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Availability of Pap Tests and Mammography in the Podkarpacie Province Provided Within the Framework of Population-Based Breast and Cervical Cancer Screening

Dostępność do badań cytologicznych i mammograficznych w województwie podkarpackim w ramach populacyjnego programu wczesnego wykrywania raka szyjki macicy i raka piersi

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ABSTRACT

Introduction. Population-based programs of early detection of cervical and breast cancer that have been operating in Poland since 2006 are aimed at reducing morbidity and mortality from cervical and breast cancer. However, a decrease in morbidity recorded for a few years is too low. It results among others from low rates of target population coverage in both screening tests.
Aim of the study. Evaluation of the availability of Pap tests and mammography provided within the framework of prevention programs and to show how changes in the availability influenced attendance and cancer detection in the Podkarpacie Province.
Materials and methods. For the analysis the SIMP (System of Information Monitoring in Prophylaxis) data were used. Microsoft Excel 2010 and Statistica 10.1 were used to conduct the tests.
Results. The number of providers in the Podkarpacie Province participating in preventive programs increased in the

STRESZCZENIE

Wstęp. Populacyjne programy wczesnego wykrywania raka szyjki macicy i raka piersi funkcjonujące w Polsce od 2006 r., mają na celu obniżenie zachorowalności i umieralności kobiet na raka szyjki macicy i raka piersi. Jednakże notowane od kilku lat spadki zachorowań są zbyt niskie. Powodem tej sytuacji są m.in. niskie wskaźniki objęcia programem populacji docelowej w obydwu skriningach.
Cel pracy. Ocena dostępności do badań cytologicznych i mammograficznych w ramach programów profilaktycznych oraz ukazanie jak zmiany dostępności rzutowały na zgłaszalność i wykrywalność nowotworów w województwie podkarpackim.
Materiał i metoda. Materiał do badania uzyskano w oparciu o dane z Systemu Informatycznego Monitorowania Profilaktyki (SIMP). Badania przeprowadzono w oparciu o program Microsoft Excel 2010 i Statistica 10.1.
Wyniki. W analizowanym okresie wzrastała liczba świadczeniodawców na Podkarpaciu uczestniczących w obydwu

Udział współautorów / Participation of co-authors: A – przygotowanie projektu badawczego/ preparation of a research project; B – zbieranie danych / collection of data; C – analiza statystyczna / statistical analysis; D – interpretacja danych / interpretation of data; E – przygotowanie manuskryptu / preparation of a manuscript; F – opracowanie piśmiennictwa / working out the literature; G – pozyskanie funduszy / obtaining funds

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analyzed period (2007–2012) the most dynamic growth was observed in 2008. The increase in the number of providers in screening for breast cancer was accompanied with the increase in attendance in the period considered. However, the correlation between the attendance of women for the Pap test and the number of providers indicated a negative trend - the increase of providers was accompanied with the decrease in attendance in screening tests.

The analysis showed that the number of detected cases of cervical cancers both for Poland and the Podkarpacie Province remained at a similar level in 2007–2011 with a slight downward trend. There is a similar tendency for breast cancer, however, the increase detected cases is more significant for Poland as compared to the Podkarpacie Province.

Conclusions. The incidence of breast cancer increased in Poland, but to a lesser degree in the Podkarpacie Province. However, the number of cases of cervical cancer both in Poland and the Podkarpacie Province showed a downward tendency. The increase in the number of providers in both programs had a positive impact only on the increase in attendance in mammography in the Podkarpacie Province.

Key words: cervical cancer, breast cancer, screening tests, availability

programach profilaktycznych, przy czym najbardziej dynamiczny wzrost obserwujemy w roku 2008. Wraz ze wzrostem liczby świadczeniodawców w skryningu raka piersi wzrasta zgłaszalność w badanym okresie. Z kolei korelacja pomiędzy zgłaszalnością kobiet na badania cytologiczne a ilością świadczeniodawców wskazuje na niekorzystny trend- wraz ze wzrostem liczby świadczeniodawców spada zgłaszalność na badania skryningowe.

