



ORIGINAL PAPER

Jan Gawełko<sup>1(ABCDEF)</sup>, Marek Cierpień-Wolan<sup>3(BCDE)</sup>, Justyna Podgórska-Bednarz<sup>2(DEFG)</sup>,  
Andrzej Kawecki<sup>1(BCDE)</sup>

## Morbidity trend of lip cancer in Podkarpacie and in Poland in the years 1963–2013

<sup>1</sup> University of Rzeszow, Institute of Nursing and Health Sciences.

<sup>2</sup> University of Rzeszow, Institute of Physiotherapy

<sup>3</sup> Provincial Statistical Office in Rzeszów

### ABSTRACT

**Introduction.** The dramatic decline in the incidence of lip cancer, which until the 80s of the twentieth century was the cause of significant morbidity, is an example of changes in the structure and trends of cancer incidence both in Poland and in the regions.

**Aim.** Therefore, the aim of this paper is to analyze the changes in the morbidity trend of the lip cancer during the last 50 years, both in Poland and in Podkarpacie.

**Material and methods.** A retrospective analysis of the lip cancer morbidity in the Podkarpackie region and in Poland in the years 1963–2013 was carried out based on data from the literature and our own research.

**Results and conclusion.** A steady decline in the incidence of lip cancer in Podkarpacie has been observed since 1982 for men and 1983 for women. In Poland these trends have been observed since 1972 for men and 1993 for women. In the analyzed period significant changes in the incidence structure in terms of sex are observed – from approximately 1:10 (women / men) in 1963 similarly in Podkarpackie and Poland – to 1:4.6 in Podkarpacie and 1: 2.6 in Poland in 2013.

**Keywords.** lip cancer, incidence, morbidity trend

### Introduction

Lip cancer, which for almost three decades was the cause of significant morbidity especially among men, is an example of changes in the structure and trends of cancer morbidity in Poland and in other regions. In the first half of the 1950's, it was second only to gastric cancer in terms of cancer in men in Poland.<sup>1</sup> Between 1963 and 2013, the percentage

of lip cancer decreased in men more than 13 times, both for Poland and Podkarpacie. A similar trend, although several times smaller in terms of both absolute count and percentage was observed in women.<sup>2-8</sup> The analysis of these phenomena using statistical methods showed significant differences in the dynamics of lip cancer morbidity trends between Podkarpacie, other regions, and Poland.

**Corresponding author:** Jan Gawełko, tel. +48 603 754 301, +48 872 11 09, email: [jangawelko@o2.pl](mailto:jangawelko@o2.pl),  
Instytut Pielęgniarstwa i Nauk o Zdrowiu, Al. mjr. W. Kopisto 2a, 35-310 Rzeszów

**Participation of co-authors:** A – Author of the concept and objectives of paper; B – collection of data; C – implementation of research; D – elaborate, analysis and interpretation of data; E – statistical analysis; F – preparation of a manuscript; G – working out the literature; H – obtaining funds

Received: 3.10.2016 | Accepted: 20.02.2017

Publication date: June 2017

Gawełko J, Cierpień-Wolan M, Podgórska-Bednarz J, Kawecki A. *Morbidity trend of lip cancer in Podkarpacie and in Poland in the years 1963–2013.* Eur J Clin Exp Med. 2017;15(1):32–38. doi: 10.15584/ejcem.2017.1.5

### Aim of the study

The aim of this paper is to analyze the changes in the morbidity trend of the lip cancer during the last 50 years, both in Poland and in the Podkarpackie region.

### Material and methods

A retrospective analysis of the lip cancer morbidity in the Podkarpackie region and in Poland in the years 1963–2013 was carried out based on available data.

In the analyzed period, Podkarpackie as a region included: the area of former Rzeszow province from 1963 to 1975, and in the period 1976–1998: the former Krosno, Przemysl, Rzeszow and Tarnobrzeg province. Also from 1999 to date – the area of the present Podkarpackie province.

