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Review

Cancer incidence and mortality in the Greater Poland Region—Analysis of the year 2010 and future trends

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ABSTRACT

Background and aim: The Greater Poland Region is one of the most industrialised areas of Poland, with a high rate of cancer incidence and mortality. The present report estimated incidence and mortality data for Greater Poland in the year 2010.

Methods: Statistical reports in this study include absolute number of cases and crude incidence rates. The derived age-, sex-, and site specific rates were age-standardised (ASRs per 100,000 person-years) using the European (ASRE) standard population.

Results: In 2010, a total 13,581 new cancer cases were reported to the Greater Poland Cancer Registry. The number of new cases increased by 24% compared to 2001. Greater Poland has the second-highest ASR for both females and males among the 16 regions in Poland. The most common cancers are similar to those in other Western European countries. Among men, the most common cancers are lung (C34), colorectal (C18-C21), and prostate (C61) cancer. In women, breast cancer is the most common (C50), followed by colon (C18-C21) and lung (C34) cancer. Lung cancer in males accounts for more than one-third of all cancer-related deaths in Greater Poland. As in 2009, lung cancer is the leading cause of death in women.

Conclusions: Given the ageing of the population, the incidence of chronic diseases, including cancer, is expected to grow. These data indicate that cancer will continue to represent an important challenge both to local health authorities and the National Health Fund, which will need to meet the growing demand for cancer care.

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1. Introduction

The incidence of cancer continues to rise in Europe as a consequence of population ageing, lifestyle choices (tobacco and alcohol use, physical inactivity, poor diet) and industrial contamination.¹ While the incidence of cancer varies from country to country, the incidence rates in Eastern Europe are generally higher than in those observed in Western Europe.^{1–5}

Treating cancer is an expensive proposition requiring sophisticated technology and costly chemotherapy agents and targeted drugs. The most cost-effective approach to cancer control is, therefore, not treatment, but rather early detection and prevention.⁶ Prevention, however, also requires surveillance through comprehensive cancer registries. Population-based registries provide valuable information on incidence rates and trends in those rates based on tumour localization, sex, and age. In addition, hospital-based registries provide information regarding diagnosis, stage distribution, treatment methods and survival.

The Greater Poland Region is the second largest province in Poland (29,825 km²) and the third most populous (3.4 million inhabitants). Greater Poland consists of 31 administrative districts and 4 cities (Kalisz, Konin, Leszno, Poznań) that function as their own district.⁷ Cancer surveillance in the region is carried out by the Greater Poland Cancer Registry (GPCR). The incidence to mortality (I/M) ratio—an indicator of accuracy—of the GPCR is 99%, thus making the GPCR among the most accurate cancer registries in Poland.

The aim of the present report is to provide and discuss data on cancer incidence in the Greater Poland Region for the year 2010.

2. Materials and methods

Data for this descriptive study was obtained from the GPCR. This cancer registry has been registering cancer cases in Poznań, Poland since 1980, and for the province since 1985.

The GPCR has been member of the International Association of Cancer Registries since 2008.⁴ According to the data from the National Cancer Registry for 2010, the GPCR, with a registration completeness of 99% (vs. a mean of 90% in Poland as a whole), registration quality of 85% (vs. 84%) is one of the highest-quality regional cancer registries in Poland. The GPCR includes data from 31 districts and 4 cities with “district rights”

(Kalisz, Konin, Leszno, Poznań). Since January 1, 2009, Death Certificate Statistical Cards—which provide essential information related to the patients cause of death—have been sent electronically from all registering points in the country only to a designated Statistical Office in Olsztyn. As a result, this comprehensive information is no longer sent directly to regional cancer registries.

Cancer registration is regulated by Polish law, including the June 29, 1995 law on public statistics (Journal of Laws, 1995, No. 88, item 439, as amended) and the Council of Ministers “Regulation of Statistical Surveys of the Public Statistics” (Journal of Laws of 2010, No. 3, item 14). All cancer registries in Poland collect data, which is reported on the official form entitled the “Cancer Notification Form”. All tumours are coded according to the 10th Revision of the International Classification of Diseases and Related Health Problems (ICD10). All malignancies with the codes C00–C97, and in situ neoplasms (D00–D09) are included in the registry.

Statistical reports in this study include absolute number of cases, crude incidence rates. The derived age-, sex-, and site specific rates were age-standardised (ASRs per 100,000 person-years) using the European (ASR_E) standard population. Females account for a majority of the population in the region, with a male:female ratio of 100:106.

3. Results

In 2010, 13,581 new cases of cancer were reported to the GPCR (6722 men and 6859 women). The number of new cases increased by 2655 (24%) compared to 2001 (see Table 1). The growth in cancer incidence increased proportionally by age group.

