



Self-government HPV vaccination programmes in Poland, 2009–2016

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Abstract

Introduction. Cervical cancer is the fourth neoplasm in women with respect to incidence. In Poland, both cervical cancer incidence and corresponding mortality are gradually decreasing. Despite these improvements, the epidemiological situation significantly deviates from European standards. Poland has one of Europe's lowest five-year survival rates at 54.1% for patients diagnosed in 2000–2002, compared to the European mean value of 62.1%.

Objective. The aim of this study is to present health policy programmes related to HPV vaccinations run by local self-government units in 2009–2016.

Materials and method. The research is based on analysis of already existing data developed by provincial governors and annual information reviews on health-policy programmes implemented by local self-government units presented to the Ministry of Health. All the programmes that included HPV vaccinations have been subjected to analysis.

Results. In 2009–2016, local government units implemented a total of 1,204 health policy programmes that covered HPV vaccinations. Under these programmes, 2.05% of girls aged 10–14 were vaccinated. Percentage-wise, these were communes that contributed the most financially to the HPV vaccination programmes, whereas the counties the least.

Conclusions. Local self-government's programmes covering HPV vaccinations conform with the trends outlined in strategic documents on fighting neoplastic diseases. It is possible that the availability of HPV vaccination was limited for girls living in rural communes. Differences in the number of programmes, number of vaccinated girls and the financial outlays allocated for the implementation of HPV vaccination programmes in particular provinces, may be determined by the epidemiological situation in a given region, measured by the incidence rate of cervical cancer.

Key words

HPV vaccination, health policy programmes, self-government units

INTRODUCTION

Malicious tumours constitute one of the most significant health problems worldwide. According to epidemiological estimations, both the incidence and number of deaths related to malicious tumours will increase globally in the next few decades [1]. This trend will also apply to Poland. Such an increase is indicative of the need to continue ongoing research and initiate new searches for efficient measures to prevent this public health issue in every possible aspect. Prevention and health promotions should play a crucial role, especially where such actions may significantly contribute to lowering the incidence. This is the case for invasive cervical cancer.

Cervical cancer is the fourth neoplasm in women with respect to incidence and mortality. In 2018, the number of cervical cancer cases worldwide was estimated at 570,000, with the number of deaths at 311,000 [2].

In Poland, the incidence of cervical cancer is gradually falling, the same as the number of related deaths. In 2010, standardized cervical cancer incidence was 10.5/100,000 [3], in 2016 – 8.1/100,000 [4]. In 2010, the standardized death rate oscillated at 5.1/100,000 [3], in 2016 – 4.1/100,000 [4]. If the

current trends continue, a drop in incidence to 7–8/100,000 may be expected, and a drop in death rates to ca. 4/100,000 in 2025 [5].

Despite these improvements, the epidemiological situation in Poland significantly deviates from European standards. Cervical cancer mortality rate is 70% higher than the EU average, and has one of the Europe's lowest five-year survival rates. For women diagnosed in 2000–2002, this rate was 54.1% [6], compared with the EU average of 62.1% [7].

In Poland, organized actions aimed at fighting malicious neoplastic diseases were implemented by the National Programme for Cancer Control [8, 9]. This programme includes secondary prevention of cervical cancer. Additionally, at regional and local levels, self-government units implemented actions in primary and secondary prevention of cervical cancer within the framework of facilitative health policy programmes. These include, among others, HPV vaccinations.

HPV vaccinations are not obligatory in Poland, but are the so-called recommended vaccinations. They are financed by local self-government units under health policy programmes or from household budgets.

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OBJECTIVE

The aim of this study is to present health policy programmes related to HPV vaccinations run by local self-government units in 2009–2016

MATERIALS AND METHOD

The research is based on analysis of already existing data (desk research), using data provided by provincial governors, and annual information reviews on health-policy programmes implemented by local self-government units presented to the Ministry of Health. All the programmes implemented in 2009–2016 that included HPV vaccinations were subjected to analysis. The programmes included those implemented by local self-government units at all levels, i.e. communes, counties and provinces.

Information is presented on the number of programmes implemented by self-government units at specific levels, and the percentage of girls aged 10–14 vaccinated in 2009–2016 in specific provinces. Also presented are the costs of the programmes covering HPV vaccinations, depending on the level of local self-government unit implementing the programme and the province. Variation in the number of programmes, the number of vaccinated girls aged 10–14, and resources intended for implementing these programmes in the provinces with the highest and the lowest standardized incidence, i.e. Podkarpackie and Lubuskie, were also subjected to analysis.