Using conventional statistical methods, based on demographic data from Provincial Statistical Office in Rzeszow, our own publications and Podkarpackie Cancer Register – incidence rates and structure indicators (percentage) for the lip cancer (designation code C00 in ICD10) were calculated. Due to changes in the administrative division of the country, the calculation of standardized rates for Podkarpackie was possible since 1999. Based on the published data of the Department of Epidemiology, Oncology Centre in Warsaw, similar data for Poland were compiled.

In 1997–1998 due to strikes in Health Care, among other causes, cancer reports were not filled in, therefore, there is no data available for this period for both Poland and Podkarpackie – which was marked on the charts.

### Results

In the years 1963–2013 in Podkarpackie 3,586 cases of the lip cancer were registered, including 2,990 in men and 596 in women. The absolute morbidity count increased from

the 50's and in 1963 was 80 for men with an incidence rate of 10.0/100 thousand and a percentage of 8.1%. For women in the same year the number of cases was 7, with an incidence rate of 0.8/100 thousand, and a percentage of 0.7%. The highest number of cases in total (117) was recorded in 1982. In subsequent years, a decrease in the morbidity was observed in Podkarpackie. In 2013, the morbidity in men amounted to 28 cases with an incidence rate of 2.7/100 thousand, standardized ratio of 1.6/100 thousand, and a percentage of 0.6%. In women, the absolute morbidity amounted to 6, with an incidence rate of 0.6/100 thousand, standardized ratio of 0.3/100 thousand, and a percentage of 0.2%.<sup>2-6</sup>

The results in the years 1963–2013 for Podkarpackie are presented in Figures 1,2,3,4.

In this time window in Poland, 41,362 cancers were registered in this location – 35,610 in men and 5,752 in women. In 1963 the morbidity totaled 850 in men and 84 in women. This resulted in the incidence rate of 5.4/100 thousand, a standardized rate 6.5/100 thousand and a percentage of 5.4% in men and 0.5/100 thousand for incidence rate and standardized rate and a percentage of 0.4% in women, respectively.

In Poland, the largest morbidity was registered in 1972 – 1,240 cases, including 1,136 in men and 104 in women. In the subsequent years, a clear downward trend was observed.

In 2013, 372 cases were registered, including 270 in men and 102 in women. Incidence rate for men was 1.4/100 thousand, standardized rate - 0.8/100 thousand, percentage of 0.4% and in women, it was respectively 0.5/100 thousand and 0.2/100 thousand, and 0.1%.<sup>1,7-9</sup> The results in the years 1963–2013 for Poland are shown in Figures 5,6,7,8.

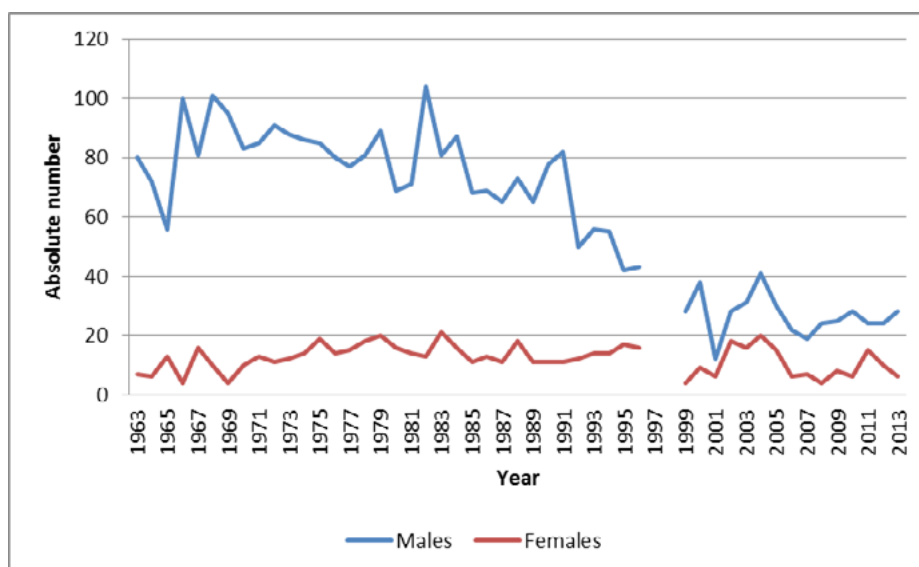


Figure 1. The absolute count of lip cancer morbidity in Podkarpackie between 1963 and 2013

