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**ANALIZA PORÓWNAWCZA OBCIĄŻENIA NOWOTWORAMI
ZŁOŚLIWYMI W MIEŚCIE I NA WSI W WOJEWÓDZTWIE
ŚWIĘTOKRZYSKIM W LATACH 1999 – 2010**

SUMMARY

Intensive research studies concentrate/focus on the risk dynamics of malignant cancers and prevention of these unfavourable tendencies. The study results constitute the basis to work out the strategy of programmes combating malignant cancers. The key element is the information about the burden of malignant cancers in the population. The knowledge of incidence, mortality and premature mortality rate with regard to the place of residence (urban/rural area) is essential in organisation of the effective fight against cancer.

The aim of the study was to analyse comparatively the burden of malignant cancers in the urban and rural areas in the Świętokrzyskie Voivodeship based on the elementary indicators recommended by IARC (International Agency Research on Cancer) to monitor the epidemiology of malignant cancers.

The study material included the information about the number of cases included in the registration chart of malignant cancer MZ/N – 1a circulated by the Świętokrzyskie Office of Cancer Registration and the data on the number of deaths among the inhabitants of the Świętokrzyskie Voivodeship, in years 1999 – 2010, obtained from Demography data base of the Central Statistical Office.

Overall new cases of malignant cancers and malignant cancer – related deaths were analysed. Additionally, the figures denoting specifically cancers of the trachea, bronchus, lung and colorectal in both men and women as well as prostate cancer in men and cancer of the breast, cervix and ovary in women were presented. New cases and death causes were coded according to ICD 10. The crude and age – standardized rates of incidence, mortality and potential years of life lost (PYLL), specific for age – groups, were calculated separately in men and women in the urban and rural area, in years 1999 – 2010.

Time trends of incidence, mortality and potential years of life lost rates were analysed by means of joinpoint models. This method extends linear regression in which the time trend is expressed by the lines connected together at the ‘joinpoints’ in which it changes its direction statistically significantly. An annual percentage change (APC) and an annual average percentage change (AAPC) of the rate value were determined based on the linear regression

model, in which the natural logarithm of incidence, mortality and PYLL was a dependent variable and a calendar year, an independent variable. Confidence interval of 95% was determined to define statistical significance of APC and AAPC. The trend direction of incidence, mortality and PYLL rates was compared between the urban and rural area by means of a joinpoint test for parallelism.

APC and AAPC values were calculated and trends were analysed using Joinpoint Regression Program 4.1.1.3 – December 2014, recommended by U.S. National Cancer Institute for this type of analyses.

Incidence, mortality and PYLL rates were compared between the urban and rural area by means of Rate Difference (RD) presenting the absolute difference in the rate values in the urban and rural area and Rate Ratio (RR) showing the ratio of rate values in the urban and rural area. To define statistical significance, standard errors and confidence intervals of 95% were assessed for inequality measures used in each time point.

The analysis of trends proved that in years 1999 – 2010, overall incidence rates of malignant cancers decreased in men in both populations. These changes were faster in the urban (APC = -2.3%, $p < 0.05$) compared to the rural area (APC = -0.9%, $p < 0.05$). Trends of malignant cancer incidence decreased generally in women in the urban area (APC = -1.6%, $p < 0.05$), whereas, in the rural area, no statistically significant changes were reported. The course of incidence trends in both sexes differed statistically significantly with regard to the place of residence.

The overall malignant cancers – related standardised rate of incidence was higher in the urban area: in men, by 9% ($p < 0.05$) and in women, by 25% ($p < 0.05$). The absolute difference in the incidence rates equalled 36.6 ($p < 0.05$) in men and 62.1 ($p < 0.05$) in women.

Trends of overall malignant cancers – related mortality rate decreased in men from the urban area (APC = -1.3%, $p < 0.05$), whereas no statistically significant changes were revealed in the rural area (APC = -0.4%). Similarly, there were no significant changes in the level of the standardised mortality rate between urban and rural inhabitants (RR = 1.0; RD = 0.8).

In women from the urban area, the standardised mortality rate decreased (APC = -1.1%, $p < 0.05$), while analysis of the trend showed no statistically significant changes in the rural area. The malignant cancer – related mortality rate was by 20% ($p < 0.05$) higher compared to women from the rural area. The absolute difference in the mortality rate equalled 23.6 ($p < 0.05$).

The trend results of the overall malignant cancer – related standardised PYLL rate proved a systematic decrease in the risk of premature death in men both in the urban (APC = -2.4%,

$p < 0.05$) and rural area ($APC = -1.8\%$, $p < 0.05$). In women in both populations, no statistically significant changes were reported in the rate of premature deaths.

In 2010 year, in men, the rate of overall malignant cancer – related premature mortality was by 12% ($p < 0.05$) lower in the urban compared to the rural area. However, in women, the premature mortality rate was by 29% higher in the inhabitants of the urban area. The absolute difference of the standardised PYLL rate between the urban and rural area reached -176.4 ($p < 0.05$) in men and 284.9 ($p < 0.05$) in women.

The results of comparative analysis of malignant cancers burden in the Świętokrzyskie Voivodeship proved that the level and trends of overall malignant cancers burden as well as with specific cancer locations differed with regard to the residence place (urban/rural area).

In 2010, in men, the overall malignant cancer – related incidence rate was the same in the urban and rural area, which resulted from a decreasing trend in the urban area incidence and no change in the rural area trend.

In men, the standardised mortality rate was higher in the urban area up to 2003 year. The urban area mortality rate continued to decrease, while the mortality rate did not improve in the rural area, which resulted in the higher overall malignant cancer – related mortality rate in the rural area reported from 2004 year.

Analysis of the overall malignant cancer – related standardised PYLL rate indicated the higher premature mortality rate in men in the rural area. In both study populations, the rate of premature mortality decreased systematically.

In the analysed period, in women, the standardised incidence, mortality and PYLL rates were higher in the urban area. Though the incidence and mortality rate decreased systematically in the urban area, the rural area trends did not improve, which resulted in a slight decrease in the inequality between the rural and urban area. In women, in both populations, no statistically significant changes were proved in the analysis of the premature mortality trend.