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## **Breast cancer knowledge among students of high schools from Lublin region**

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### **ABSTRACT**

#### **Introduction**

Breast cancer, with an estimated 1.67 million new cases diagnosed in 2012 (25% of all cancers), is the second most common neoplasm worldwide. It is also the most frequent proliferative process among women.

#### **Objective**

Evaluation of the level of students' knowledge concerning risk factors and prophylaxis of breast cancer.

#### **Material and methods**

The study was conducted among randomly selected students of high schools from Lubelskie region between April and June 2017. Participation in the study was voluntary and anonymous. The study group consisted of 137 students. The study used the method of a diagnostic survey using a questionnaire constructed by the authors. The obtained results were statistically analyzed using the STATISTICA 13 program. The significance of intergroup differences was verified with Pearson chi-square test.

## **Results**

The vast majority of students indicated the following main risk factors of breast cancer: family history, genetic predispositions, smoking and advanced age. In the respondents opinion, palpable tumor, changes in the size or shape of the breast and enlargement of axillar lymph nodes were the main symptoms of breast cancer. The Internet was indicated as the main source of breast cancer knowledge.

## **Conclusions**

Interviewed students showed relatively low level of knowledge concerning problem of breast cancer risk factors. Young people use Internet as a main source of information about breast cancer and its prophylaxis. According to the results, it is necessary to mobilize health professionals, to promote rules for the prevention of breast cancer among young women. There is a need of new, wide, persuasive social campaigns from the area of breast cancer prevention.

**Keywords:** Breast Neoplasms, Prevention and Control

## **INTRODUCTION**

Breast cancer (BC), with an estimated 1.67 million new cases diagnosed in 2012 (25% of all cancers), is the second most common neoplasm worldwide [1]. It is also the most frequent proliferative process among women. In Poland there is an increasing trend in new breast cancer incidents observed. For instance, in 1999, 10,903 new cases have been diagnosed versus 18,106 new incidents in 2015 [2].

The main risk factors for developing breast cancer are female gender, age over 65 years and presence of malignant tumor in first-degree relatives [3, 4].

According to genetic risk factors, approximately 3% of all breast cancers may be connected to mutations in BRCA1 or BRCA2 genes affecting women in earlier age groups [5]. Further, few cases are attributable to TP53 mutation found in Li-Fraumeni syndrome [6].

Other non-modifiable risk factors were presence of ‘high density’ of breasts, atypical hyperplasia and a long period from the first (<12 years old) to the last (> 55 years old) menstruation (as it is a long time of estrogen exposure) [7].

Modifiable risk factors of breast malignancy are obesity causing increase in estrogen exposure caused by aromatization of steroids in fatty tissues [8] and late first pregnancy (over 35 years of age) or being a nullipara [9] as well as long-term estrogen replacement therapy. On the

contrary, it has been shown that breast-feeding [10], reducing intake of alcohol and regular exercise[11] have favorable outcome regarding breast cancer.

Thus, it is very important to identify risk factors of breast cancer and to promote knowledge about them in population, especially in young people attending high schools. Pupils of the schools are opened for many prophylactic actions which are performed in an attractive way and they have an opportunity to change their lifestyle and some behaviors to reduce risk of developing breast cancer.

## **OBJECTIVE**

Evaluation of the level of students' knowledge concerning risk factors and prophylaxis of breast cancer.

## **MATERIAL AND METHODS**

The study was conducted among randomly selected students of high schools from Lubelskie region between April and June 2017. Participation in the study was voluntary and anonymous. The study group consisted of 137 students, of whom 65.0% were women and 35.0% men. The most numerous age group consisted of pupils aged 17 years (n=48, 35,04%). Students attended general high school (with different classes profiles), profiled high school and technical high school. The study used the method of a diagnostic survey using a questionnaire constructed by the authors. The obtained results were statistically analyzed using the STATISTICA 13 program. Data was analyzed using descriptive statistics and presented as percentages. The significance of intergroup differences was verified with Pearson chi-square test. The analysis of the collected data is the basis for further conclusions.

## **RESULTS**

The group of respondents of the study was not coherent, when they answered the question about the ability of developing of breast cancer by representatives of both sexes. Most students stated that this neoplasm occurs only in women (n=74, 54,01%). Only 63 of them (45,99%) claimed it may be present in both women and men.

Most of the student were aware of the breast cancer mortality rate (n=66, 48,18%). They indicated that this malignant tumor is on the second place if the mortality due to malignancies in women is considered.

The majority of respondents thought breast cancer is most often diagnosed at age of 30-50 years. Moreover they had knowledge that this disease affects not only people in older age but young individuals, under 20 years of age are also endangered.