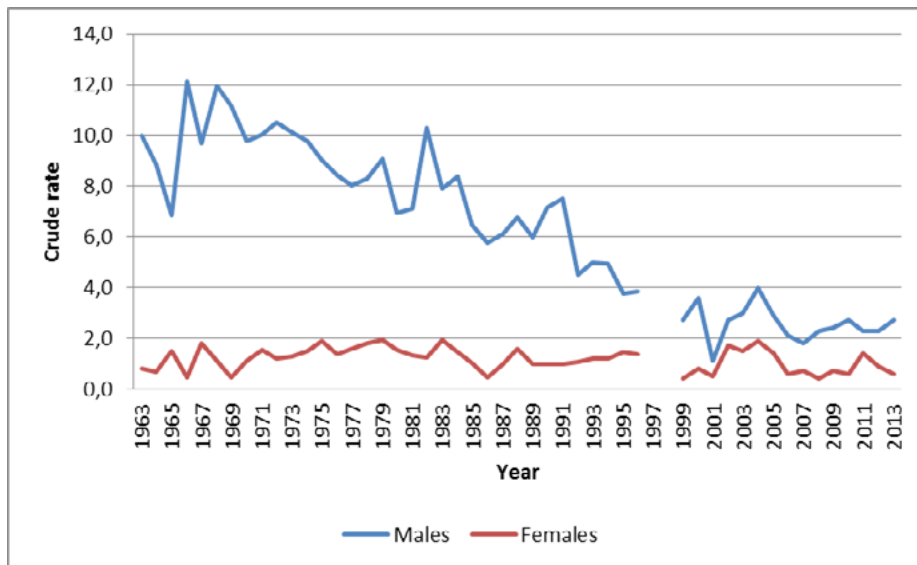


Figure 2. The incidence rate of lip cancer in Podkarpacie between 1963 and 2013

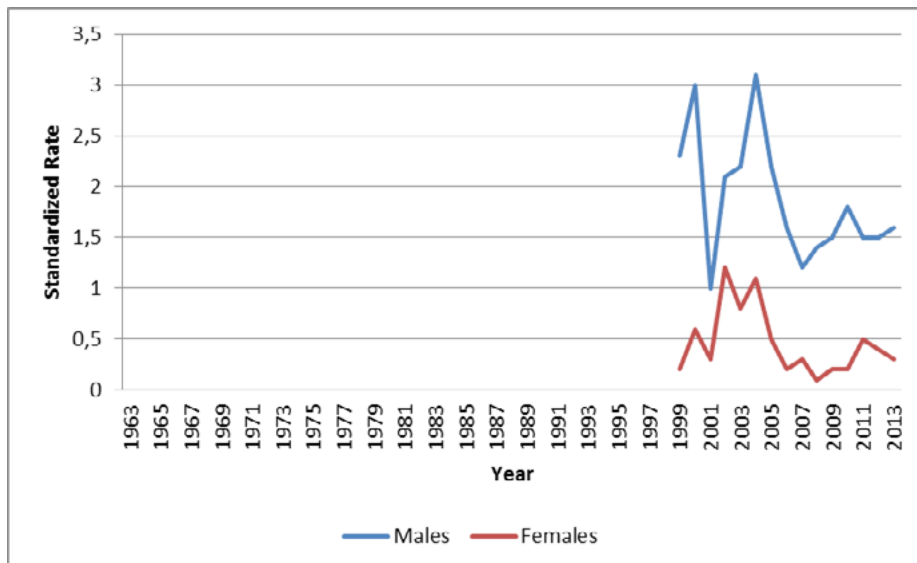


Figure 3. Standardized lip cancer morbidity rate in Podkarpacie in the years 1999-2013

