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Bilateral preventive mastectomy as a preventive method of breast cancer in the opinion of women

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Abstract

Background

Breast cancer is the most common cancer among women. Despite of the progress of medicine and develop of treatment, it is still the second cause of death among women. To reduce the risk of getting breast cancer, the more often treatment is "preventive mastectomies" which completely remove the breast gland by healthy women that are in the "high risk" group.

Material and Methods

To conduct the research I develop a survey, written by my own. The study included 252 women from Poland over the age of 18.

Results

The opinion about the performance of preventive mastectomies in case of women in "high risk" was very diverse. Only 13% of interviewees were convinced that they would have the surgery and up to 29% could not give an answer. Most woman (86%) are convinced that breast cancer is genetically determined. That mastectomy can be a way to prevent breast cancer agrees 69% of respondents. More than half of respondents (52%) don't know if such surgery is in Poland available. Only half of the respondents could indicate the place where an examination of an increased risk of breast cancer can be made (49%). 81% of respondents examine there breasts at least with one method, and 19% did not check it at all.

Conclusions

The knowledge about the heredity of cancer and the availability of treatments is insufficient. Women are not convinced that they would have gone to radical preventive treatment, and they are afraid of many consequences connected with it. It is essential to educate the public including the medical staff in this scope. It is also important that the patient together with his doctor examined all the possible options for limiting the risk of cancer.

Key words: Brest cancer, preventive mastectomy, women

Introduction

In recent years, the intensity of cancer has been steadily increasing. Breast cancer is currently one of the biggest epidemiological problems. It absolutely requires the introduction of effective measures for prevention and education of the public. The biggest problem in connection with the occurrence of breast cancer turns out to be late diagnosis, which translates into high mortality rates, up to 1/3 of cases of this disease ends in death. Poland belongs to the group of countries where the risk of malignant breast cancer is high. Breast cancer is the dominant health problem in the female population accounting for 21.9% of cancer cases. The analysis of the structure of deaths in women due to breast cancer is equally alarming, the cancer ranked second in 2013 accounting for 13.9% of cancer-related deaths [1]. Significant

risk factors for breast cancer include gender, age, long-term use of hormone therapy, poor diet, obesity, excessive alcohol consumption, early age of first menstruation or late age of first pregnancy, and genetic burden, including BRCA1 and BRCA2 gene mutations [2]. The causal relationship between increased risk of breast cancer and mutations in the BRCA1 gene has been known for nearly two decades. It is estimated that there are about 100,000 carriers of BRCA1 and BRCA2 gene mutations in Poland. The presence of BRCA1 mutations significantly increases the likelihood of developing breast cancer and ovarian cancer. The risk of breast cancer in carriers of an abnormal copy of the gene reaches 50-80%, and for ovarian cancer - 40%. When genetic mutations are found, there is no treatment for the identified gene defects. Cancer detected at an early stage has a much better chance of being cured, so it is important to have regular check-ups. Of greatest importance for early detection of breast cancer is regular breast self-examination, ultrasound and mammography. In some patients, a prophylactic mastectomy is considered. A mastectomy involves the removal of the entire breast along with the pectoralis major muscle and nipple. There are many different variations of this method. Preventive mastectomy is a method that involves removing a healthy gland to significantly reduce the risk of cancer, especially in high-risk women. Increasingly, mastectomy is being performed simultaneously with breast reconstruction. Preventive mastectomy can reduce the risk of breast cancer by up to 90%, but it does not provide absolute certainty that cancer will not occur, so it remains a controversial method of prevention [3-5].

The aim of the survey is to find out women's opinions on bilateral preventive mastectomy as a preventive method of breast cancer.

In addition, the following specific objectives were formulated: (1) To determine the factors influencing women's opinion on preventive mastectomy. (2) To find out the level of women's knowledge about the inheritance of breast cancer. (3) To assess women's knowledge of the availability of genetic testing for breast cancer. (4) To assess women's knowledge of preventive mastectomy.

