





ORIGINAL PAPER

Małgorzata Nagórska ^{1(ADFG)}, Magdalena Aksamit ^{2(BCDE)}, Krystyna Krygowska ^{3(EFG)},
Dorota Bassara-Nowak ^{1(FG)}

Determinants of women's behavior in breast cancer prevention

¹ Medical Faculty, University of Rzeszow, Rzeszow, Poland

² Medical Care Center, Jarosław, Poland

³ John Paul II Podkarpacie Province Hospital, Krosno, Poland

ABSTRACT

Introduction. According to statistics, breast cancer is the second leading cause of death in Poland. Progress in treatment and diagnosis gives an opportunity of a quick diagnosis, but women are reluctant to undergo prophylaxis screening.

Aim. To identify women's attitudes about breast cancer prophylaxis.

Material and methods. The diagnostic survey was conducted in a group of 200 women. The research tool was the questionnaire developed by the authors.

Results. Knowledge about breast cancer and prophylaxis was on an average level. Nearly half of the women surveyed (45.5%) declared that they do not ask for a breast examination while visiting a gynecologist. Only 26.8% of the surveyed women were systematically subjected to preventive examinations for breast cancer, while 18.7% of them performed breast self-examination. Every fifth respondent used invitation for a free mammogram.

Conclusion. The women's knowledge about breast cancer is average, but it does not translate into their attitudes towards the prevention of this cancer. Most women neither perform breast self-examination nor benefit from free prophylaxis programs. Younger respondents most often use the Internet. Education and place of residence do not affect the participation of women in preventive examinations for breast cancer.

Keywords. attitudes, breast cancer, knowledge, prophylaxis

Introduction

Nowadays, breast cancer is a major health issue. Similar to lung cancer, it accounted for 12.3% of newly diagnosed cancers in the world in 2018.¹ What is also disturbing is the steady increase in the incidence in Poland. The incidence rate in 1999 was 38.78/100,000, while in 2009 this level increased to 50.37/100 thousand, and in 2018 –

59.1/100,000. Mortality in this period was at the level of 14/100,000. According to the National Cancer Registry in 2016, breast cancer was the second leading cause of death among women in Poland after lung cancer.²

The incidence exceeds the number of deaths three times, which proves the progress that has taken place over the years. The 5-year survival rate also reached

Corresponding author: Małgorzata Nagórska, e-mail: nagorska@ur.edu.pl

Participation of co-authors: A – Author of the concept and objectives of paper; B – collection of data; C – implementation of research; D – elaborate, analysis and interpretation of data; E – statistical analysis; F – preparation of a manuscript; G – working out the literature; H – obtaining funds

Received: 23.03.2019 | Accepted: 29.04.2019

Publication date: June 2019

a high level of 75% thanks to the introduction of the breast cancer screening program, effective diagnosis and treatment.³⁻⁵

The prevalence of breast cancer is not the same in all countries, the difference between the lowest and the highest prevalence varies 25 times. About 55% of breast cancer cases are reported in industrialized countries, with a similar percentage of deaths reported in developing countries.

The highest prevalence of breast cancer (90–100/100,000) is recorded in North America, Australia, northern and western Europe. The average prevalence is observed in Central and Eastern Europe. The lowest incidence rate (27/100 000) is recorded in Africa and Southeast Asia. In 2012, 1.67 million of new breast cancer cases were diagnosed, which is 25.2% of all cancers in women, and more than 2 million new cases were diagnosed in 2018. 626,679 deaths due to breast cancer were confirmed.

Mortality, like morbidity, varies. Southern part of South America, Africa and Asia are the areas where the highest mortality due to breast cancer was recorded, while Central America and some regions of Asia have the lowest mortality rate.⁶

The risk factors increasing the incidence are: 50–70 years of age, early menarche age, menopause at late age, birth of the first child after 30 years, long-term hormone replacement therapy, family history of cancer and mutations in the BRCA1, BRCA2 genes.