A significant proportion of students (56–83 %) were informed that advanced age, family history of breast cancer, female sex, and smoking are among the important BC risk factors. What is more over 94% students knew that some patients can be genetically burdened with the risk of BC. Only minority of study group declared that obesity, fat rich diet, long-term use of contraception, resignation from breastfeeding and exposure to ionizing radiation as the risk factors of BC (Table 1.).

<b>Risk factors of breast cancer</b>	<b>n</b>	<b>%</b>
Family history	83	60,58
Genetical predispositions	129	94,16
Exposure to ionizing radiation	2	1,46
Female	114	83,21
Smoking	78	56,93
Long-term use of contraception	7	5,11
Advanced age	111	81,02
Obesity	7	5,11
No breastfeeding	3	2,19
Fat rich diet	3	2,19

Table 1. Risk factors of breast cancer

According to part of questionnaire concerning prophylaxis of breast cancer, the majority of respondents (n=126, 91,97% of total study objects) were aware that breast tumor may diagnosed during palpative self-examination. Women were the group significantly more aware of this fact (p=0,038). Near a half of students declared that a prophylactic mammography examination in women aged over 50 years should be performed every 6 months. 31,39% of them were convinced that this test is to be performed every year (43 individuals) and 10,22% that every second year (14 respondents).

When symptoms of BC are considered, the most obvious for respondents (83,94% of them indicated, n=115) was palpable tumor within the breast, also changing the size or shape of the breast and enlargement of axillar lymph nodes were frequently chosen. Breast skin that looks like orange peel, pulling the nipple, serous-blood discharge from nipple and widening of the veins of the breast skin were rarely considered by students as symptoms of BC (Table 2.).

Symptom	n	%
Changing the size or shape of the breast	81	59,12
Palpable tumor	115	83,94
Breast skin that looks like orange peel	2	1,46
Pulling the nipple	1	0,73
Serous-blood discharge from nipple	3	2,19
Widening of the veins of the breast skin	3	2,19
Enlargement of axillar lymph nodes	48	35,04

Table 2. Symptoms of breast cancer

The vast majority of respondents was informed that early detection of a tumor give a better chance of healing (only one respondent was of the opposite opinion). Moreover, significant proportion of students claimed breast amputation is not necessary to completely cure breast cancer (n=97, 70,80%).

At the end of whole interviewing procedures respondents were asked about sources of their knowledge about breast cancer and related problems. The biggest group of them used Internet (n=74, 54,01%). Some gain knowledge from talks with their relatives (n=15, 10,95%). Students of general high schools significantly more often indicated their family members as a source of knowledge (p=0,012). Other sources were: school, magazines for women and TV. Social campaigns and doctors provided knowledge for just a few people (Table 3.).

Source of knowledge	n	%
Family	15	10,95
Internet	74	54,01
School	11	8,03
Magazines for women	7	5,11
TV	7	5,11
Doctor	3	2,19
Social campaigns	1	0,73

Table 3. Source of knowledge

## DISCUSSION

Knowledge of cancer risk factors is an important element of primary prevention. Having insight into the causes of cancer, ways of its development and effects exerted may motivate patients to change their lifestyle, perform prophylactic examinations. Thus, evaluation of society awareness of breast cancer is notably important. Many researchers in Poland took this scientific

problem as their task. Only two studies described knowledge about breast cancer as satisfactory [19,20] According to the majority of authors, the knowledge of women in Poland in the field of breast cancer prevention is at a low level [12, 13, 14, 15, 16, 17, 18].

Therefore, it seems interesting to identify the sources of knowledge of women involved in mentioned studies. The declared sources of information were media, professional and popular science literature, advertising folders and banners, women's magazines, professionals in this field: doctors and nurses.

In our study, Internet turned out to be the most frequently chosen source of knowledge (54,01%). Similarly, in the studies by Lewandowska et al. and Wołowski et al. the main source of knowledge was the Internet, for 38.01% [19] and 58.0% of women [20], respectively. The above fact does not seem to be surprising, as these study were also conducted among young women who use the Internet more often to spend their free time or work and in other areas of life. On the contrary, in studies by Cichońska et al. and Paździor et al. (in both studies half of the women were between 20 and 30 years old) none of the respondents mentioned the Internet as a source of knowledge [12, 18].

In research presented here, television provided information for only 5,11% interviewed women. For nurses in the Lublin and Podkarpackie voivodships, television was an important source of information for over one third of the respondents [21]. Also in Paździor et al. study, as many as 57.0% of the respondents pointed to television [18].