Material and method

The study material included 252 women. The main criterion for inclusion in the study was age ≤ 18 years. Participation in the study was voluntary and random. The study used a proprietary questionnaire, consisting of 18 questions, including five multiple-choice and 13 single-choice. Questionnaires were collected in two ways: paper and online. The paper

questionnaires were collected in person, while the online survey was posted on interankiety.pl. using the CAWI (Computer-Assisted Web Interview) method. Of the respondents, 139 completed the online questionnaire, 113 women completed the paper version.

Data analysis was performed using MS Excel and Statistica 12. Pearson's Chi² test was used for analysis, taking the level of statistical significance as $p \leq 0.05$. 25 statistical analyses were performed in the study. Five questions were correlated with age, education, place of residence, marital status and positive family history of breast cancer. The results of nine of them were found to be statistically significant.

Table 1 Characteristics of the study group

Variable		n	%
Age group	18-29	116	46
	30-39	49	20
	40-49	31	12
	50-59	23	9
	60 and over	33	13
Place of residence	city	222	88
	village	30	12
Education	basic	11	4
	professional	39	15
	Medium	80	32
	higher	122	48
Marital status	Miss	108	43
	married	114	45
	divorcee	19	8
	widow	11	4

Results

Among those surveyed, 22% of women declared a family history of breast cancer (56), while 78% had no family history of the disease (196).

Of the respondents, 6 had breast cancer, 3 women report the disease in their sister, 12 in their mothers, 12 in their grandmothers (maternal mother), 6 in their maternal sister, 9 in their maternal grandmother, 7 cases occurred in their father's mother, 3 in their father's grandmother and 3 in their father's sister (Table 2).

Table 2 Breast cancer patients in the family

Degree of relationship	I	My sister	My mother	Mother's mother	Mother's sister	Mother's grandmother	Father's mother	Father's grandmother	Father's sister
Number of responses	6	3	12	12	6	9	7	3	3
% of responses given	2%	1%	5%	5%	2%	4%	3%	1%	1%

More than 86% (217) of respondents are of the opinion that breast cancer can be genetically determined. A highly significant correlation ($p=0.00001$) was found between the distribution of responses to the question: can breast cancer be genetically determined and education. There was also a significant correlation between the answer and the marital status of the respondents ($p=0.01$) and age ($p=0.007$). The strongest correlation with knowledge is education, which translates into higher knowledge. A positive family history of breast cancer was not positively correlated with any question ($p=0.5$).

The vast majority of those participating in the survey correctly answered the question, "What is a mastectomy?" - 96.8%, or 244 out of 252 respondents, while 5 of them answered that they did not know (2.8%). Only one answer was incorrect.

Mastectomy as a preventive method of breast cancer is recognized by 69% (174), 11% do not recognize it as such a method (27), and 20% cannot answer this question (50) (Fig.1).