Primary prevention in breast cancer is based on the implementation of a healthy lifestyle, first of all – a healthy diet and physical activity, and maintaining a normal body weight.^{7,8} Breastfeeding is an important factor in reducing the risk of getting sick. It has been proven that long-term > 6-month breastfeeding may reduce the risk of disease by 10–30%.⁹ Other preventive measures, resulting from the fact that 3–8% of breast cancers are genetically determined, are chemoprevention and prophylactic mastectomy and / or ovariectomy. These are treatments dedicated to people with mutations in the BRCA1 and / or BRCA2 genes, in whom the risk of breast cancer amounts to 55–85% and 37–85%, respectively. The risk of developing ovarian cancer in these people is 15–60% and 15–27%, respectively.¹⁰⁻¹³

Secondary prevention, i.e. all actions aimed at early detection of an already existing disease, includes: mammography in healthy women and ultrasonography as a complementary examination of breast self-examination.

The screening system for breast cancer in Poland includes a population of women aged 50–69 years, in whom mammography can be performed every 2 years. However, in women from the risk group (breast cancer among the closest family members, mutation within BRCA1 or BRCA2 genes), a mammography re-screening should be performed after 12 months.¹⁴

Aim

The aim of the paper was to identify women's attitudes about breast cancer prophylaxis.

Material and methods

The study used the method of a diagnostic survey, a survey technique. The research tools were a questionnaire developed by the authors, which contained twenty-seven questions. Fifteen of them checked the women's knowledge about breast cancer prevention. One point was awarded for each correctly answered answer. In order to assess the level of knowledge, the following scores were adopted: 7 points – low level of knowledge, 8–12 points – moderate, 13–15 points – high. The remaining questions concerned attitudes towards breast cancer prevention. Statistical analysis was carried out using the SPSS software. The chi-square independence test was used for statistical analysis, and if the relationship between the variables was confirmed, the V Kramer's test determining the strength of dependence was additionally used.

Characteristics of the study group

The study was carried out at the turn of February and March 2015. The group of respondents consisted of 200 adult women, patients of the Medical Care Center in Jarosław, who voluntarily gave consent to participate in the study. Survey questionnaires were handed personally after providing information about the purpose of the study, the way of completing it and anonymity. Correctly completed questionnaires were tantamount to the consent to participate in the study.

The most numerous group were women aged 41–50, slightly smaller, but equally numerous group were women over 50. The remaining 17.5% were women aged 31–40, the least numerous group were women aged 19–30 (14%). The research shows that 53.3% of women were rural residents, while 46.7% of women lived in the city.

Among the respondents, 72.5% were married women, 17.5% were single, and only 10% were widows. The respondents most often had higher education (45.5%), every fifth (23.2%) – vocational education, 17.7% – secondary, and 13.6% – primary education.

The women performing mental or manual work accounted for 45.5%, the remaining 9% were retired or on pension.

A large proportion of women surveyed (40%) gave birth to 1 or 2 children, a little less (32.5%) – 3 children. Nulliparous women constituted 18.5% and only 9% gave birth to more than four children.

Among the women surveyed, the vast majority (93%) had their first menstrual period between the age of 12 and 15. In the study group, 36% gave birth to their first child at the age of 21–25, slightly less (34%) – at the age of 17–20, in the third place were women giving birth

Table 1. The characteristics of the studied population

	Variable	N	%
Age	19-30	28	14.0
	31-40	35	17.5
	41-50	72	36.0
	> 50	65	32.5
Marital status	Married	145	72.5
	Widow	20	10.0
	Single	35	17.5
Number of children	None	37	18.5
	1-2	80	40.0
	3-4	65	32.5
	> 4	18	9.0
Age at the birth of the first child	17-20	68	34.0
	21-25	72	36.0
	26-30	38	19.0
	>30	22	11.0
Age at menarche	12-15	185	93.0
	16-18	14	7.0
Education	Higher	90	45.5
	Secondary	35	17.7
	Vocational	46	23.2
	Primary	27	13.6
	Mental	90	45.5
Type of work performed	Physical	90	45.5
	Retired	18	9.0
Source of knowledge	Internet	101	50.5
	Books	100	50.0
	Medical staff	45	22.5
	Other sources	24	12.0
Place of residence	Urban area	93	46.7
	Rural area	106	53.3

to the first child at the age of 26–30 (19%), the least numerous was a group of women that had their first child above 30 years of age (11%).