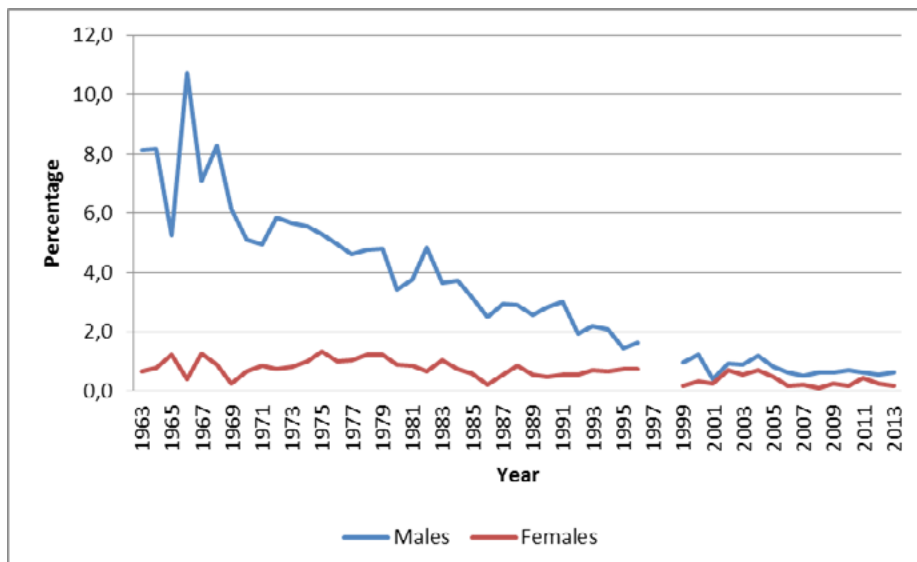


Figure 4. The percentage of lip cancer morbidity in Podkarpacie in the years 1963–2013

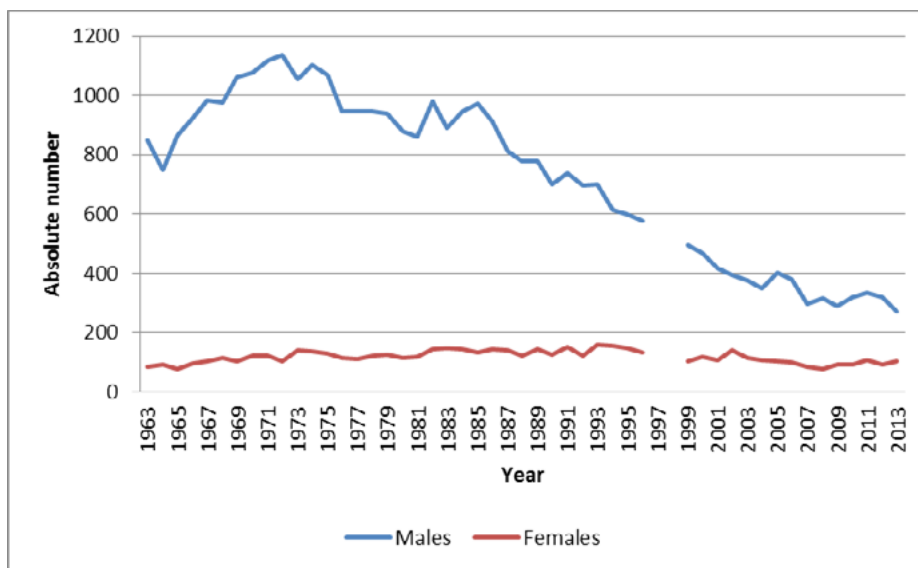


Figure 5. The number of absolute incidence of lip cancer morbidity in Poland in the years 1963–2013