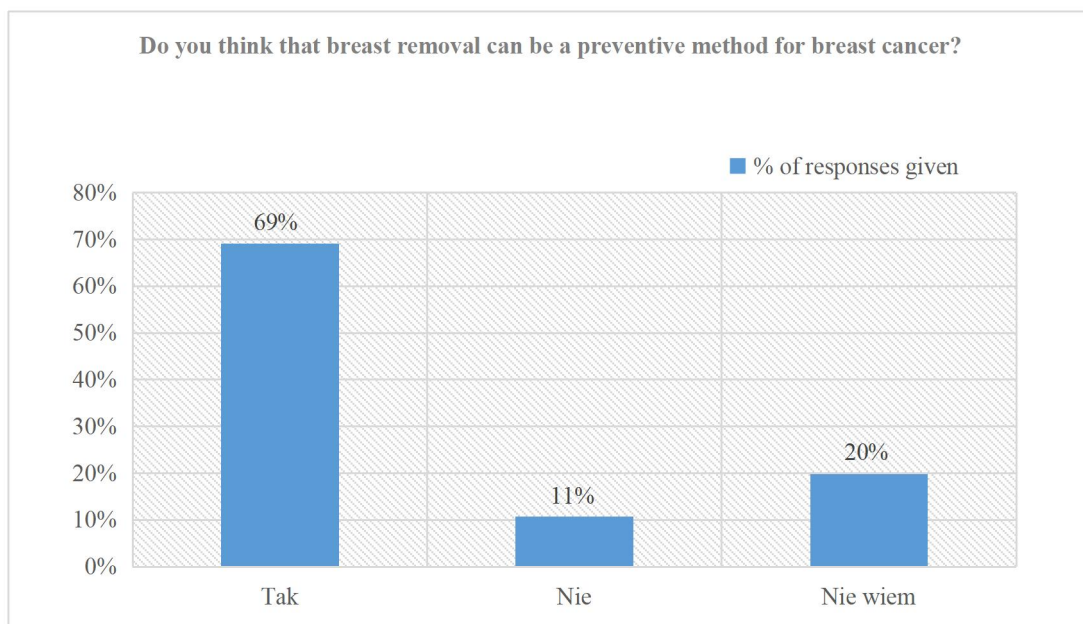


Figure 1: Mastectomy as a preventive method according to women.

The question "Do you think breast removal can be a preventive method of breast cancer?" was found to be significantly correlated ($p=0.004$) with a positive family history. It can be assumed that women with a family history of cancer were more strongly motivated to obtain knowledge about the reasons for cancer. There was also a statistically significant relationship with age ($p=0.006$). Younger people, who are most likely to have a higher education, were more likely to answer this question correctly.

To the question, "Do you know of any cases of women who have had their breasts removed prophylactically?" 186 women answered in the affirmative (74%), while 65 denied it (26%).

In a multiple-choice question about sources of information about women who have had their breasts removed prophylactically, the answers were arranged as follows: 160 on television (63%), 15 from family (6%), 32 from friends (13%), 8 from a doctor or nurse (3%), 31 on the radio (12%), 120 on the Internet (48%) and 66 learned from newspapers (26%) (Table 3).

Table 3 Sources reporting on women who have prophylactic breast removal

Source	Television	Family	Friends	Doctor/nurse	Radio	Internet	Newspapers
Number of responses	160	15	32	8	31	120	66
% of responses given	63%	6%	13%	3%	12%	48%	26%

Only 17 women think prophylactic mastectomy is an available method in Poland, 39 women think it is a rather unavailable method, 52 think it is rather available, and 14 respondents say it is unavailable. More than half of the women, or 52%, could not answer this question (Figure 2).