The most common cancers in men were lung (C34), prostate (C61), and colon (C18). In women, the most common locations were breast (C50), lung (C34), and corpus uteri (not cervix) (C54) (see Fig. 1).

The total number of all in situ cancers (D00–D09, pre-invasive, stage ‘0’) increased from 216 cases in 2005 to 183 cases in 2006, 278 in 2007, 308 in 2008, 327 in 2009, and 359 in the year 2010.

In 2010, 588 cancer cases (C00–D09) were identified by routine screening tests; this represents an increase of 227 (63%) more cases than in 2009. Of these, 510 (87%) were breast

Table 1 – Cancer incidence, Greater Poland, 2001–2010.

Year	Male			Female		
	Absolute number	Crude rate	ASR _E	Absolute number	Crude rate	ASR _E
2001	5367	330.8	395.26	5559	323.2	299.37
2002	5584	343.6	397.00	5616	326.0	292.60
2003	5749	353.4	405.33	5722	331.7	294.00
2004	5908	362.6	408.02	5770	333.9	294.53
2005	6340	388.5	409.52	6282	362.8	304.28
2006	6513	398.3	418.26	6178	356.1	296.91
2007	6749	412.0	421.51	6746	387.8	319.06
2008	7086	431.3	435.28	6714	384.8	309.49
2009	6964	422.4	419.77	6749	385.5	311.76
2010	6722	405.2	416.50	6859	389.6	324.27

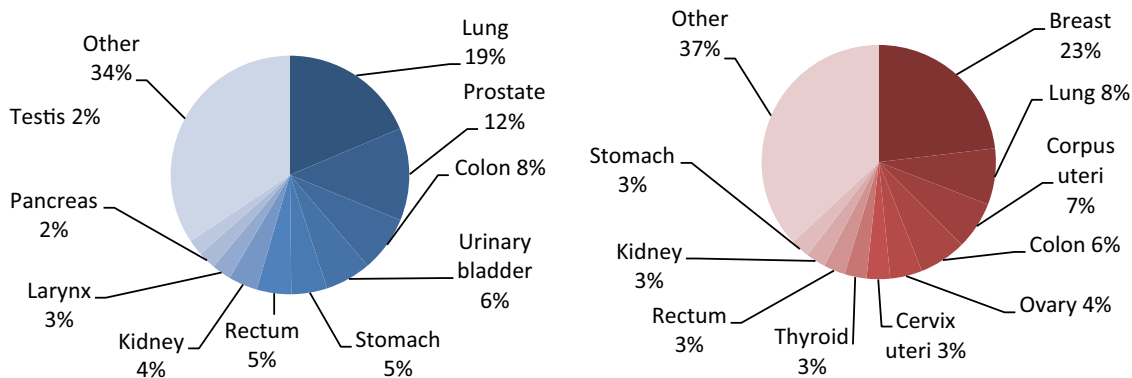


Fig. 1 – Distribution of cancer incidence by localization in 2010, males and females, Greater Poland.

cancers, 34 lung cancers, 16 cervical cancers, 11 colorectal cancers, and 17 prostate cancers.

In the Greater Poland Region, 106 children aged 0–19 were diagnosed with cancer (the crude incidence rate in children is 14 cases per 100,000 population).

According to the Central Statistical Office, 8218 cancer-related deaths were registered in the region in 2010 (4603 in men and 3615 in women) representing an increase of nearly 8% (Table 2). Distribution of cancer deaths by age groups increases proportionally by age, as do incidence rates.

The leading causes of cancer deaths reported in 2010 in men were lung cancer (C34), prostate cancer (C61), and cancer of the colon (C18). The leading causes of cancer deaths in women reported in 2010 were the same as those reported in 2009²: lung cancer (C34), followed by breast (C50), and colon cancer (C18). The distribution of cancer-caused deaths in males and females is shown in Fig. 2.

4. Discussion

This study provides an overview of cancer incidence and mortality in the Greater Poland Region. In 2010, 13,581 new cancer cases were reported to the GPCC: 6722 cases in males (ASR_E 416.5) and 6859 cases in females (ASR_E 324.3).⁴ Importantly, these incidence rates are lower than rates in several other western European countries (excluding females in Spain), including Spain (449.9 and 264.5 ASR_E in males and females, respectively), France (550.7

and 369.8, respectively), and Germany (463.2 and 344.5, respectively).⁸ The number of new cases increased by 2655 (24%) as compared to 2001 (Table 1). The most prevalent cancers in men are those of the lung (C34), prostate (C61), and colon (C18). In women, the most common locations are breast (C50), lung (C34), and corpus uteri (C54) (see Fig. 1).

