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OCENA STRATEGII ZWALCZANIA RAKA PIERSI W POPULACJI KOBIET WOJEWÓDZTWA ŚWIĘTOKRZYSKIEGO NA PODSTAWIE WIELOASPEKTOWEJ ANALIZY EPIDEMIOLOGICZNEJ

SUMMARY

Breast cancer is the most common cancer among women in the world. In the face of the growing burden of that cancer, strategies for cancer control need to be monitored and evaluated.

The aim of the study was to evaluate strategies for cancer control in Świętokrzyskie Voivodeship based on a multi-faceted epidemiological analysis using standardized and internationally comparable *Cancer Health Indicators - CHI* recommended for cancer control.

The evaluation was based on indicators: incidence, mortality, trends of incidence and mortality, percentage of breast cancer cases classified as "localised", proportion of patients receiving post-operative breast radiotherapy after breast conserving surgery, proportion of breast conservation surgery in pT1 cases.

The study material included information from the Cancer Case Report Card MZ/N.1a. The analysis of breast cancer incidence in the Świętokrzyskie Voivodeship in the years 2002-2013 was based on data collected from the Świętokrzyskie Office of Cancer Registration in Kielce. Data on the number of deaths from breast cancer among women in the Świętokrzyskie Voivodeship, in the years 2002-2013, taking into account the place of residence (urban/rural), and population numbers in the Voivodeship in the analyzed years were obtained from database of the Central Statistical Office,.

Information on selected prognostic factors, applied diagnostic and therapeutic procedures were collected based on Protocol of EUROCARE High Resolution Study. The study included residents of Świętokrzyskie Voivodeship, who in 2013 were diagnosed with breast cancer and they were treated in the Świętokrzyskie Oncology Centre or other healthcare facilities in the region and have been reported to ŚBRN. The study included 483 patients suffering from invasive breast cancer.

The study material included the following data to analyze prognostic factors, ie.: stage at diagnosis according to the ENCR Classification, primary tumor site, tumour morphology, grading.

In order to evaluate diagnostic procedures, information on diagnostic exams on the breast and diagnostic exams for distant metastasis was collected.

For evaluation of applied therapeutic procedures, information on local treatment (surgery, radiotherapy) and systemic treatment (chemotherapy, hormonal therapy, targeted therapy) was collected.

The compare selected prognostic factors, diagnostic and therapeutic procedures in urban and rural areas and in the following age groups: 15-49, 50-69, ≥70, chi square test (X^2) was used, assuming that $p \leq 0.05$.

Changes in breast cancer mortality and incidence trends in general and in urban and rural areas were analysed using joinpoint models. In this analysis, which is the extension of the linear regression, time trend is expressed by the lines connected together at the 'joinpoints' in which it changes its direction statistically significant ($p < 0.05$). On the basis of the linear regression model, in which natural logarithm of incidence (mortality) rate was a dependent variable and a calendar year was an independent variable, an Annual Percentage Change (APC) of the rates was calculated for each time trend. The trend direction of incidence and mortality rates was compared between the urban and rural areas using joinpoint test for parallelism. 95% confidence intervals were determined to define statistical significance of APC. APC values were calculated and time trends trends were analysed using Joinpoint Regression Program 4.2.0.2, recommended by U.S. National Cancer Institute for this type of analyses.

Incidence and mortality rates were compared between the urban and rural areas by means Rate Ratio (RR) showing the ratio of rate values in the urban and rural area. For this inequality measure standard errors and 95% confidence intervals were assessed in each time point. To compare crude, age-standardized and age-specific incidence and mortality rates between urban and rural areas Health Disparities Calculator (Version 1.2.4) was used, developed by the U.S. National Cancer Institute to evaluate and monitor health inequalities.

High quality and completeness of the data collected in ŚBRN allowed the evaluation of the strategy to combat breast cancer in Świętokrzyskie Voivodeship based on a multifaceted epidemiological analysis, which shows the existing possibilities of conducting this type of research. The results of this type analyzes should be the starting point for making key decisions on combating breast cancer.

The results of the evaluation strategies for breast cancer control in Świętokrzyskie Voivodeship based on a multifaceted epidemiological analysis allowed the following conclusions:

1. In the years 2002-2013 trends in breast cancer incidence among women in Świętokrzyskie voivodeship showed variations according to the age group. Statistically significant increase in morbidity was observed only in the age group recommended for screening (50-69 years). At the same time in the analyzed period there were no statistically significant changes of the breast cancer mortality rates.
2. The results indicated urban – rural inequalities in the burden of breast cancer. Both incidence and mortality rates were higher in urban areas. However, the analysis of trends showed that the pace and direction of change, both incidence and mortality, were developing negatively among inhabitants of rural areas.
3. The analysis showed differences in the stage at diagnosis distribution according to the age group. A high percentage (52,9%) of breast cancer cases classified as "localised was observed in the age group recommended for screening (50-69 years).

   The results indicated the existence of urban – rural inequalities in the stage at diagnosis distribution. Tumours with regional spread and advanced breast cancer were more often diagnosed in rural areas.
4. Results of the study showed that proportion of patients receiving post-operative breast radiotherapy after breast conserving surgery and proportion of breast conservation surgery in pT1 cases was high, 33,7% and 61,7% respectively The highest values of both indicators were observed in the age group recommended for screening (50-69 years).
5. The results indicated the existence of limited access to the diagnostic procedures, ie.: magnetic resonance imaging, intra-surgery biopsy and therapeutic procedures, ie.: breast-conserving treatment, chemotherapy and radiotherapy among the oldest patients.
6. Increase in breast cancer incidence in the age group 50-69 years and the favorable structure of the stage at diagnosis distribution in this age group attest to the effectiveness of implemented in Świętokrzyskie breast cancer control strategy. However, the existing health inequalities indicate the need to intensify activities in rural areas and plan activities aimed at the oldest patients.