Over half of the respondents indicated the media – the Internet, radio or TV as a source of information about breast cancer. Few less got knowledge from scientific books and press, and one in five was educated by medical staff (Table 1).

Results

The results of the test of knowledge indicate that the largest group (81.5%) were the subjects who presented average level of knowledge (8–12 points), 14.5% women presented a low level of knowledge (7 points). The highest score (13–15 points) obtained only 4% of the respondents.

Among the surveyed women, 62.1% of the respondents confirmed that they regularly undergo prophylaxis screening for breast cancer, 37.9% did not regularly screen.

Most women did not perform self-examination of the breast (58.6%), while 31.3% of the respondents declared performing self-examination of the breasts.

The largest group of respondents (91%) agreed that women with the family history of breast cancer should be covered by prophylaxis – the answers “yes” and “rather yes”, but 8.0% claimed that such women should not be subjected to prophylaxis.

The research showed that more than half of the respondents (65.5%) had the mammograms performed, 34.1% of the patients had never the mammography performed. A large proportion of the respondents (89.7%) reported to a gynecologist, when they detect a nodule during breast self-examination, 10.3% of women ignored this fact.

Nearly two-thirds of women (65.5%) felt that breast cancer screening programs should be more publicized in the media.

When asked whether women with breast cancer should be offered support group meetings, the vast majority of women (75.5%) answered “yes” and “rather yes”.

Table 2. Level of knowledge of women and attitudes towards breast cancer prevention

What sources of knowledge do you use about breast cancer?		Women's knowledge of breast cancer (max 15 points)			Total points	
		7 pts.	8-12 pts.	13 - 15 pts.		
1		2	3	4	5	
Internet, radio, TV	Yes	N	19	77	5	101
		%	65.5	47.2	62.5	50.5
p = 0.15						
Scientific books, press	Yes	N	7	88	5	100
		%	24.1	54.0	62.5	50.0
P = 0.01, Kramer's V = 0.26, Chi - square = 9.30 (df = 2)						
Medical professional	Yes	N	8	36	1	45
		%	27.6	22.1	12.5	22.5
P = 0.64						
Other source	Yes	N	1	23	0	24
		%	3.4	14.2	0	12.0
P = 0.15						
Do you regularly undergo preventive examinations for breast cancer?	Yes	N	8	44	1	53
		%	27.6	27.3	12.5	26.8
	Rather yes	N	10	52	3	65
		%	34.5	32.3	37.5	32.8
	No	N	6	26	2	34
		%	20.7	16.1	25.0	17.2
	Rather no	N	5	39	2	46
		%	17.2	24.2	25.0	23.2
P = 0.93						
Do you regularly perform breast self-examination?	Yes	N	3	32	2	37
		%	10.3	19.9	25.0	18.7
	Rather yes	N	9	40	0	49
		%	31	24.8	0	24.7
	No	N	11	57	4	72
		%	38	35.4	50.0	36.4
	Rather no	N	6	32	2	40
		%	20.7	19.9	25.0	20.2
P = 0.62						
Have you ever had a mammogram??	Yes	N	19	81	5	105
		%	65.5	50.3	62.5	53.0
	No	N	8	80	3	91
		%	27.6	49.7	37.5	46.0
	Rather no	N	2	0	0	2
		%	6.9	0	0	1.0
P = 0.06						
If you detect a lump during self-examination, do you report to the doctor?	Yes	N	12	91	4	107
		%	41.4	56.5	50.0	54.0
	Rather yes	N	14	51	4	69
		%	48.3	31.7	50.0	34.8
	No	N	1	7	0	8
		%	3.4	4.3	0	4.0
	Rather no	N	2	12	0	14
		%	6.9	7.5	0	7.1
P = 0.60						