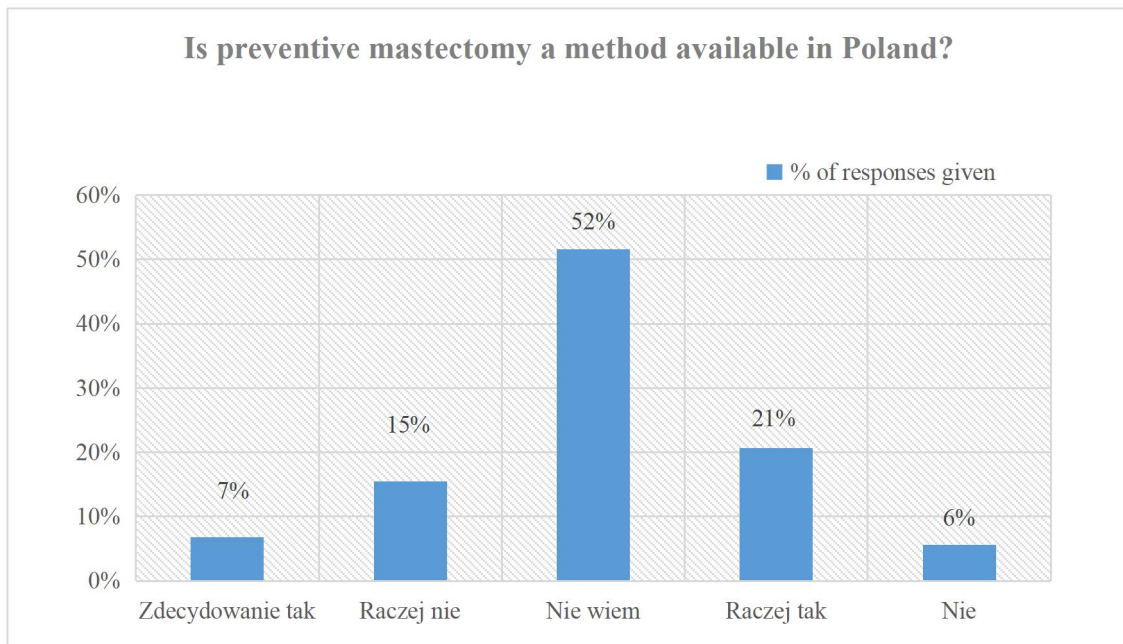


Figure 2: Women's knowledge of the availability of preventive mastectomy.

Among the benefits of preventive mastectomy, female respondents most often cited: avoiding the disease - 168 responses, saving lives - 141 responses, and prolonging life - 136 responses (Table 4).

Views on the availability of preventive mastectomy are positively correlated with age ($p=0.001$) and education ($p=0.005$). Younger age and higher level of education are most likely to have a positive effect on the body of knowledge.

Table 4 Benefits of mastectomy

Benefit	avoidance of disease	opportunity to be present in the life of the family	lifesaving	lifespan extension	I don't know
Total responses	168	73	141	136	19
% of responses given	67%	29%	56%	54%	8%

The chart below illustrates women's responses to a question about performing a possible preventive mastectomy in case of increased risk of disease. 29% of the women surveyed could not declare whether they would agree to such a procedure, and a similarly

large group answered that they would "rather say yes." 12% of respondents strongly denied it (Figure 3).

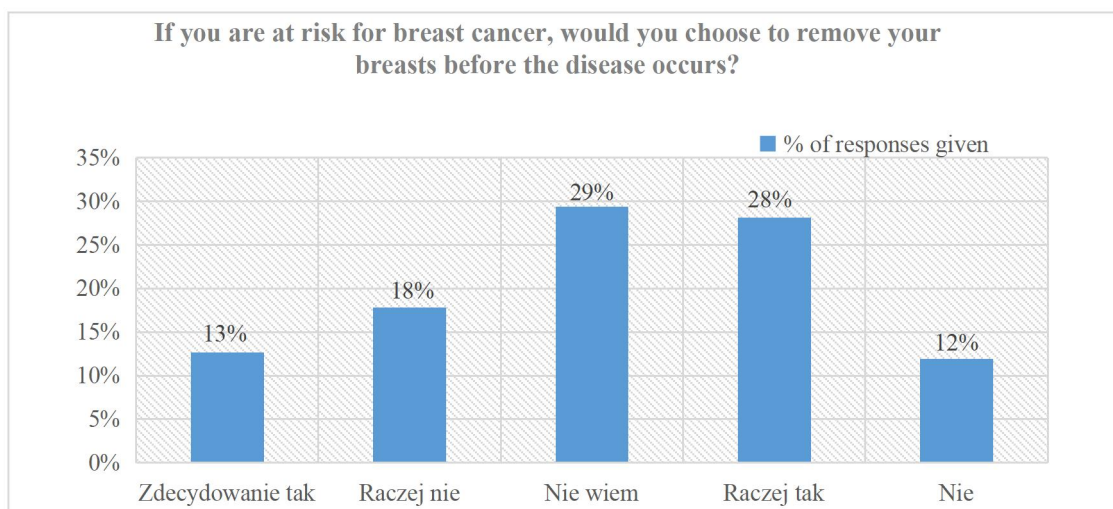


Figure 3: Willingness to undergo mastectomy in case of cancer risk.

Among the most common responses regarding fears of mastectomy surgery were complications after the procedure and loss of a sense of femininity (Table 5).

There was a significant correlation ($p=0.018$) between the distribution of responses to this question and education. Those with higher education were significantly more likely to opt for preventive amputation of the breast gland. It is interesting to note that the majority of respondents showing higher and high school education answered "don't know" or "rather yes," with a predominance of the second answer. Thus, it cannot be argued that better-educated people would be far more likely to choose this procedure as a preventive method, as the results are comparable.

