of breast cancer among close relatives of the study participants. The analysis showed that only 15% ( $n=123$ ) of the study women had a family history of breast malignancies (Figure 1).

In women with a family history of breast cancer, this malignancy was most often diagnosed in mothers >50 years of age ( $n=35$ ), mother's sisters ( $n=18$ ), and respondents' sisters at  $\leq 50$  years of age ( $n=16$ ).

One objective of the mammographic screening offered to the study participants was to detect breast lesions at the earliest possible stage and to implement appropriate diagnostic-therapeutic intervention. The proportion of women who reported the presence of breast ailments/lesions before mammography is shown in Table 5, along with the percentage of participants in whom breast lesions eligible for further evaluation were detected during the screening.

Before the mammography, breast lesions/ailments were reported by 245 (30%) participants of the study; this group included 79% of women with unilateral ailments/lesions and 21% with ailments/lesions in both breasts (Figure 2).

The significance of the relationship between the mammographic evidence of breast lesions that required further evaluation and age of the study participants was tested with the Kruskal-Wallis test. A statistically significant relationship was found between these two variables (Table 6). As

**Figure 3.** Graphic representation of the relationship between the mammographic evidence of breast lesions that required further evaluation and age of the study participants ( $p=0.006$ ).

shown in Figure 3, the median age of women with the breast lesions qualified for further evaluation based on their mammographic presentation was significantly lower than the age of other participants of the study.

## Discussion

The statement that early diagnosed cancer is curable is nothing new. Many previous studies confirmed that prophylactic tests, conducted systematically and according to preventive programs and recommendations, contribute to a substantial decrease in cancer mortality, including breast cancer-related deaths [9,10].

The number of newly diagnosed breast cancers in the Polish population has been increasing dramatically. In recent few years, we observed a growing interest of Polish women in participating in prophylactic programs aimed at early detection of this malignancy. One of such programs is the Population-Based Program for Early Detection of

Breast Cancer. However, still less than half of eligible Polish women participate in the population-based screening [11,12].

Why do Polish women not participate in the prophylactic activities that give them a chance to undergo a therapeutic intervention at the right time, and hence, may prolong their life?

Many women have a stereotypic attitude toward cancer. Some of them believe that cancer is a morbid disease regardless of the moment it was diagnosed or think that surgical intervention or even an X-ray may cause malignant transformation of an otherwise benign lesion. For such women, diagnosis of cancer is an equivalent of a death sentence. They usually do not believe in the possibility of recovery and prefer to leave the malignancy untouched [11].

Consequently, this is a fear of diagnosis and subsequent oncological treatment, which prevents women from participation in cancer prevention [13,14]. This implies that an effort should be undertaken to make cancer prevention a habit at least among young women. The necessity of such approach was also confirmed in our present study which demonstrated that in 65% of participating women, breasts were not examined regularly by a physician, and only 12% of the study participants self-examined their breasts systematically.

The study was carried out in 2017 at "Certus" Medical Center. The study group was comprised of 808 women invited for prophylactic mammography. The participants of the preventive program were typically women aged between 50 and 55 years, recipients of retirement or disability pension, with secondary education. The place of residence did not exert a significant effect on the respondents' decision to undergo mammography. This observation is clearly opposite with the results published by Gałuszka-Bednarczyk et al, according to whom women living in the countryside participated in mammography less often, whereas the referral rates for big city-dwellers and women with higher education were the highest [15]. Our

study did not demonstrate a significant association between participation in mammographic screening and the educational level of the respondents. In contrast, Gałuszka-Bednarczyk et al showed that education was a significant determinant of referrals for mammography among women older than 50 years [15]. In another study, conducted by Skorzyńska et al, the knowledge of breast cancer prevention correlated with the educational level, and women with higher education showed a more systematic approach to prevention of this malignancy [16].

## Conclusions

Considering the Polish Central Statistical Office estimates, according to which the proportion of persons older than 65 years is projected to grow up to 22.3% by 2030, we may expect further increase in breast cancer incidence. Improvement of the epidemiological situation in Poland, which is worse than in other European countries, requires continuation of multidirectional activities, among them population-based education and active screening. Despite the good availability of breast cancer screening and launched social marketing campaigns, the referral rates of Polish postmenopausal women for free mammography are still too low. According to the Polish National Health Fund statistics, a total of 310 000 personal invitations for mammographic screening were sent over in 2015, but the number of responders was only 54 792, i.e. less than 18%. Considering these alarming data, cancer prevention should be given a priority, both in national health policy plans and health education of an individual. Perhaps, women should be informed about the availability of breast cancer screening and motivated to participate using the channels with established high coverage, such as television, radio and the Catholic church.

## Conflict of interests

The authors declare no conflict of interests.

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