	1		2	3	4	5
Do you lead a healthy lifestyle?	Yes	N	4	20	0	24
		%	13.8	12.4	0	12.1
	Rather yes	N	5	84	6	95
		%	17.2	52.2	75.0	48.0
	No	N	15	24	2	41
		%	51.8	14.9	25.0	20.7
	Rather no	N	5	33	0	38
		%	17.2	20.5	0	19.2
P < 0.001, Kramer's V = 0.26, Chi – square = 26.46 (df = 6)						
If you are at the gynecologist and he does not perform a breast examination, do you ask for this examination?	Yes	N	7	30	0	37
		%	24.1	18.6	0	18.7
	Rather yes	N	3	33	2	38
		%	10.3	20.5	25.0	19.2
	No	N	18	68	4	90
		%	62.2	42.3	50.0	45.5
	Rather no	N	1	30	2	33
		%	3.4	18.6	25.0	16.7
P = 0.16						
When you feel the discomfort of the reproductive system, do you report to the gynecologist?	Yes	N	14	84	4	102
		%	48.3	52.2	50.0	51.5
	Rather yes	N	10	64	2	76
		%	34.5	39.8	25.0	38.3
	No	N	2	7	1	10
		%	6.9	4.3	12.5	5.1
	Rather no	N	3	6	1	10
		%	10.3	3.7	12.5	5.1
p = 0.55						

The research showed that 31% of surveyed women thought that they lead a healthy lifestyle, the remaining 69% admitted that they do not lead a healthy lifestyle.

The survey also asked about participation in prophylaxis screening, 38% of women admitted that they do not use invitations for free mammography, 22% of women answered that they are likely to take advantage of it, the answer “yes” was indicated by 21.5%, almost as many as the answer “rather yes”. 17.5% of women indicated the answer “rather not”.

The research shows that 65.6% of women surveyed did not ask for a breast examination during an appointment at a gynecologist, 34.4% asked for such an examination. In the group of women surveyed, 81.8% reported to a gynecologist when they experience some discomfort from the reproductive system.

Women with higher scores in the knowledge test preferred scientific books as their source of knowledge ($p = 0.01$). In the case of other sources of knowledge, no statistically significant relationships were found with the level of respondents' knowledge.

There was no statistically significant relationship between women's knowledge about breast cancer and regular prophylaxis screening for breast cancer ($p = 0.93$) as

well as between women's knowledge and breast self-examination ($p = 0.62$).

There was a weak statistically significant relationship ($p = 0.06$) between women's knowledge about breast cancer prevention and mammography.

A lack of statistically significant relationship ($p = 0.60$) was found between knowledge and going to the gynecologist after detection of a lump in the breast during breast self-examination. The research showed that women who do not lead a healthy lifestyle are more often characterized by a lower level of knowledge about breast cancer. The dependence was weak ($p < 1$). There was no statistically significant relationship ($p = 0.30$) between knowledge and the use of invitations to free mammography by women. A lack of statistically significant relationship ($p = 0.16$) was found between knowledge and asking for breast examination by women, when a doctor does not perform it.

The results showed that there was no relationship ($p = 0.55$) between women's knowledge about breast cancer prevention and women reporting to a gynecologist when they experience some discomfort from the reproductive system. The relationship between the lev-

el of respondents' knowledge and their attitude towards breast cancer prevention is illustrated in Table 2.

Statistical analysis showed that younger women acquired knowledge more often from the Internet, radio and TV, this is a weak and statistically significant relationship ($p=0.02$). On the other hand, older women acquired knowledge from other unmentioned sources – a weak statistically significant relationship ($p=0.008$). There was no statistically significant relationship between the place of residence and the sources of knowledge about breast cancer. Internet, radio, TV ($p=0.84$), scientific books, press ($p=0.18$), medical professional (doctor, nurse, midwife) ($p=0.74$) and other source ($p=0.73$). There is also a lack of dependence between the place of residence ($p=0.11$) and education of the surveyed women ($p=0.59$), and participation in preventive examinations for breast cancer.