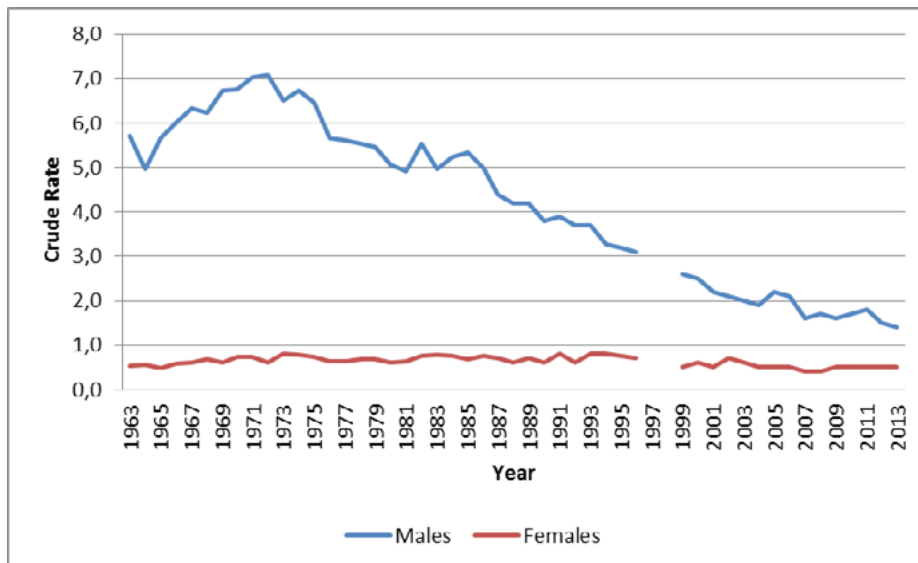


Figure 6. The incidence rate of lip cancer in Poland in the years 1963–2013

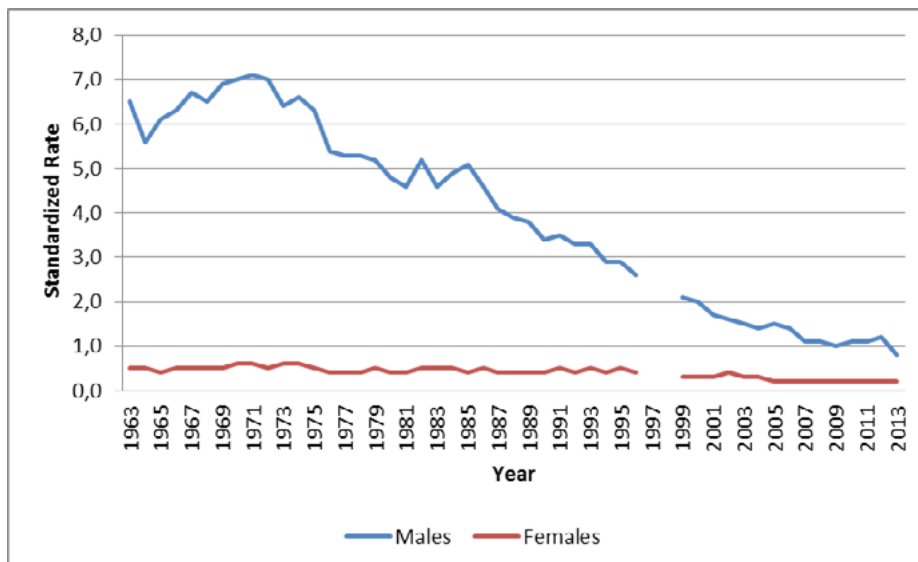
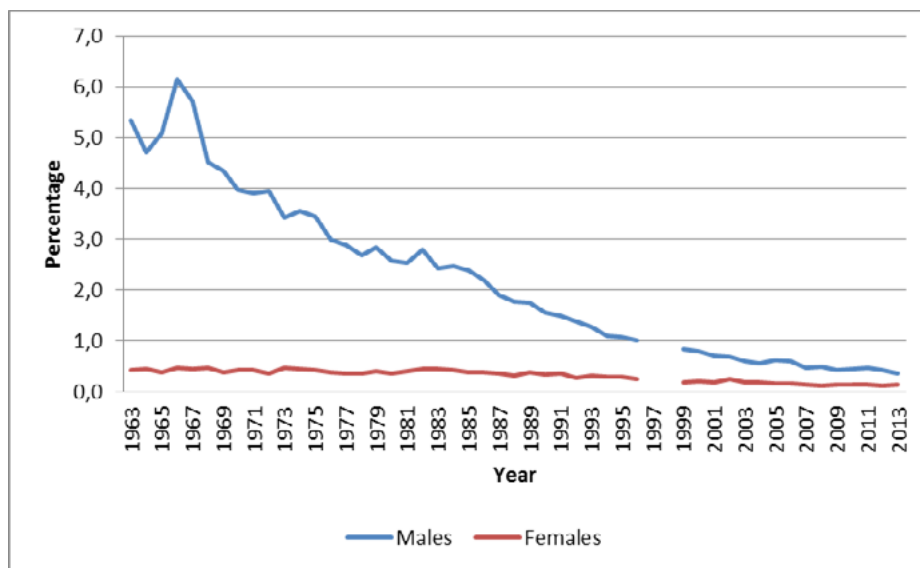