Analiza wskaźników wykrytych raków szyjki macicy zarówno w Polsce jak i w województwie podkarpackim utrzymuje się na podobnym poziomie w latach 2007-2011 z niewielką tendencją spadkową. Podobnie sytuacja przedstawia się dla raka piersi, jednakże wzrost ten jest znacznie większy dla Polski w porównaniu z województwem podkarpackim.

Wnioski. Liczba zachorowań na raka piersi wzrasta na terenie Polski a w mniejszym stopniu na Podkarpaciu. Natomiast ilość zachorowań na raka szyjki macicy zarówno w Polsce jak i w województwie podkarpackim ma tendencje spadkowe. Zanotowany wzrost liczby świadczeniodawców w obydwu programach na Podkarpaciu wpłynął pozytywnie tylko na wzrost zgłaszalności na badania mammograficznie.

Słowa kluczowe: rak szyjki macicy, rak piersi, badania skryningowe, dostępność.

Introduction

Population-based programs of early detection of cervical and breast cancer, that were implemented in 2006, are based on a long-term National Cancer Control Program dated 1st July 2005. Polish Cervical Cancer Screening Program is aimed to perform active screening of women aged 25–59 years. The test is carried out once every three years. In turn, Polish Breast Cancer Screening Program covers all women aged 50–69 years who did not have a mammogram in the last 24 months [5].

The actions undertaken within the framework of both programs are supposed to lead to a reduction in morbidity and mortality in women with breast and cervical cancer in Poland to get to the level of advanced countries of the European Union. The experience of other countries showed that introduction of active prevention reduced the incidence of cervical cancer by up to 80 % [1,4] and breast cancer mortality by 15% [3]. It is worth noting that this is the result of a comprehensive and long-term policy aimed at health promotion and prevention which, as the authors of the World Health Report note, is a major challenge for current health systems. A particularly important issue is the availability of health screening [2]. The biggest problem of Polish screening is low attendance in health screening despite the presence of various forms of activation of the target group (personal invitations, media campaigns, educational activities) [3,5].

Aim of the study

Aim of the study was the evaluation of the availability of Pap tests and mammography provided within the framework of prevention programs and presenting changes in the availability and how they influenced attendance and cancer detection in the Podkarpacie Province.

Material and methods

The material for the test was based on the analysis of the reports on the implementation of health screening programs from SIMP (System of Information Monitoring in Prophylaxis) data from the National Health Fund and the Regional Coordinating Centre for Population Programs for Early Detection of Breast Cancer and Cervical Cancer in Rzeszów. This system was implemented in Poland in 2007. The analyses data from the Podkarpacie Province covered the period 2007–2012. Pearson analysis was used to identify correlations. Microsoft Excel 2010 and Statistica 10.1. were used to conduct the tests.

Results

Providers of health screening in Programs for Early Detection of Breast Cancer and Cervical Cancer in the Podkarpacie province

The number of providers participating in prevention programs was changing over the analyzed period. The most substantial increase for both programs was observed 2008.Number of providers of breast cancer screening increased from 21 to 25 and cervical cancer screening providers increased from 54 to 110. A fall in the number

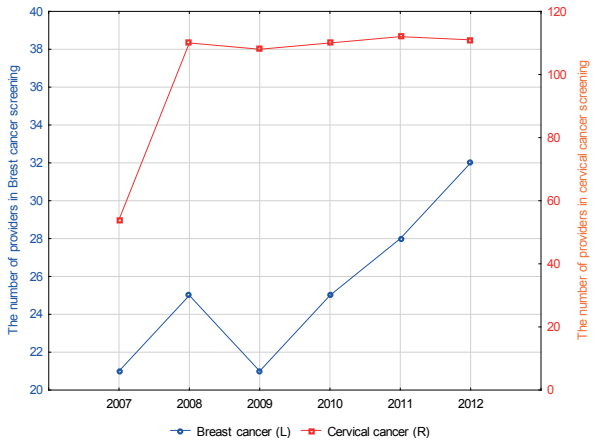

Fig. 1. Number of providers participating in screening programs in the Podkarpacie province in 2007–2012