Table 5 Consequences of preventive mastectomy as feared by surveyed women

Consequences	Total responses	% of responses given
disfigurement	168	67%
lowering of self-esteem	73	29%
complications after surgery	141	56%
shame in front of your life partner	136	54%
loss of sense of femininity	19	8%
lack of acceptance by partner	50	20%
relationship breakdown	35	14%
depression	77	31%
high cost of the procedure	78	31%

Nearly 50% of respondents identified a genetic counseling center as a place where it is possible to perform tests to confirm an increased risk of breast cancer (123). 33% did not know if such testing was possible (Figure 4).

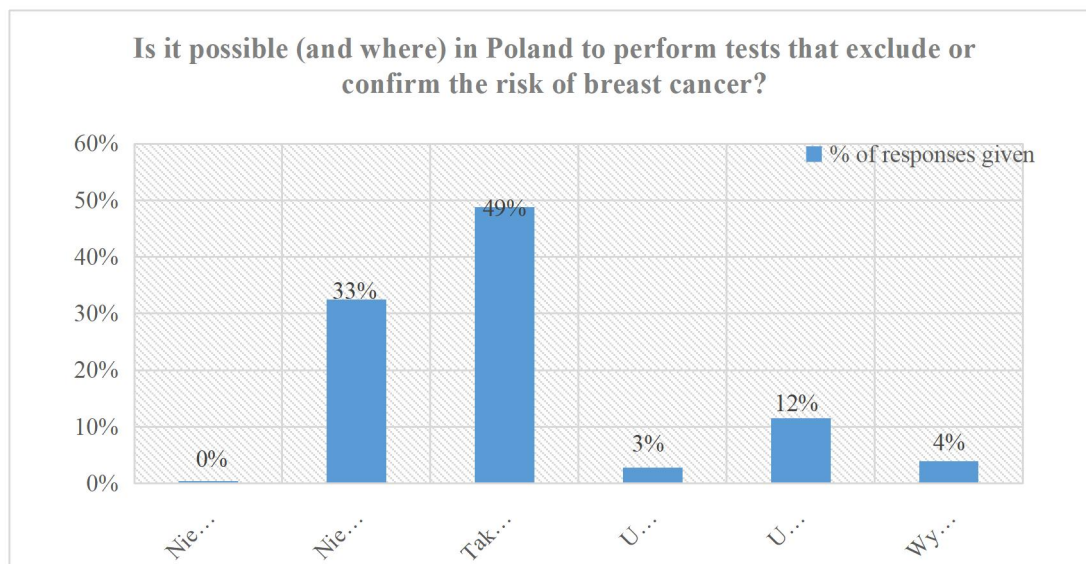


Figure 4: Surveyed women's perceptions of accessibility to genetic testing.

Among the women surveyed, knowledge of how and where to test for BRCA1, BRCA2 gene mutations is at a poor level (49%). There was no correlation between this knowledge and age, place of residence, positive family history, or even education. Significantly higher knowledge was shown by maids and married women. The correlation between marital status and this knowledge was $p=0.009$.

Among the surveyed female respondents, 142 perform regular breast examinations on their own (56%). 48 women say they do not examine their breasts by any existing method (19%) (Table 6).

Table 6 Breast examinations performed by female respondents

Type of test	Breast self-examination	ULTRASOUND	Mammography	Examination by a gynecologist	I don't examine my breasts
Total responses	142	65	47	86	48
% of responses given	56%	26%	19%	34%	19%

Discussion

Preventive mastectomy, despite its research-confirmed effectiveness in preventing malignant tumor of the mammary gland, is still a very controversial topic. In Poland, this procedure is not reimbursed by the National Health Fund, but nevertheless, these procedures are sometimes performed under the name of other procedures and billed as another service. The Ministry of Health does not collect statistical data on the subject. On the other hand, procedures to remove the uterus, with or without adnexa, are often performed on women with BRCA1 and/or BRCA2 gene mutations. Tests to detect an increased risk of breast or ovarian cancer are performed free of charge for those with a family history of breast or ovarian cancer [6].