Figure 7. Standardized incidence of lip cancer in Poland in the years 1963–2013



**Figure 8.** The percentage of lip cancer morbidity in Podkarpacie in the years 1963–2013

## Discussion

Over the 50 years analyzed, the absolute count of lip cancer morbidity both in Podkarpackie and Poland decreased significantly – especially in men. The incidence in men in Podkarpacie decreased over 50 years almost 3 times (2.9) and in Poland, more than 3 times (3.2). These figures, however, do not reflect the real dynamics expressed in the absolute count for the top morbidity, comparing to which the decrease in incidence results for Podkarpacie is almost 3.7 and 4.2 times for the Poland. A clearer picture is obtained from the presentation of these changes based on the percentage. In 1963 in Podkarpacie, lip cancer morbidity in men amounted to 8.1% which is 3rd place among cancer morbidity, immediately after gastric cancer and lung cancer. The percentage for women was 0.7% (20<sup>th</sup> place). At the same time, in Poland it was the 4th disease in terms of morbidity in men with the percentage of 5.4%. The percentage for women was 0.4% (29<sup>th</sup> place). In 2013, the morbidity in men in Podkarpacie was 0.6% which is the 24<sup>th</sup> disease in terms of incidence and in women it was 0.2% – 47<sup>th</sup>. In Poland, lip cancer was 34<sup>th</sup>, 0.3% in men and in women 50<sup>th</sup>, 0.1%.

Geography of cancer incidence has been the subject of numerous publications which results indicate greater morbidity in the eastern part of the country.<sup>10–12</sup> Therefore, a comparison of the results obtained for Podkarpacie with the trends in other regions of Poland seems interesting. In the year 1999 when new administrative division was adopted – the highest incidence ratio in men 6.9/100 thousand was registered in the Świętokrzyskie province. In turn, the lowest values of 0.4/100 thousand and 0.8/100 thousand were registered in the Lubuskie and Pomeranian provinces, respectively. In 2013, the

highest incidence rate – 2.9/100 thousand were registered in the Świętokrzyskie province and the lowest in the Kujawsko-Pomeranian and West Pomeranian provinces. Regarding the incidence among women in 1999, the highest incidence rate was registered in the Świętokrzyskie province – 1.3/100 thousand, followed by the Wielkopolska and Opole provinces. In 2013, in turn, the highest value of 1.3 /100 thousand were registered in the Opole province and subsequently in the Świętokrzyskie province 1.2/100 thousand.<sup>9,13</sup>