Standardized invasive cervical cancer incidence values in 2009–2016 in specific provinces¹ were divided into quartiles in such a way that the first quartile included provinces with the lowest standardized incidence, with the value of this parameter increasing across subsequent quartiles. Two provinces representing the first and fourth quartiles were subjected to analysis: Podkarpackie (1st quartile) and Lubuskie (4th quartile). t-Student tests for independent samples was used to analyse differences in incidence rates between these provinces and variation in the number of programmes, vaccinated girls and amount of financing.

RESULTS

The HPV vaccination programmes covered the purchase of vaccines, vaccination, information flyers and posters on this form of prevention, as well as the education of parents, caregivers and youth. Local self-government units vaccinated girls aged 10–14; in isolated cases older girls were also vaccinated. There were two types of vaccines used: bivalent (Cervarix), 4-valent (Gardasil*) and 9-valent (Gardasil 9).

In 2009–2016, local government units implemented a total of 1,204 health policy programmes covering HPV vaccinations. The lowest number of programmes was implemented in 2009 (127 programmes) and the largest number in 2014 (183 programmes). In 2010–2016, these communes implemented the largest numbers of programmes – 981. – Among them, the largest number of programmes

was implemented by municipal communes – 451, municipal-rural communes – 274, and the lowest numbers by rural communes – 256. Counties implemented 194 programmes and provinces 29.

Figure 1 presents the number of health policy programmes provided by local self-government units in total in the years 2009–2016.

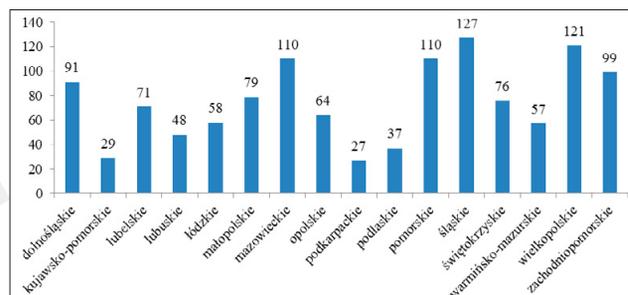


Figure 1. Number of health policy programmes in HPV vaccinations provided by local self-government units in total, 2009–2016

In 2009–2016, the largest number of health prevention programmes covering HPV vaccinations was implemented in the Śląskie and Wielkopolskie provinces, and the lowest number in the Podkarpackie and Kujawsko-Pomorskie provinces.

Data on the numbers of girls aged 10–14 vaccinated under programmes implemented by specific local self-government units, as well as on the numbers and percentage share of girls aged 10–14 vaccinated in total in the years 2009–2016 in specific provinces, is also presented (Tab. 1).

Table 1. Number and percentage share of girls aged 10–14* vaccinated against HPV in specific provinces

Province	Number of girls aged 10–14		% of vaccinated girls
	Total	Vaccinated in 2009–2016	
Dolnośląskie	63,164	1,805	2.86%
Kujawsko-pomorskie	51,379	376	0.73%
Lubelskie	53,730	1,173	2.18%
Lubuskie	24,474	1,118	4.57%
Łódzkie	55,951	715	1.28%
Małopolskie	85,532	649	0.76%
Mazowieckie	124,394	1,820	1.46%
Opolskie	22,420	2,540	11.33%
Podkarpackie	56,142	349	0.62%
Podlaskie	29,316	589	2.01%
Pomorskie	57,836	633	1.09%
Śląskie	100,516	1,389	1.38%
Świętokrzyskie	30,084	396	1.32%
Warmińsko-mazurskie	36,900	642	1.74%
Wielkopolskie	85,963	3,561	4.14%
Zachodniopomorskie	40,132	1,054	2.63%

* Percentage share of girls covered by HPV vaccination programmes with respect to the total number of girls aged 10–14 in specific provinces. The population of girls in subsequent years was determined on the basis of a population balance, as of 31.12.2008, 31.12.2009, 31.12.2010, 31.12.2011; 31.12.2012; 31.12.2013; 31.12.2014, 31.12.2015. Data obtained with respect to specific years from a Report of the Central Statistical Office of Poland (GUS): *Surface area and population with territorial breakdown* (<https://stat.gov.pl/obszary-tematyczne/ludnosc>, accessed on 15 January 2019).

1. Data on standardized malicious cervical cancer incidence rates obtained from the National Neoplasm Record, available at: <http://onkologia.org.pl/publikacje/> accessed 17 March 2019.

In 2009–2016, under health policy programmes run by local self-government units, a total of 18,809 girls aged 10–14 were vaccinated against HPV. This includes 10,325 girls vaccinated in commune-run programmes: 2,694 in rural communes, 2,883 in municipal-rural communes, and 4,748 in municipal communes. 3,030 girls were vaccinated under programmes run by counties and 5,454 under provinces.