In 2013, it was reported in the world media that well-known Hollywood star Angelina Jolie underwent a double mastectomy procedure after being diagnosed with a BRCA1 gene mutation. She was calculated to have an 87% risk of breast cancer. An additional contributing factor to this decision was a positive family history [3]. A large percentage of the public, through Jolie's personal confessions, learned about gene mutations and the possibility of inherited cancer [7,4].

The authors of the Practical Guide for Physicians make the first attempts to define the indications for prophylactic amputation of the mammary gland. They recognize that any indication is always relative, and that the procedure does not have 100 percent effectiveness. Accordingly, they propose the name *"risk-reducing amputation."* On the other hand, in the Recommendations for Diagnostic and Treatment Management, the authors propose the creation of a division into two disease risk groups: high and very high risk groups, and the implementation of prophylactic mastectomy [3,5]. Jeziorski stresses that the number of papers in the world literature is growing, and authors are paying more and more attention to prophylactic mastectomy. This procedure, according to these sources, is most often undergone by young patients with cancer of one breast to avoid recurrence in the parallel breast. The 2005 and 2010 papers cited by the author report a high success rate for the procedure, with a 91-95% reduction in the risk of disease in the other breast. In his concluding remarks, he stresses that a specific way of obtaining consent for the procedure should be established. Obtaining this consent should be a multi-step process, consisting of the opinions of a surgical oncologist, plastic surgeon, psychologist and, if necessary, other specialists [8].

Lostumbo et al. conducted a large review on prophylactic mastectomy. The material came from 39 observational studies involving a total of 7384 women. Three main questions were posed: does bilateral mastectomy in asymptomatic women reduce the risk of disease (study group 3727 women); does mastectomy of the opposite breast improve outcomes (study group 3657 women); what is the cancer rate, mortality, recurrence-free time, morbidity, psychosomatic consequences. To assess quality of life, the study group consisted of 1154 women. The analysis confirmed a reduction in incidence, but stressed that there is no guarantee that cancer will not occur. Detailed results show that in the group of women with amputation without reconstruction, 21% required reoperation, and in the group with reconstruction, 59%. The indications were problems with the implant, early complications and aesthetic reasons. 64% indicated physical complaints in the form of back pain, infection and itching. Quality of life assessments reported less satisfaction with the visual outcome, poorer self-perception of patients, and unsatisfactory results of reoperation in 4% of patients without reconstruction and 49% with breast reconstruction [7].

Rheim and Schmutzler confirm that despite the downward trend in invasive cancer care, the number of preventive mastectomies performed in healthy women and preventive amputation of the second breast in ill women is steadily increasing. This is all the more surprising since no increase in survival rates has been shown in cancer patients with preventive mastectomy of the healthy breast. Researchers believe that the decision-making process for the procedure is often influenced by conflicting parameters. It is both the patient's fear and desire to gain an advantage over the disease, but also the surgeon's financial motivation or the oncologist's paternalistic approach. Physicians should support patients throughout the decision-making process and encourage them to consider all other options. Surgical intervention is irreversible, so it should be chosen only after all other options have been exhausted [6].

There are numerous studies on women's knowledge of breast cancer prevention and screening. There are also widespread works about the mental, physical state of women who have won against breast cancer. About psychological feelings, as well as physical complications after mastectomy surgery. However, it is more difficult to find a study in the literature about mastectomy preventing cancer. Only in the last dozen years or so has this topic gained prominence in the world literature. However, neither in the Polish nor in the foreign-language literature is there a similar work examining the opinion of women about this

procedure and its possible implementation. Only a small number of survey questions in our own study were reflected in the works of other researchers.

The results of the conducted analyses in the direction of family history appeared to coincide with the results obtained by Lubinsky. According to this author, genetic predisposition is shown by about 30% of breast cancer patients. In our own study, 22% of women declare a positive family history of breast cancer [7].

The standardized incidence rate of breast cancer in Poland is about 52/100,000. In our own study, among the participating women (252), 2% of the subjects had the disease. This may be due to the location of the study, which was conducted in the Silesian Voivodeship, where both incidence and death rates rank high compared to other provinces in Poland [2,3].

