

## Breast self-exams in a group of women participating in mammography screening

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**Introduction.** A key role in the struggle against breast cancer is played by secondary prevention, which includes breast self-exams, clinical tests, and mammography screening. The purpose of the study was to analyze the impact of age, education, and selected breast cancer risk factors on the frequency with which women participating in the mammography screening program perform breast self-exams.

**Material and methods.** The study group consisted of 32,626 women aged 50–69, enrolled in the Early Breast Cancer Detection Program in Lower Silesia between January 2007 and 2011. The study was conducted by means of a diagnostic survey and the frequency of breast self-exams was analyzed as a function of age, education, and selected risk factors.

**Results.** Only 14% of respondents, mostly younger and better educated, reported that they examined their breasts regularly every month. Exposure to risk factors had a negligible impact on the frequency of self-exams.

**Conclusions.** Younger and better educated women were more likely to perform breast self-exams. Risk factors, such as a family history of breast cancer and the prolonged use of hormonal medication, did not have a significant impact on self-exam frequency. Monthly self-exams were more often reported by women suffering from breast-related ailments, probably because of the associated experience of pain and discomfort.

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**Key words:** breast cancer, breast self-exam, mammography screening, prevention

### Introduction

Epidemiological data suggest that the incidence of breast cancer continues to be on the rise. In Poland, the disease is characterized by medium morbidity and moderate mortality rates [1]. In 2013, it was diagnosed in 17,142 women, representing 21.9% of all detected cancers. Second only to lung cancer as the leading cause of death among women, the disease accounted for as many as 5816 deaths, i.e. 13.9% of total female cancer-related mortality in 2013 [2]. As the most common cancer to affect women, it represents a major public health concern all around the globe, as well as in Poland. A key role in the struggle against the disease is played by prophylaxis, and an essential element of the latter is secondary prevention, i.e. early cancer detection with a view to reducing related mortality rates [3, 4].

Prevention should be accompanied by adequate health education designed to raise health awareness in society.

The latter is a complex cognitive structure that shapes and determines health behaviors among people, and crucially depends on the ability to perceive the warning signs of health risks, the knowledge of health and disease acquired from various sources, and the place of health in the human hierarchy of values [5]. The minimum cancer awareness that needs to be imparted to the female general public consists in the ability to recognize early symptoms of breast cancer. However, it is equally crucial to encourage an alert attitude and encourage women to take up conscious health-promoting behaviors, such as performing regular breast self-exams and seeking medical help whenever any alarming symptoms show up [6].

Health behaviors can be defined as all the actions in the daily life of a person that affect his/her health. They represent the practical application of the knowledge of health and disease and constitute the product of individual

choice. Health behaviors can be either health-promoting or health-defeating [7]. Actions that benefit women's health include, for instance, breast self-exams, mammography, and participation in screening tests [8]. Contrary to the view expressed by the United States Preventive Services Task Force (US PSTF), which holds that self-exams play a rather negligible role in the reduction of breast-cancer mortality, the practice constitutes an important element in the secondary prevention of the disease [9]. Learning how to examine their own breasts on a regular basis motivates women to take better care of their health, and significantly contributes to raising female health awareness [10, 11].

The purpose of the study was to analyze the impact of age, education, and selected breast-cancer risk factors on the frequency with which women participating in mammography screening tests perform breast self-exams.

### Material and methods

The study group consisted of 32,626 women aged 50–69, signed up for mammography screening at the Lower Silesian Oncology Center in Wrocław in the framework of the Population-Based Early Breast Cancer Detection Program. The study was conducted between January 2007 and December 2011 and used a dedicated questionnaire previously designed for the program [12].

Data was collected prospectively by the Lower Silesian Voivodeship Coordinating Center for the Early Breast Cancer Detection Program at the Lower Silesian Oncology Center and stored in the Computer-Based Prevention Monitoring System.

The frequency of self-exams ("every month", "sometimes", "never") was analyzed as a function of the age and education of respondents enrolled in the early detection program. Women between the ages of 50 and 69 were grouped into 5-year age brackets. Their level of education was described on a scale ranging from incomplete primary to a university degree. In addition, self-exam frequency was studied in terms of selected risk factors (such as a family history of breast cancer, the use of hormonal medication for

more than 5 years) and the presence of alarming symptoms and breast lesions (pain, lumps, nipple discharge, breast skin lesions).

### Statistical analysis

Regression analysis was used to estimate the impact of age, education, and selected risk factors on the frequency of self-exams. All calculations were performed with Microsoft Excel.