Percentage share of girls covered by HPV vaccination programmes with respect to the total number of girls aged 10–14 in specific provinces was 2.05% nationwide. Data on the number and percentage of girls covered by the HPV prevention programmes show variation at the level of specific provinces. The largest number of girls were vaccinated in Wielkopolskie province (3561), Opolskie (2540) and Mazowieckie (1,820), with the lowest numbers recorded in Podkarpackie (349), Kujawsko-Pomorskie (376) and Świętokrzyskie (396). Opolskie (11.33%), Lubuskie (4.57%) and Wielkopolskie (4.14%) exhibited the highest percentages of HPV-vaccinated girls. Podkarpackie (0.62%), Kujawsko-Pomorskie (0.73%) and Małopolskie (0.76%) had the lowest percentages of vaccinated girls.

Percentage share of financial resources intended for HPV vaccinations in budgets of specific types of local self-government units intended for health policy programmes (Tab. 2), and the total cost of programmes in specific provinces are also presented (Fig. 2).

Table 2. Percentage share of financial resources intended for programmes covering HPV vaccinations in budgets of specific types of local self-government units intended for health policy programmes

Local self-government unit	2009	2010	2011	2012	2013	2014	2015	2016
Commune	7.57	11.80	7.44	4.84	6.24	4.78	8.69	26.03
County	0.14	0.19	0.12	0.90	0.15	0.16	0.13	0.40
Province	1.32	2.48	1.18	0.95	0.84	0.93	0.51	1.52

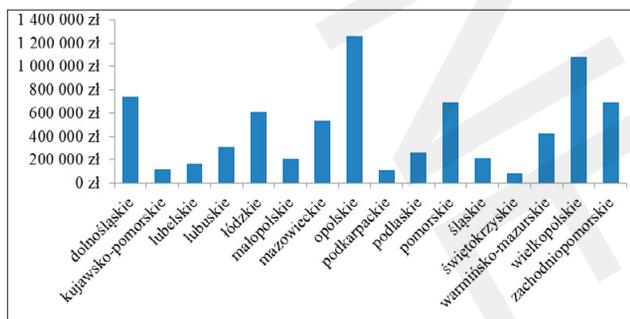


Figure 2. Total costs of health policy programmes covering HPV vaccinations in specific provinces

Communes had the largest percentage share of financial resources intended for HPV vaccinations in budgets for health policies (mean value of 9.67% for 2009–2016), and counties had the lowest (mean value of ca. 0.27% for 2009–2016).

In 2009–2016, local self-government unit invested PLN 7,498,388 on health policy programmes covering HPV vaccinations. Expenditures for these programmes were the highest in Opolskie (PLN 1,260,875) and Wielkopolskie (PLN 1,007,858). Świętokrzyskie (PLN 85,050) and Podkarpackie (PLN 111,744) assigned the least funds for this purpose.

Variation in the number of programmes covering HPV vaccinations, number of vaccinated girls aged 10–14, and resources intended for implementing these programmes in the provinces with the lowest and the highest standardized incidence – Podkarpackie and Lubuskie provinces – were also subjected to analysis. Mean cervical cancer incidence in Lubuskie was higher than in Podkarpackie, and analysis showed that this difference was statistically significant [$t(7)=7.00$; $p<0.005$].

Analysis using the Student's t-test for independent samples showed that the average number of health policy programmes regarding HPV vaccinations conducted by local government units in the Lubuskie Province ($M=11.38$, $SD=4.50$), was statistically higher than the average number of such programmes conducted in the analysed period in the Podkarpackie province ($M=3.63$, $SD=2.33$), $t(14)=4.33$; $p<0.001$. Cohen's d value=0.605 indicated the average dependence between the standardized incidence rate in these provinces, and the number of programmes implemented.

The average level of funds allocated for the implementation of HPV vaccination programmes run by local government units in the Lubuskie Province ($M=435283.12$, $SD=405,998.04$) is statistically significantly higher than the average level of financing of these programmes in the Podkarpackie Province ($M=15361$, $SD=21,383.68$). This is confirmed by the result of the Student's t-test for independent samples $t(13)=2.72$; $p<0.05$. Cohen's d value=1.461 indicated a high dependence between the standardized incidence rate in these provinces and the amount of funds allocated to financing health policy programmes.

There was no statistically significant difference between the number of girls covered by HPV vaccination programmes in both analysed provinces $t(6)=1.45$; $p=0.197$.

DISCUSSION

HPV vaccinations under optional health prevention programmes are currently the only way to engage public funds in the prevention of cervical cancer in Poland. Published data show that HPV vaccination programmes are currently being implemented in 82 countries worldwide [10, 11]. Such solutions conform with the WHO guidelines recommending comprehensive prevention and control of cervical cancer, including multidisciplinary actions covering education, community mobilization, vaccinations, mass screening, treatment and palliative care [12]. The updated WHO stance published on HPV vaccinations recommends the vaccination for all children aged 9–14 and, if financial resources allow, to introduce complementary vaccinations for those up to 18 in all countries because of the excellent safety profile and population effectiveness of the vaccination [13].