Discussion

Breast cancer is one of the leading causes of death among women in Poland and in the world. In the initial stage of the disease, the possibility of curing is complete, in the late stage the chances become smaller.¹⁵ In this situation, the women's knowledge is important, which often determines their attitudes towards the prevention of breast cancer. In the study, women most often presented average (81.5%) or low (14.5%) level of knowledge. The level of women's knowledge about breast cancer was also unsatisfactory in studies carried out by other authors in several countries around the world.¹⁶⁻²⁰

In Ślusarska's study, 82.6% of women know the principles of breast self-examination, while in Najdyhor research - 57% of women, and in Węgrowski's study - 42% of the respondents could not indicate the optimal time for breast self-examination.²¹⁻²³ The correct answer to the question about optimal breast self-examination time (2-3 days after menstruation) in the present study gave 86% of the respondents, the remaining 14% considered the statement as false. In Abolfotouh's study over 40% of the respondents correctly indicated the frequency and optimal time of self-examination.¹⁸

The knowledge of the risk factors is necessary to prevent cancer. The Przsada and Najdyhor studies showed that the vast majority of women surveyed lacked knowledge about them.^{16,22} In our study women mostly responded correctly.

An important aspect in the prevention of breast cancer is the knowledge of symptoms that indicate cancer. Women asked about the symptoms of breast cancer did not show much knowledge e.g. the question whether enlarged axillary lymph nodes are a symptom of breast cancer, 54.8% of them responded correctly. Almost half of the respondents incorrectly indicated that this is a false answer. Much better with a similar question coped the women in Ślusarska's study, where over

70% considered enlarged axillary lymph nodes as a sign of cancer. The question about the way of breast cancer spread was the most problematic. The vast majority of women (74.5%) indicated the wrong answer. Only 25.5% knew the correct answer. Similarly, in the studies of Woźniak, where 39% of respondents knew the symptoms of breast cancer, the remaining 56% did not have such knowledge.²⁴

The second part of the study concerned the attitudes of women towards the prevention of breast cancer. Our study was in line with the results of other authors investigating similar aspects of women's attitudes towards breast cancer prevention.

In Ślusarska's studies, over 61% of the respondents knew that they should have a breast examination during the visit to a gynecologist, but they do not ask for it.²¹ The results of our study are comparable, because 45.5% of women declared they would not ask for it if a gynecologist did not suggest this examination.

On the other hand, only 26.8% of the respondents who answered "yes" to the question about having systematic prophylactic examinations for breast cancer, 32.8% answered "rather yes" – these are quite low results. Breast self-examination, which is a fast, and also the cheapest method to detect early changes in mammary glands, is performed by only 18.7% of women. As many as 36.4% of women do not perform such test. For comparison, in Alwan et al. studies 42.6% of women perform breast self-examination (BSE).¹⁷ Regular self-examination is performed by every third Greek woman.²⁶

In Przsada study, the majority of women asked about breast self-examination confirmed doing it (81%), according to research by Woźniak, breast self-examination performs 54%.^{16,24} After detecting the lesion, 89% of the respondents indicated that they reported to the doctor, for comparison in research among women in Ireland almost 70% saw a GP after detecting the lesion.²⁵

The literature states that mammography is the most effective prophylactic examination for breast cancer. In our research, every second woman (53%) had mammography performed, which coincides with Przsada study, where 53% of women have undergone a mammographic examination at least once.¹⁶

The results of research carried out by the teams of Korkut, Dewal, Lostao and Garwacka-Czachor in Turkey, USA, Spain and Poland confirm that despite satisfactory knowledge of women about breast cancer, they do not participate in preventive examinations.²⁷⁻³⁰ In our research were in line with them, i.e. the level of knowledge does not affect health-related behaviors - participation in screening tests.