## Results

### Frequency of breast self-exams as a function of age and education

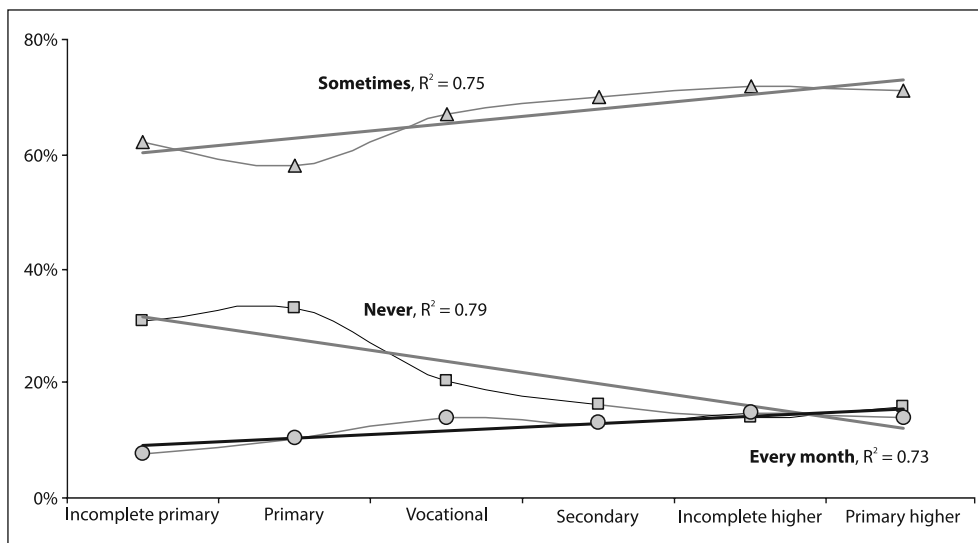
Monthly self-exams were reported by 4512 (14%) women; 5861 (18%) declared that they never examined their breasts, and the remaining 22,253 (68%) said they did it sometimes.

The 50–54 age bracket was set as the point of reference. Successive age groups varied significantly with respect to the number of women who responded "once a month", "sometimes", or "never" when asked how often they performed breast self-exams. The proportion of women who reported a monthly frequency decreased in successive age groups (55–59, 60–64, and 65–69) by, respectively, 0.8%, 1.2%, and 1.6% as compared to the baseline. The largest difference in the "sometimes" group (1.9%) was observed in the 65 to 69 age bracket. Age was also related to how likely a woman was to give up self-exams altogether; the percentage of respondents who declared they never examined their breasts significantly increased with age (Tab. I, Fig. 1).

The proportion of women who did examine their breasts on a regular basis showed a linear increase from a meager 7.2% in the group of respondents with incomplete primary education to 14.3% in the group of university graduates. Conversely, the proportion of women who did not examine their breasts at all dropped from c. 30% in the group of respondents with primary education to just 15% in the group of women who had graduated from secondary school (Tab. II).

**Table I.** Number and percentage of women who perform regular breast self-exams as a function of age

Frequency		Age (years)			
		50–54	55–59	60–64	65–69
Every month n = 4512	Number	1397	1367	1095	653
	Percentage	14.6	13.8	13.4	13.0
	Difference, %	0	-0.8	-1.2	-1.6
Sometimes n = 22 253	Number	6538	6814	5553	3348
	Percentage	68.5	68.9	68.0	66.6
	Difference, %	0	0.4	-0.5	-1.9
Never n = 5861	Number	1611	1708	1519	1023
	Percentage	16.9	17.3	18.6	20.4
	Difference, %	0	0.4	1.7	3.5



**Figure 1.** Changes in the proportion of women who perform breast self-examination as a function of educational level

### Impact of selected risk factors on the frequency of breast self-exams

In the group of 2396 women who reported a family history of breast cancer, only 15.4% declared that they performed self-exams every month; the corresponding figure for respondents without a family history of the disease stood at 13.7%.

Only 14.9% of women who had been taking hormonal medication in the previous five years declared that they examined their breasts on a regular basis; the corresponding figure for other respondents stood at 13.8%. 17.3% of women with breast ailments reported regular self-exams, as compared to 12.9% of respondents without similar complaints (Tab. III).

### Discussion

Essential health-promoting behaviors that form part of secondary breast cancer prevention include breast self-exams and mammography screening. Regular check-ups enable the early detection of disease and demonstrate a sense of responsibility for one's own health.

The present study found that only one in seven women (14%) in Lower Silesia examines her own breasts every month; 18% do not do it at all and 68% only every now and then. In a CBOS survey conducted in 2002 (i.e. before the implementation of the Population-Based Early Breast Cancer Detection Program) the proportion of women who declared that they examine their breasts regularly was twice as high (28%), while the percentage of respondents who never did it was similar (20%). It is worth noting that as many as 80% of the women in the CBOS survey said "yes" when asked: "Are you familiar with the breast self-exam, recommended by physicians as a method for the early detection of breast cancer?" [13]. The figure may suggest that most women have the requisite knowledge about breast cancer prevention but only few decide to put it into practice.