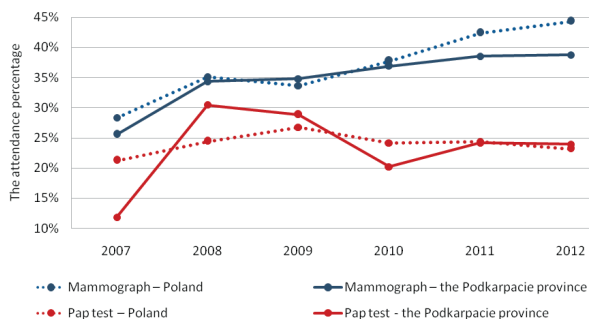

Fig. 2. Attendance inPap smearsandmammogramsin 2007–2012

of providers in both programs observed in 2009 was followed by a steady increase in the number of breast cancer screening providers from 21 in 2009 to 32 in 2012 and a slight increase in the number of cervical cancer screening providers (Fig. 1).

Attendance in the screening programs for Early Detection of Breast Cancer and Cervical Cancer in the Podkarpacie province and Poland

Considering the attendance of women from the Podkarpacie province in the screening for breast cancer, a steady annual increase in the number of women participating in this test was observed, although last 3 years showed that our region did not reach the national average. Attendance of women in Pap test, however, seemed to be different. After a dynamic growth in 2008 and 2009, a downward trend was observed in the attendance of the target population. Comparing these data with the population nationwide, a decrease in attendance was observed from 2009 both for Poland and the Podkarpacie province.

The detection of cervical and breast cancer

The number of cases of cervical cancer in Poland was specified on the basis of the data from the ***National Cancer Registry*** (NCR, pol. Krajowy Rejestr Nowotworów – ***KRN***) and compared with the data from the Podkarpacie province. This analysis showed that the number of detected cervical cancers both in Poland and the Podkarpacie province remained at a similar level in 2007–2011with a slight downward trend. (Fig.b3)

Similarly, based on the data from the National Cancer Registry the number of cases of breast cancer in Poland were specified and compared with the data in the Podkarpacie province. This analysis showed that the number of detected cases of breast cancer increased in the presented years. However, this increases much higher for the Poland compared to the Podkarpacie province (Fig. 4).

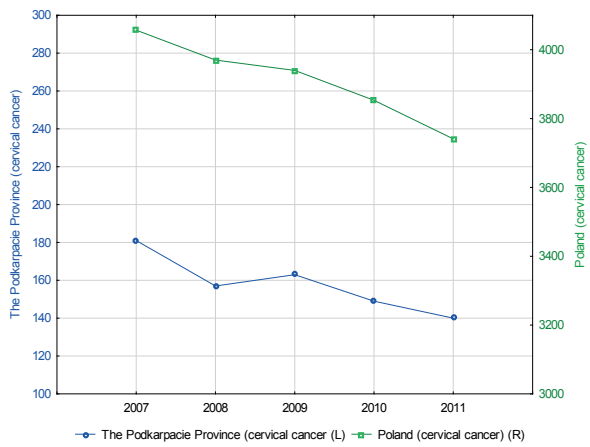

Fig. 3. The number of cases of cervical cancer in the Podkarpacie province and Poland between 2007–2011 according to the *National Cancer Registry*

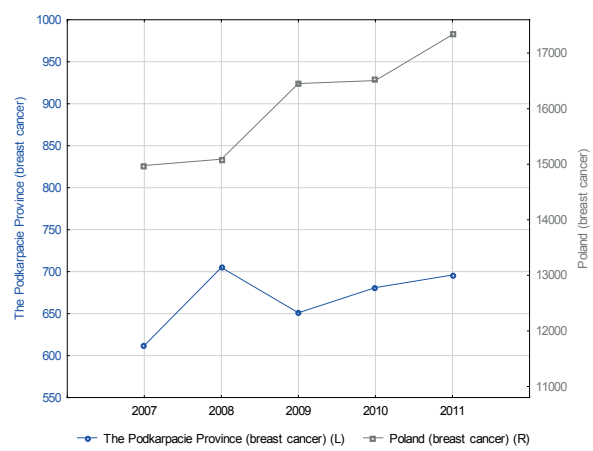

Fig. 4. The number of cases of breast cancer in the Podkarpacie province and Poland between 2007–2011 according to the *National Cancer Registry*