Regional differences in cancer incidence are obvious phenomenon in epidemiology. It is evident both in countries with a large population and diversity of geographical area as Poland or France and in relatively small countries in terms of area and population as Slovakia or Switzerland. For example, in 2009 in France, the incidence in men was 0 in the department of Isere, and in the departments of Loire-Atlantique and Vendee it was 2.8/100 thousand.<sup>14</sup> In turn, in Switzerland, the incidence in men was 0 in the cantons of St Gallen, Appenzell, Glarus and Graubunden, while 0.6/100 thousand for Zurich.<sup>14</sup> Therefore, the above observations for Poland and Podkarpacie were referred to the data for Slovakia and the Country of Prešov neighboring Podkarpacie.

In Slovakia in 1978, the incidence rate was 7.1/100 thousand for men and after reaching the peak value of 7.9/100 thousand in 1982, it has systematically decreased to 2.3/100 thousand in 2009. In women in 1978, a rate of 1.2 /100 thousand was recorded and a peak incidence of 1.5/100 thousand was in 1990, followed by a decrease to 0.3/100 thousand in 2004, and a rise again to 1.1/100 thousand in 2009. These values are higher in comparison to Poland, where in 1978 the incidence rates for men were 5.6/100 thousand and for women – 0.6/100 thousand. On the other hand, comparing the trends to the data available in Slovakia, i.e. until 2009,

it must be noted that both the incidence in 2009 in men – 1.6/100 thousand and in women 0.5/100 thousand did not reach so high values as in Slovakia over the period 1978-2009.<sup>3,14</sup>

For the county of Prešov bordering Podkarpacie, the incidence rate for men in 2003 were 3.6/100 thousand and 0.7/100 thousand for women – while in Podkarpacie they amounted to 3.0/100 thousand for men and 1.5/100 thousand for women. In 2009, the rates in the region amounted to 2.3/100 thousand in men and so they were similar to that of Podkarpacie, which amounted to 2.4/100 thousand. The incidence rate for women were 1.0/100 thousand and were higher than in Podkarpacie where it was 0.7/100 thousand for women.<sup>3,15-21</sup>

These comparisons, apart from the presentation of data characterizing the morbidity trends in the region, certainly also allow reference to the situation in their country and other provinces. It seems that especially in the mapping of health needs, signaling regional differences can be significantly useful in the development of regional health programs. In 1999 in Poland, the differences in the incidence of lip cancer in men ranged from 0.4/100 thousand (Lubuskie) to 6.9/100 thousand (Świętokrzyskie).<sup>13</sup> After 14 years in 2013, the spread decreased significantly from about 0.5/100 thousand (Kuyavian-Pomeranian) to 2.3/100 thousand (Świętokrzyskie).<sup>9</sup> Therefore, only constant analysis of trends in cancer morbidity and mortality can be the basis for effective health organizations in the field of oncology both on the country and regional level.

## Conclusion

1. A steady decline in the lip cancer morbidity was recorded in Podkarpacie since 1982 for men and 1983 for women. These trends for Poland have been observed since 1972 for men and 1993 for women.
2. Within 5 decades, proportions in women/men morbidity underwent significant change from approximately 1:10 in 1963, both in Podkarpacie and Poland, to 1:4.6 in Podkarpacie and 1: 2.6 in Poland in 2013.
3. During the studied period, the percentage of lip cancer morbidity in Podkarpacie, despite the decrease in the number of cases, was higher than the percentage for both men and for women in Poland.
4. The incidence of lip cancer in Poland, in comparison to Slovakia, is characterized by a lower incidence rate both in men and women.
5. The incidence of lip cancer in Podkarpacie compared to Prešov shows decreasing trends for both sexes and the incidence in women in Podkarpacie is significantly lower.
6. Only constant monitoring of trends in cancer morbidity in the regions will enable the efficient organization of health care in this area.

## Compliance with ethical standards

*Conflict of interest:* The authors declare that they have no conflicts of interest.