It is worth stressing that observation research in which the effect of general HPV vaccinations on the population has also been assessed in numerous countries, and confirmed the high efficiency in preventing HPV contamination, pre-cancer conditions of the cervix, vagina, vulva and condyles in women, and pre-cancer conditions of the penis, anus and condyles in men [14, 15, 16, 17, 18, 19]. In this context, it seems justified to include HPV vaccinations in obligatory vaccination schedules, or possibly to organize with the Ministry of Health or National Health Fund, a general HPV vaccination programme.

The results presented suggest that in the period subject to research, in each province, local self-government units implemented health policy programmes covering HPV vaccines. Taking into account the fact that in the light of current provisions of the law, health prevention programmes are optional for local self-government units, their independent activity in this regard should be respected. This is an expression of interest in public health tasks, and also conforms with actions outlined in strategic documents on fighting neoplasm diseases. In the National Programme for Cancer Control implemented in 2005–2015 [8] and in the Programme for 2016–2024 [9], the necessity for taking actions aimed at health promotion and neoplasm prevention has been stressed. These actions should be supported by regional and local undertakings, initiatives of scientific and medical professional societies, as well as non-government organizations. In a document entitled *Cancer Fighting Strategy for Poland for 2015–2024* and in the *White Book* report drafted under the auspices of the Polish Society of Oncology, these have been listed as one of the major directions for changes aimed at improving the population incidence and mortality rates connected with neoplasm diseases in Poland.

It was found that the communes implemented the largest number of HPV vaccination programmes, vaccinated the largest number of girls, and had the highest percentage of financial resources allocated for these vaccinations in the budgets for health policy programmes. Among the communes, the smallest rural communes were the most active in these areas. Consequently, this may mean that the availability of HPV vaccinations was limited primarily to girls living in these communes. This conclusion conforms with the results of an inspection conducted by the Supreme Audit Office on the implementation of health policy programmes by local self-government units [20].

The results obtained exhibit variation across specific provinces with respect to the number of programmes, number of vaccinated girls, and financial outlays for the implementation of these programmes. The observed discrepancies could be due to a variety of reasons. One of them may include cervical cancer incidence. The current provisions of the law are in favour of accepting such a stand. In line with art. 48. of the 27 August 2004 Act on health services financed by public funds (*Journal of Laws* of 2018, item 1510 with amendments), health policy programmes relate in particular to essential epidemiological phenomena, other essential health issues pertaining to all or selected groups of service providers, introduction of new medical procedures or prevention actions geared towards a pre-defined target population and concerning a specific disease or health issues.

Moreover, since 1 January 2015 [21], there is an obligation to develop programmes based on health needs maps, and since 30 November 2017 [22], it is necessary to take into account available epidemiological data (art. 48a item 1 of the Act). With these provisions in mind, it seems justified to assume that the epidemiological situation should be the factor determining the implementation of health policy programmes. This position indirectly confirms statistically significant differences in the number of programmes, and the amount of financial resources allocated for their implementation in provinces with the highest and lowest incidence rate for cervical cancer – Lubuskie and Podkarpackie. It should be

noted that there was no statistically significant difference in the number of vaccinated girls in these provinces. It is possible that local government units in the Lubuskie Province spent a larger pool of funds for other activities in addition to HPV vaccinations but undertaken within these programmes, e.g. leaflets, information brochures, posters about this form of primary prevention, as well as the education of parents, guardians and youths. It cannot be ruled out that the reason for this may also be differences in the price of vaccinations.

However, it cannot be excluded that engagement in HPV vaccinations under health policy programmes can be caused by other factors, such as economic factors, or factors connected with commune management, for example, awareness and sensitivity towards specific public health issues and activities of local communities. The literature does not present research that would determine factors influencing engagement in health policy programmes by local self-government units. Additional, targeted research would be needed to determine them.

CONCLUSIONS

1. Programmes covering HPV vaccinations conform with the trends outlined in strategic national documents on fighting neoplastic diseases.
2. Diversification of the activity of particular types of communes in the implementation of HPV vaccination programmes may mean that the availability of these vaccinations was limited mainly to girls living in rural communes.
3. Diversification of the activity of local government units in individual provinces in the implementation of HPV vaccination programmes may be determined by the epidemiological situation in a given region, measured by the incidence rate of cervical cancer.
4. The implementation of a larger number of programmes in the Lubuskie Province and the higher funding allocated to them than in the Podkarpackie Province, without a significant difference in the number of vaccinated girls, may be a consequence of allocating a larger pool of funds to activities other than vaccination, but may also result from differences in vaccination prices.

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