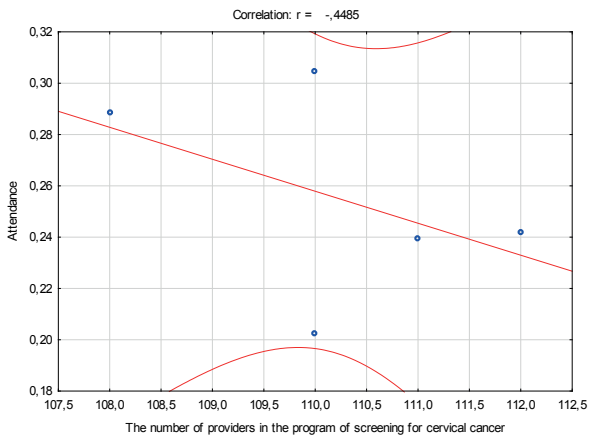

Fig. 5. A scatterplot of the number of providers of cervical cancer screening and the target group attendance

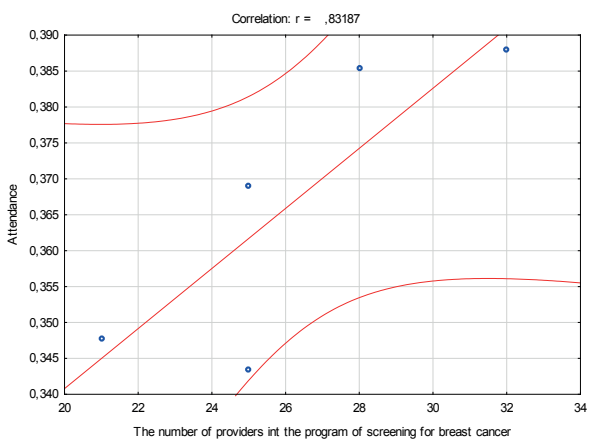

Fig. 6. A scatterplot of the number of providers of breast cancer screening and the target group attendance.

The correlation between attendance and the number of providers of screening programs

The paper investigated if there was a correlation between the attendance and the number of service providers in screening for cervical cancer. The tests were performed using Pearson's linear correlation analysis. The correlation coefficient between the studied traits was -0.44, which means a moderate negative and inversely proportional correlation (p = 0,4490). The increase in the number of providers was accompanied with the fall in the attendance in the researched period (fig. 5).

The paper investigated if there was a correlation between the attendance and the number of service providers in screening for breast cancer. The tests were performed using Pearson's linear correlation analysis. The correlation coefficient between the tested traits was 0.83 which means a significant positive and directly proportional relationship (p = 0,0810). The increase in the number of providers was accompanied with the target population attendance (Fig. 6).

Discussion

A slow decline in the incidence of cervical cancer has been observed in the Podkarpacie province and Poland since the late 90's [6]. This trend, however, does not fully correspond to the original assumptions of the program included in the National Health Programme, according to which morbidity and mortality of cervical cancer in 2015was supposed to be reduced by 50% [5]. This situation results to a large extent from the low rates of the target population coverage both in screening for cervical and breast cancer (Fig. 7, 8).

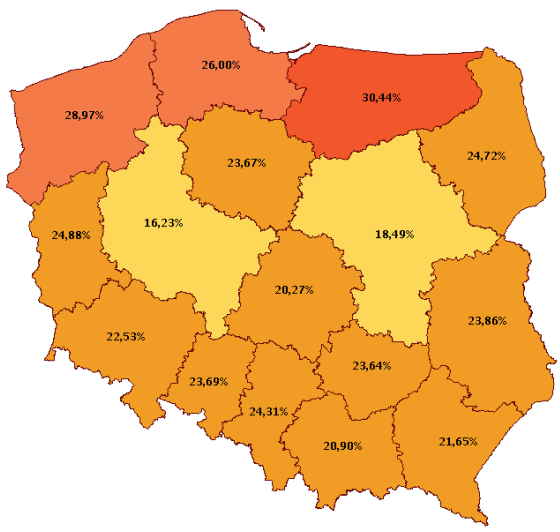

Fig. 7. Coverage of population by cervical cancer screening according to SIMP,dated1.05.2014