*Funding:* None

## References

1. Koszarowski T, Gadomska H, Wronkowski Z, Romejko M. Nowotwory złośliwe w Polsce w latach 1952-1982. Warszawa, Instytut Onkologii; 1985.
2. Koszarowski T, Gadomska H, Wronkowski Z, Romejko M. Organizacja walki z chorobami nowotworowymi w Polsce. Epidemiologia nowotworów złośliwych w Polsce i w terenach wybranych w latach 1963-71. Warszawa, Instytut Onkologii; 1972.
3. Gawelko J. Zachorowania na nowotwory złośliwe w regionie Polski południowo-wschodniej w latach 1963-2010. Rzeszów, Wydawnictwo UR; 2016.
4. Grądalska-Lampart M, Patro A, Radziszewska A, Gawelko J. Nowotwory złośliwe w województwie podkarpackim w 2011 roku. Rzeszów, Podkarpacki Rejestr Nowotworów; 2013.
5. Grądalska-Lampart M, Patro A, Radziszewska A, Gawelko J. Nowotwory złośliwe w województwie podkarpackim w 2012 roku. Rzeszów, Podkarpacki Rejestr Nowotworów; 2014.
6. Grądalska-Lampart M, Radziszewska A, Patro A, Kozioł K, Gawelko J. Nowotwory złośliwe w województwie podkarpackim w 2013 roku. Rzeszów, Podkarpacki Rejestr Nowotworów; 2015.
7. Didkowska J, Wojciechowska U at al. Nowotwory złośliwe w Polsce w 2011 roku. Warszawa, Centrum Onkologii - Instytut im. Marii Skłodowskiej-Curie; 2013.
8. Wojciechowska U, Didkowska J at al. Nowotwory złośliwe w Polsce w 2012 roku. Warszawa, Centrum Onkologii - Instytut im. Marii Skłodowskiej-Curie; 2014.
9. Didkowska J, Wojciechowska U at al. Nowotwory złośliwe w Polsce w 2013 roku. Warszawa, Centrum Onkologii - Instytut im. Marii Skłodowskiej-Curie; 2015.
10. Staszewski J. Regionalne różnice rejestrowanej umieralności na nowotwory złośliwe w Polsce w 1961 roku. Nowotwory. 1967;17:297.
11. Staszewski J. Regionalne różnice umieralności na nowotwory złośliwe w Polsce w latach 1970-1974. Gliwice, Instytut Onkologii; 1979.
12. Zatoński W, Tyczyński J, Becker N. Geographical distribution of cancer in Poland. in: Boyle P, Muir CS, Grundmann E, editors. Cancer Mapping. Berlin-Heidelberg, Springer Verlag; 1989:176-95.
13. Didkowska J, Wojciechowska U i wsp. Nowotwory złośliwe w Polsce w roku 1999. Warszawa, Centrum Onkologii - Instytut im. Marii Skłodowskiej-Curie; 2001.
14. International Agency for Research on Cancer. <https://www.iarc.fr/>. Accessed November 3, 2016.
15. Ondrušová M, editor. Cancer incidence in the Slovak Republic 2003. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2007.

16. Safaei Diba Ch, Pleško I, editors. Cancer incidence in the Slovak Republic 2004. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2008.
17. Safaei Diba Ch, Pleško I, Obšitníková, A, editors. Cancer incidence in the Slovak Republic 2005 . Bratislava, National Cancer Registry Cancer Research Institute SAS; 2009.
18. Safaei Diba Ch, Pleško I, Hlava P, editors. Cancer incidence in the Slovak Republic 2006. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2010.
19. Safaei Diba Ch, Pleško I, Hlava P, editors. Cancer incidence in the Slovak Republic 2007. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2012.
20. Safaei Diba Ch, Pleško I, editors. Cancer incidence in the Slovak Republic 2008. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2014.
21. Safaei Diba Ch, editor. Cancer incidence in the Slovak Republic 2009. Bratislava, National Cancer Registry Cancer Research Institute SAS; 2015.