In the Przsada study, a large proportion of the respondents were in favor of the need to implement and publicize preventive programs, which coincides with

the present research. 66.2% of women are in favour of advertising breast cancer prevention programs in the media, 30.3% of the respondents answered "rather yes", only 1% of women indicated the answer "no".

However, statistics on the use of invitations for free mammography are still disturbing. Research shows that only 21.7% use such invitations, 22.2% rather use them, and 38.4% do not use them. This statistic looks similar to Przysada study, where 33% of the respondents took advantage of this possibility, and almost half did not, explaining it with the lack of necessity.¹⁶

According to the study, women do not have enough knowledge about breast cancer and the right attitudes towards prevention. They are still reluctant to use invitations for free mammography, disregarding their health. Knowledge and awareness as well as social support are essential elements in the prevention and treatment of breast cancer.

Conclusions

Summarizing, the women's state of knowledge about breast cancer is on average level, however, women's knowledge does not translate into their attitudes towards the prevention of this cancer. Most women do not perform breast self-examination and do not benefit from free prophylaxis programs. Moreover, the age of women determines the choice of sources of information about breast cancer. Younger respondents most often use the Internet.

Education and place of residence do not significantly affect the participation of women in prophylaxis screening for breast cancer.

References

- Worldwide cancer research data. World cancer research fund. <https://www.wcrf.org/dietandcancer/cancer-trends/worldwide-cancer-data> (Access 22.02.2019).
- Wojciechowska U, Czaderny K, Ciuba A, Olasek P, Dikowska J. *Nowotwory złośliwe w Polsce w 2016. Krajowy Rejestr Nowotworów*. Warszawa 2018.
- Krajowy Rejestr Nowotworów. <http://onkologia.org.pl/>, (Access 22.02.2019)
- Grądalska-Lampart M, Radziszewska A, Patro A, Wojciechowska U. *Nowotwory złośliwe w województwie podkarpackim w 2016 roku*. http://www.szpital.rzeszow.pl/pco/podkarpacki_rejestr_nowotworow/publikacje/ (Access 22.02.2019).
- Bojakowska U, Kalinowski P, Kowalska ME. Epidemiologia i profilaktyka raka piersi. *Journal of Education, Health and Sport*. 2016;6(8):701-710.
- Globocan 2018: Estimated Cancer Incidence, Mortality and Prevalence Worldwide in 2018. http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx (Access 24.02.2019).
- Europejski Kodeks Walki z Rakiem. www.kodekswalkizrakiem.pl (Access 23.02.2019)
- Krzakowski M, Kawecki A, Badurak P. *Nowotwory złośliwe: postępowanie wielodyscyplinarne: leczenie systemowe, chirurgia, radioterapia, Tom I*. Lublin: Wyd. Czelej; 2012.
- Nehring-Gugulska M, Żukowska-Rubik M, Pietkiewicz A. Karmienie piersią w teorii i praktyce. *Medycyna Praktyczna*. 2017;45-46.
- Krzemieniecki K, Komorowski A, Wysocki W. Wybrane nowotwory. Rak piersi. W: Gajewski P, (red.). *Interna Szczeklika. Podręcznik chorób wewnętrznych*. Kraków: Medycyna praktyczna; 2013: 2210 – 2214.
- Kordek R. *Onkologia: podręcznik dla studentów i lekarzy*. Gdańsk: Wyd. Via Medica; 2007.
- Jarosz M. *Zalecenia żywieniowe w prewencji nowotworów, Materiały konferencyjne i Krajowej Konferencji Naukowej pt. Żywnienie i nowotwory Polskiego Towarzystwa Nauk Żywnościowych*. Olsztyn: 2018;9.
- Nehring-Gugulska M, Żukowska-Rubik M, Pietkiewicz A. Karmienie piersią w teorii i praktyce. *Medycyna Praktyczna*. 2017:273-284.
- Ustawa z dnia 3 listopada 2015 r. – o ustanowieniu programu wieloletniego „Narodowy Program Zwalczenia Chorób Nowotworowych”. (Dz. U. z 2015 r. poz. 1165).
- Krzemieniecki K, Komorowski A, Wysocki W. Wybrane nowotwory. Rak piersi. w: Gajewski P. *Interna Szczeklika. Podręcznik chorób wewnętrznych*. Kraków: Medycyna praktyczna; 2013;2210-2214.
- Przysada G, Bojczuk T, Kuźniar. Poziom wiedzy kobiet na temat profilaktyki i wczesnego rozpoznawania raka piersi. *Young Sports Science*. 2009;3:129-136.
- Alwan NA, Al-Diwan JK, Wafa'M AA, Eliessa RA. Knowledge, attitude & practice towards breast cancer & breast self examination in Kirkuk University, Iraq. *Asian Pacific Journal of Reproduction*. 2012;1(4):308-311.
- Abolfotouh MA, Ala'a AB, Mahfouz A A, Al-Assiri MH, Al-Juhani AF, Alaskar AS. Using the health belief model to predict breast self examination among Saudi women. *BMC Public Health*. 2015;15(1):1163.
- Okobia MN, Bunker CH, Okonofua F E, Osime, U. Knowledge, attitude and practice of Nigerian women towards breast cancer: a cross-sectional study. *World Journal of Surgical Oncology*. 2016;4(1):11.
- Akhigbe AO, Omuemu VO. Knowledge, attitudes and practice of breast cancer screening among female health workers in a Nigerian urban city. *BMC Cancer*. 2009; 9(1): 203.
- Ślusarska B, Nowicki G, Łachowska E, Piasecka H, Marciniak A. Wiedza kobiet na temat profilaktyki raka piersi w wybranych uwarunkowaniach socio-demograficznych. *Medycyna Ogólna i Nauki o Zdrowiu*. 2016; 22(1):59-65.
- Najdyhor E, Krajewska-Kułak E, Krajewska-Ferishah K. Wiedza kobiet i mężczyzn na temat profilaktyki raka piersi. *Ginekologia Polska*. 2013;84:116-125.
- Węgorowski P, Michalik J, Gogułka E, Rząca M, Pietraszek A. Ocena poziomu wiedzy kobiet na temat profilaktyki raka piersi. *Journal of Education, Health and Sport*. 2017;7(8):593-606.