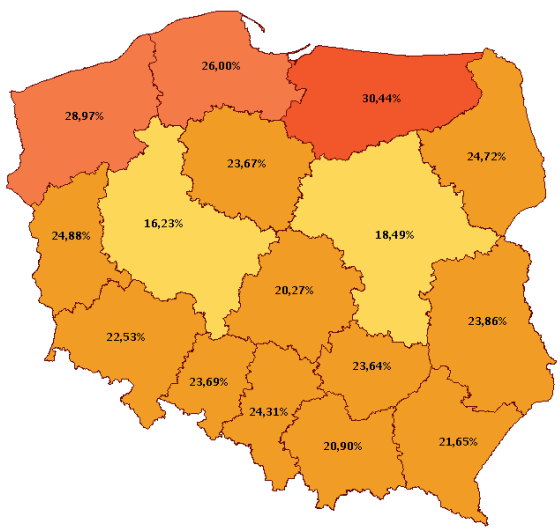

Fig. 8. Coverage of population by breast cancer screening according to SIMP,dated1.05.2014

The recommended minimum coverage of 70% of the target population by breast cancer screening was not achieved, despite posting personal invitations and other educational and media activities that were supposed to increase in the attendance in screening programs. Screening programs to be effective have to be long-term and mass [7, 3]. Analysis of screening programs for breast cancer and cervical cancer in European countries showed that the percentage of women's participation was high – 80 % [7, 4 , 3]. The data from the Far East countries (Taiwan, Korea) showed that implementation of longstanding population programs for cytological screening significantly decreased morbidity and mortality from invasive cervical cancer [8, 9]. Numerous authors highlighted the fact that an important part of marketing in the implementation of health programs is multidirectional analysis focused on the profile of the target group and the availability of screening in the place of residence. Socio-demographic analysis of Polish women participating in screening indicated a trend that better educated, married, urban women participated more frequently [10,3]. Such a profile on the one hand showed that women are interested in screening and why, on the other hand it was a valuable source of knowledge about women at risk of social exclusion. They are less educated women, residents of village, who do the tests while reporting to a doctor from other reasons. Sociological research showed that the main way to access them with medical information is through the media by popular television series [13]. The analysis of the availability of screening tests demonstrated differences between regions – considering the prevention of breast cancer: a minimum number of people per 1 provider is 58 087 in the Silesia province and the maximum is 209 616 in the Świętokrzyskie province. Regarding cervical cancer screening, the differences concern the Małopolska province where the minimum number of people per 1 provider is 5 741, while the maximum is 16 332 for the Mazowieckie province [11]. The cost of screening test is an important element in the marketing analysis. The cost of one Pap test carried out within the population-based program amounted to PLN 61.80 in 2009, while the average cost of cervical cancer detection within the program was 15 043 PLN [12]. Regarding the mammography, the unit cost of mammography was higher and amounted to 50–70 PLN, while the total cost of cancer detection (without doing further diagnostic and therapeutic procedures) was an average of 16 426 PLN [3].

Conclusions

1. A slow increase in the attendance in screening in Breast Cancer Early Detection Program was observed in the Podkarpacie province in the years 2007-2012. However, the increase in the Pap test attendance within the framework of Cervical Cancer Screening and Early Detection Program was followed by a stabilization or even declining trend.
2. The incidence of breast cancer increased in Poland and to a lesser degree in the Podkarpacie province. However, the number of cases of cervical cancer both in Poland and the Podkarpacie province showed a downward trend.
3. The increase in the number of providers in both programs in the Podkarpacie province had a positive impact only on the increase in attendance in mammography.
4. Availability determined by the actual number of providers in the period tested did not affect the attendance in Pap tests in the Podkarpacie province, however, it increased the attendance in mammography.

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