An interesting fact is the relatively rare indication of a doctor as a source of knowledge. Among interviewed students of high schools it was only 2,19%. In study by Smoleń et al. nurses' in answers regarding sources of information about breast cancer, there was no doctor or gynecologist [21]. It is worth noting that in other studies doctor provided information on breast cancer and its prevention for 5 – 19% of respondents [18,19,20]. In Paździor et al. study, family doctor was also mentioned by 5,0% of women [18].

The reasons for the development of cancer are not fully understood, but there are some factors that increase the risk. Interviewed students of high schools most often mentioned genetic predispositions, advanced age and smoking as risk factors for breast cancer appearance. In other studies genetic predispositions and family history of breast cancer were considered to be most important in breast cancer pathogenesis [14, 17, 19, 20]. However, in the group of respondents analyzed by Adamowicz et al. [15] and Woźniak [16], a small proportion of women pointed to the possibility of developing cancer as a result of a family hereditary burden. What is more, in the Woźniak study [16], 46,0% of women could not indicate any risk factors for breast cancer, regardless of age and level of education.

Only minority of study group declared that obesity, fat rich diet, long-term use of contraception, resignation from breastfeeding and exposure to ionizing radiation as the risk factors of breast malignancies. Significantly higher awareness of radiation and hormonal drugs use as risk factors showed nurses involved in the Smoleń et al. study [21]. Moreover, the studies by Zych et al., revealed that near one third of women interpreted the use of oral contraception as a risk factor for breast cancer [17]. Opinion of respondents on obesity, fat rich diet differs between particular studies. In the studies of Czezelewska et al. [13], 82,0% and 58.0% of the students of different faculties assigned obesity significant importance in the development of breast cancer. Diet and too high body mass were also considered as contributors to breast cancer appearance by relatively large proportion of respondents in other studies [14, 17,21]. On the contrary, in the study of Cichońska et al., only 2,0% of the surveyed women reported overweight as a risk factor for breast cancer [12].

The analysis of study addressed to similar group of respondents as our study performed by Rotter et al., who interviewed 300 girls from secondary group from Szczecin, Poland [22] is alluring as well. Their results are generally consistent with findings presented here. The majority of students gained some knowledge about BC and its prevention from media. In the next place the gynecologist was indicated (approximately quarter of whole group) . Only 1 female student from 300 involved in the study obtained some information about breast cancer and self-control from a family doctor, compared to our study, describing doctor regardless of specialization as a source of knowledge for only 2,19% of respondents. The reason of this differences are not clearly known. Possibly, as time passes (2013 vs 2017), young people gradually spent more time online and use of Internet as a source of information is more common in every life area. Moreover, theories that Szczecin is bigger city than Lublin and Łęczna, where our study was performed and it influences on the level of general health awareness and health literacy or simply interviewed group did not have trust to their doctor or any activities to inform patients about cancers and their prevention were not performed, are plausible. When awareness about risk factors is compared, majority of students from Szczecin asked whether breast cancer may be hereditary, answered affirmatively as well as in our study. However, 32% of high school students and 18% of vocational high school students chose the answer "I do not know". What is more, results of analyzed study, indicate a low level of knowledge about factors that may predispose to breast cancer among high school girls. The number of students who marked a low-fat diet (1/3 of girls) as a risk factor was surprising.

Health education is a basic element of health promotion and is most often defined as a process of learning how to take care of own health, family and the community condition in which they live. Educational actions are one of the tools of health education. Such actions in the area breast cancer prophylaxis are certainly important. Many of the respondents gained their knowledge from Internet, talk with relatives, women magazines and TV. However, the specialists believe that the content present in most popular magazines and TV programs is not reliable. Thus, there is a great need to perform some persuasive social campaigns that may provide reliable information about breast cancer and its risk factors. Many people do not have sufficient level of knowledge that may be protective, as gaining some awareness helps to change everyday behavior. Sometimes only development of breast cancer in close relatives or even self-experience of that condition may result in gaining some awareness of risk factors and ways of disease prevention. Mędrala-Kuder comparing healthy respondents and breast cancer survivors according to the knowledge on breast cancer risk factors, evaluated that women who have been cured of breast cancer possess a higher level of knowledge on the risk factors of this malignant tumor than people without any contact with this disease [23]. The same conclusions come from study by Kurpas et al., depicting the phenomenon of excellent breast self-examination skills and its regular performance in all surveyed breast cancer survivors [24].

## **CONCLUSIONS**

1. Interviewed students of high schools showed relatively low level of knowledge concerning problem of breast cancer risk factors.
2. Young people use Internet as a main source of information in many life areas, including issues associated with health, breast cancer and its prophylaxis.
3. It is necessary to mobilize health professionals, in particular family physicians, nurses and midwives to promote rules for the prevention of breast cancer among young women.
4. There is a need of new, wide, persuasive social campaigns from the area of breast cancer prevention.



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