As many as 86% of respondents know that breast cancer can be genetic. This is a high result, especially since less than half of the respondents had a university education, which usually translates into higher knowledge. At the same time, 11% of female respondents were unable to answer this question, despite numerous educational campaigns in both the media and health care facilities, educational posters and other sources. This may indicate an insufficient impact of these ventures on the female population.

In our own survey, 94% of respondents have heard of mastectomy, and 97% know that it involves removing the breast. It can be assumed that the 3% difference in responses is due to the cue obtained in the question: "What is a mastectomy?". There may also have been a skew in the results of this question, as some respondents may have guessed. This is a significant flaw in a survey conducted in the form of a test. The researcher is unable to determine whether the correct answer is due to knowledge or a *"lucky guess."*

To the question "Do you think that breast removal can be a preventive method of breast cancer?" only 69% answered in the affirmative. On the other hand, to the question "Do you know of cases of women who have had their breasts removed prophylactically?" 74% of respondents already answered in the affirmative. This is another example of the defect of the work conducted in this form. It is impossible to say whether the respondent knew the first answer beforehand and simply forgot, or whether she felt uncomfortable to answer in the very next question in the negative.

Knowledge of women who have undergone prophylactic mastectomy by 63% of those surveyed came from television, which only confirms the theory that mass media have significant power to influence the population. In second place is the Internet, which is more often used by younger people, who accounted for 46% of the group surveyed.

One of the most important questions in the survey in question was: "If you were at risk of developing breast cancer, would you choose to have your breasts removed before the onset of the disease?". In the sums of the answers given, none of the answers listed stands out significantly. The highest score was given by the answer "I don't know," given by as many as 73 women. This is not a big surprise. The question is a difficult one, requiring thought, and probably most of those surveyed had never thought about it before. The easiest and quickest answer was this one. A similar number of female respondents answered "rather yes," which means that they do not exclude such a situation.

The consequences that women would fear in the case of preventive breast amputation are mainly complications after the procedure, loss of their sense of femininity and lowered self-esteem. These are the consequences that women actually face after such a procedure. Sources confirming this information are studies that look at women after [8]. The question: is it possible in Poland (and where) to perform tests that will exclude or confirm the risk of breast cancer, gained only 49% of correct answers. Most women do not know, or indicate an incorrect answer. This indicates inadequate education of women on how to test for such risks. The question about methods of breast examination by female respondents was also found in other scientific studies. In the study by Przysada et al, as many as 81% of respondents performed breast self-examination, which is significantly higher than in our own study - only 56% [5].

The results obtained by Najdyhor and Krajewski indicate that 64% of women perform breast self-examination, which is consistent with self-examination (56%). 52% of respondents had mammography performed in the past, and 56% had breast ultrasound. The result obtained in the present study differs significantly, with 19% of women having mammography and 26% ultrasound, respectively. The overall percentage of women who examined their breasts was about 50%, while in our own study it was 81% [5].

Applications

1. Women's opinion on prophylactic mastectomy varies. The decision about the procedure should be made only after all other preventive options have been ruled out, with the support of a number of specialists, including a psychologist, and patients should be continuously educated in this direction.
2. The main factor influencing women's decision to have a preventive mastectomy is education, which also determines health. Thus, it is necessary to systematically retrain both health care personnel and patient education in order to effectively prevent disease.
3. The level of women's knowledge about the inheritance of breast cancer, can be described as insufficient. It is necessary to establish more intensified forms of communication as impact tools of the area of health education and health promotion.
4. Survey respondents' knowledge of the availability of genetic testing is average. This represents an important observation in favor of the functioning of medical information within Primary Health Care.
5. The level of knowledge of the women surveyed about preventive mastectomy is very low, and the sources of information from which they mostly obtain knowledge on the subject include popular rather than scientific content. Significant, in view of this fact, is the greater publicity of social educational campaigns for the fight against breast cancer, controversial advertising and prevention programs.
6. Preventive mastectomy is a highly publicized topic in the media. However, there is a significant deficit of scientific reports on the subject, both in the Polish and foreign literature.

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