In Greater Poland, exposure to cancer risk is related to risk agents (primarily tobacco smoke), and population ageing (the number of males between age 50 and 69 increased by 31% and females by 28% in the period from 2001 to 2010). In 2010, the cancer registry recorded 8218 cancer related deaths (4603 men, 3615 women). In terms of the ASR_E, the region has among the highest ASRs among the 16 Polish provinces (2nd for both sexes). Efforts to combat tobacco use have led to a decrease in lung cancer, although this site still accounts for 19% of new cases and 29% of deaths in the region. Prostate cancer is the 2nd most common cancer in men, and also shows the highest growth rate.

The poor 5-year survival rates underscore the need for more research and effective prevention. To this end, in 2005, efforts were initiated to expand the national cancer control programme (National Cancer Combat Programme “Improvement of the cancer data collection and registration system”) to assess the level of public knowledge of health promoting behaviours and to raise public awareness of cancer by disseminating informational materials and organising media campaigns to promote a healthy lifestyle.

Table 2 – Cancer mortality 2001–2010, Greater Poland.

Year	Male			Female		
	Absolute number	Crude rate	ASR _E	Absolute number	Crude rate	ASR _E
2001	4178	255.8	315.04	3408	197.6	175.33
2002	4193	258.0	314.17	3391	196.8	171.86
2003	4266	262.3	313.37	3329	193.0	165.38
2004	4550	279.3	329.70	3407	197.2	166.54
2005	4345	266.2	309.35	3540	204.4	169.58
2006	4572	279.6	317.57	3679	212.0	174.18
2007	4570	279.0	309.07	3710	213.3	171.59
2008	4606	280.4	305.26	3573	204.8	160.48
2009	4545	275.7	294.33	3713	212.1	164.88
2010	4603	277.5	289.55	3615	205.3	156.22

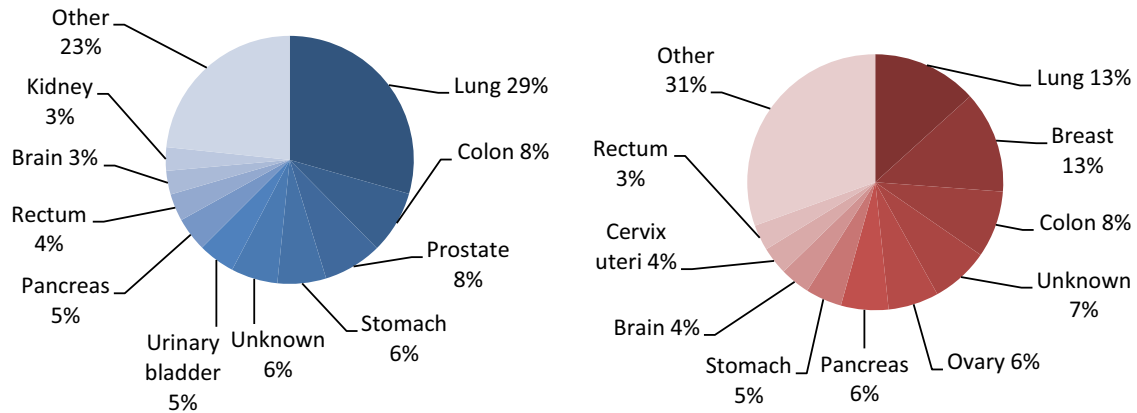


Fig. 2 – Distribution of cancer deaths in males and females, Greater Poland 2010.

The main challenges of Polish oncology are to improve patient access to prompt diagnosis, followed by timely, comprehensive, and accurate treatment.^{9,10} To fulfil this aim, additional and regular investment in oncology hospitals is necessary.¹¹ Similarly, in order to gather reliable data, improvements in the quality of cancer registration is essential.¹² Early prevention plays a vital role in combating cancer and should be linked with educational activities. However, despite the many achievements made in recent years, one factor that has not been well-addressed, especially in the public health sector, is patient comfort.¹³

Sound knowledge of the patterns of cancer incidence and mortality is essential to establish policies for cancer control among the various countries and regions of Europe. Incidence rates for lung cancer in men have begun to decrease in some European countries, particularly in those countries (e.g., areas of North-Western Europe where smoking prevalence first began to diminish). This is not, however, the case for Eastern European females, in whom rates are still rising. Similarly, incidence and mortality rates in women, who acquired the smoking habit later than men, are now on the rise in a number of European countries. Hence, lung cancer