Regular monthly self-exams are recommended especially for women from high-risk families from the age of 18 onward [14]. The effectiveness of the method in cancer detection is limited due to its low sensitivity and specificity [15], but also due to the low frequency with which it is

**Table II.** Frequency of breast self-exams as a function of educational level

Variable	Every month		Sometimes		Never		Total	
	n	%	n	%	n	%	n	%
Incomplete primary	8	7.2	69	62.2	34	30.6	111	0.3
Primary	244	10.1	1405	58.4	758	31.5	2407	7.4
Vocational	631	13.3	3124	65.9	989	20.8	4744	14.5
Secondary	2056	14.1	10 158	69.4	2409	16.5	14 623	44.8
Incomplete higher	292	14.9	1391	71.2	271	13.9	1954	6.0
Higher	1077	14.3	5300	70.4	1151	15.3	7528	23.1
Data unavailable	204	16.2	806	64.0	249	19.8	1259	3.9
Total	4512		22 253		5861		32 626	100

**Table III.** Impact of risk factors and alarming symptoms on the frequency of breast self-exams

Exposure to a risk factor	Risk factors and alarming symptoms											
	Family history of breast cancer				Use of hormonal medication in previous 5 years				Breast ailments			
	L <sub>K</sub>	%	L <sub>KS</sub>	%	L <sub>K</sub>	%	L <sub>KS</sub>	%	L <sub>K</sub>	%	L <sub>KS</sub>	%
YES	2396	7.3	369	15.4	2042	6.3	304	14.9	6825	20.9	1178	17.3
NO	30 230	92.7	4143	13.7	30 584	93.7	4208	13.8	25 801	79.1	3334	12.9
Difference (YES – NO)				1.7				1.1				4.4
Total	32 626	100			32 626	100			32 626	100		

L<sub>K</sub>— number of women with the risk factor; L<sub>KS</sub>—number of women who perform breast self-exams every month

practiced [16]. Despite these shortcomings, women should be taught breast exam techniques and encouraged to use them on a regular basis, so as to increase their appreciation and sense of responsibility for their own health.

The present study found that self-exam frequency significantly depended on age and educational level. Younger women were much more likely to examine their own breasts, and the proportion of those who never did considerably increased with age. A similar pattern was observed for education: the higher the level achieved, the greater the proportion of women who regularly examined their breasts; the lowest frequency was observed among respondents with primary and incomplete primary schooling. On average, one in three women with the corresponding educational level never examined her breasts, as compared to one in five and one in six for women who have completed vocational training and graduated from high school, respectively. These findings are consistent with the results of a study on 1000 Polish breast-cancer patients conducted in 2011 [17], which likewise reported a significantly higher frequency of regular breast self-exams among younger and better educated women.

Despite the high incidence and mortality rates of breast cancer, its etiology has not yet been fully explained. However, a number of risk factors have been identified, such as a history of breast cancer among close relatives and the prolonged use of hormonal medication. The present study assessed the impact of these risk factors on the frequency of regular breast self-exams. 7.3% of respondents reported a family history of breast cancer; however, only one in six or seven women from the group (15.4%) declared that she examined her breasts every month. The figure was comparable to that for women without any family history of the disease (13.7%). A similar pattern was observed for women who had taken hormonal medication within five years prior to the study. Only 14.9% reported regular self-exams, as compared to a similar figure among those who had not taken any hormonal medication (13.8%). One in five (20%)

women reported the presence of breast ailments or lesions. The proportion of those who declared they examined their breasts regularly (17.3%) was higher than the corresponding figure for women free from similar complaints (12.9%). It seems that the presence of breast ailments and lesions has a significant impact on the regularity of breast self-exams. It is alarming, however, that a family history of breast cancer and the prolonged use of hormonal medication do not translate into a rise of cancer alertness and greater frequency of breast self-exams among respondents. This suggests a basic lack of awareness of the risk factors of the disease and the important role of self-exam in its secondary prevention. It is likely that the greater regularity of self-exams among women with breast ailments stemmed from the associated pain and discomfort rather than increased cancer awareness.

## Conclusions

1. Age and education have a significant impact on the frequency of breast self-exams. Younger and better educated women perform them significantly more often.
2. A family history of breast cancer and the use of hormonal medication do not seem to have a significant impact on the frequency of self-exams. This may suggest a lack of awareness of the risk factors of the disease and the role of self-exams in its secondary prevention.
3. A presence of breast ailments or lesions has a significant impact on the frequency of breast self-exams; this correlation, however, seems to stem from the associated pain and discomfort rather than increased cancer awareness.

**Conflict of interest:** none declared

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