24. Woźniak I. Wiedza o schorzeniach nowotworowych narządów kobiecych i postawy kobiet wobec badań profilaktycznych, *Problemy Pielęgniarstwa*. 2008;16,(1,2):136-143.
25. O'Mahony M, McCarthy G, Corcoran P, Hegarty J. Shedding light on women's help seeking behaviour for self-discovered breast symptoms. *European Journal of Oncology Nursing*. 2013;17(5),632-639.
26. Grosomanidis D, Foka A, Panousis D, et al. Breast cancer awareness among Greek women and potential determinants. *Hellenic Journal of Surgery*. 2015;87(4):289-297.
27. Korkut Y. Assessment of knowledge, attitudes, and behaviors regarding breast and cervical cancer among women in western Turkey. *Journal of International Medical Research*. 2019;0300060519830252.
28. Dewal L. Testicular and breast self-examination knowledge and practices of certified athletic trainers and the secondary prevention of such cancers in intercollegiate student-athletes. *Am J Health Stud*. 2006;21:28-35.
29. Lostao L, Joiner T, Pettit JW, et al. Health beliefs and illness attitudes as predictors of breast cancer screening attendance. *Eur J Public Health*. 2001;11:274-279.
30. Garwacka-Czachor E, Maciejczyk A, Bębenek M. Samo-badanie piersi w grupie kobiet biorących udział w przesiewowych badaniach mammograficznych, *Biuletyn Polskiego Towarzystwa Onkologicznego Nowotwory*. 2016;1(3): 228-232.