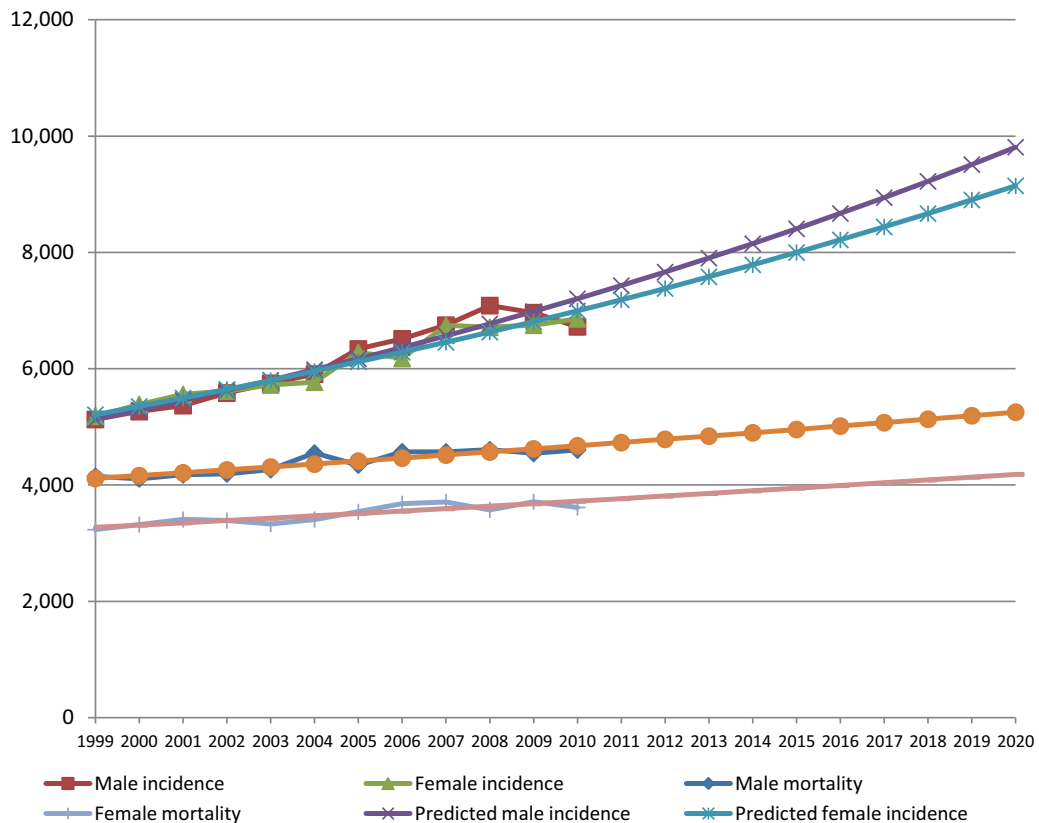


Fig. 3 – Predicted changes in cancer incidence and mortality.

retains its status as the most common cancer in Europe, as well as the leading cause of cancer death. The lessons for primary prevention, through efforts to decrease tobacco smoking, are obvious. Such measures will have an impact upon other tobacco-related cancers too, including cancer of the oral cavity and pharynx, oesophagus, pancreas, larynx and urinary tract.

A reduction in alcohol consumption would reduce the risk of neoplasms of the upper digestive system and respiratory tract. Likewise, there is scope to prevent colorectal and breast cancer—the second and third most common cancers in Europe, respectively—through diet modification and, particularly for breast cancer, by reducing the prevalence of obesity. Compared to previous estimates,¹⁴ there is also clear evidence that preventative interventions have had an impact on cancer incidence and mortality, particularly in the more affluent countries. For instance, the decline in cervical cancer observed in several of the Nordic countries can be attributed to the effectiveness of national screening programmes. Similarly, effective treatment of testicular tumours has led to a reduction in death rates in many European countries during the last decade.

Cancer registries allow for the follow up of treatment results.¹⁵ Moreover, evaluation of clinical results using cancer registry data is not only limited to a particular institution but instead enables us to perform inter-institutional comparison between oncology hospitals.

The morbidity and mortality forecast for 2020, established according to an exponential model based on data from 1999 to 2010, indicates that the GPCR will record 19,000 new cancer cases (9810 in men and 9145 in women), while 57,000 patients will be under oncologist care (Fig. 3). Cancer-caused mortality in 2020 is predicted to be 9500 (5253 men and 4184 women).

The predicted increase in cancer incidence for Poland in 2019 is expected to result from demographic changes, the influence of certain cancer risk factors, and participation in screening programmes.^{15,16}

5. Conclusions

Population ageing combined with gradually increasing survival rates (due to improvements in diagnosing and treating cancer patients) will require continuation of the anti-cancer programmes in the Greater Poland province. This will necessitate, therefore, ongoing investments to maintain and modernise the infrastructure needed for treatment and diagnostics and funds to continue prevention programmes. Finally, new funds will be needed to treat patients with newly diagnosed cancers.

Conflict of interest

None declared.

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