The analysis of the health care market development in Poland – its directions and threats

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Abstract: The health care system is an important part of the economy of each country. The limited availability of resources (including financial) and unlimited health needs result in a permanent conflict. The aim of the paper is to present and interpret selected issues about the health care market development in Poland – its directions, risks, barriers and incentives of further expansion. The analysis will be based on selected statistical indicators, as well as regulations for the organization and financing of the health care market in Poland.

Keywords: health care, Poland, finance, development

1 Introduction

Health care has a significant impact on the development of society, the national economy and the entire country. As part of health care, actions are taken to maintain, improve or restore the health of the population, as well as medical activities aimed at protecting and maintaining life. This vital role of health care causes that its basic product-health care service, is in many countries a social (public) good. It is a good which, due to its physical features, can be financed from private funds, but due to high costs limiting its accessibility and implemented state policy is financed or co-financed (socio-private good) from public funds [16, pp. 26- 28].

Health care is implemented in a large part in quasi-market conditions. Health services providers are facing competition among themselves which creates the need to apply for public funds and meet certain standards, including quality ones. On the other hand, on the market, among the insurers, there is a tendency for

negative selection, as well as many other phenomena that distinguish this market from the classic and full free market economy.

Arrow's thesis advanced in 1963 [1] that this market, due to its special attributes (irregular, unpredictable demand; expected behavior of the physician; product uncertainty, agency relationship; supply conditions and licensing of profession; pricing practices, negative selection), is not able to shape itself, which results in the necessity of state interference in its organization and functioning, seems to be still actual. This remains a current issue even despite organizational changes, conditions and the scope of services provided, a much higher level of expenditure, which is also confirmed by the fact that there is still no country that would be fully satisfied with its health care system [24].

As a result, it is generally acceptable to partially regulate this market, as well as the presence of public and non-public organizations dealing with the distribution of financial resources and health care services. The relationships and position of these two groups as well as the structure of financial flows in the health care system are shaped differently, depending on the historical, cultural and political conditions, and also the wealth of the society.

2 History of health care market in Poland

The health care system in Poland has undergone transformations in the last 20 years, from the supply model towards the insurance model. Reforms in this area were a natural consequence of the change in the economic system. From a historical perspective, it is also important to emphasize that health care in Poland had been subject to many reforms before. After the end of World War I and the regaining of independence by the Polish State, the first attempts at a comprehensive design of this system began. In 1918, the Ministry of Public Health was created, as well as the sickness funds. Financing health care, which was initially not common, was implemented both from public and private sources [9]. These actions were, however, interrupted by another war, after which the health care system was shaped along the lines of the socialist model. Centralization and nationalization of finances followed, and gradually exclusion the market of private health care entities. Inpatient and specialist outpatient health services were carried out as part of the three main levels (local, regional and national), and at the lowest level supported additionally by outpatient primary care (Figure 1).

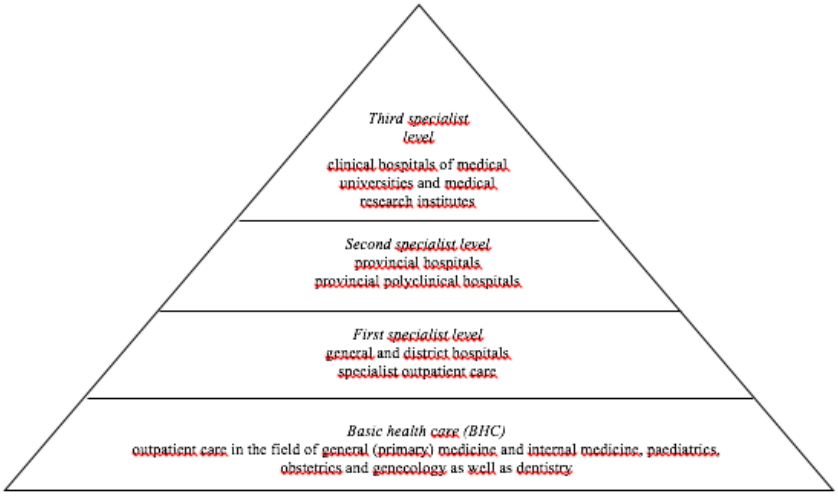

Figure 1. The structure of Polish health care services provided before the reorganization in 1999
Source*:* based on [25, pp. 55-59].

This structure, in a slightly changed form, also applies today.

In the contemporary history of the health care market in Poland, the year 1999 is important as from this point the centralized, budgetary system of financing health care was replaced with the insurance system. On January 1, 1999, the Act on universal public health insurance [28] also became applicable, subsequently subjected to modifications and amendments (replaced by subsequent acts). Though, these changes concerned modifications within the system, not turning it completely to another.

There were introduced health maintenance organizations (public), which in regions (16 + 1) distributed public funds between entities. In order to obtain funding, health care establishments had to join offer competitions and meet certain requirements. Instead of budget-based financing payment for the service has been introduced (with some exceptions). The previous system was characterized by the transfer of funds based on the number of beds, full-time jobs and amounts from previous years, for a specific entity, omitting analyzes of costs, type and quantity of services provided. The new system – objective one, introduced the principle of money following the patient in the system and the service provided.

At the same time, the possibility of establishing private health entities was freed up, as well as the need of public entities to become independent. This independence lies in the fact that these entities manage their property independently, and cover the costs from the revenues. They also administrate their own financial result (periodically, the founding body of public entities covers their negative financial results, while it cannot take over the positive ones).

In the subsequent years, the insurance system of health care in Poland has been subjected to further modifications resulting from revealed imperfections, volatility of characteristics and requirements of the environment, as well as social expectations and political decisions.

In response to the criticism of the independence of the operation of the health maintenance organizations, there was introduced a centralized National Health Care, with branches (16). Regulation of the prices of medicines available in the general circulation has begun, and recently the financing of inpatient care has been modified significantly.

Health care in Poland has been financed for the most part from public sources (Figure 2), among which the most important is the social insurance contribution paid by the insured either directly or indirectly (through an employer or other substitute payer) to the Polish Social Insurance Institution (ZUS) and to The Agricultural Social Insurance Fund (KRUS).

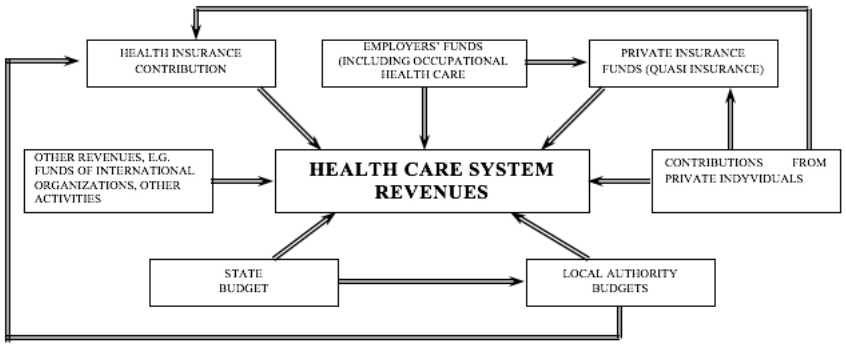

Figure 2. Health care system revenues
Source: own elaboration.

The revenues collected in the public sector for the most part then form a financial plan for the implementation of National Health Fund expenditure (Table 1).

Table 1. National Health Fund's financial plans for years: 2011, 2014, 2018, 2019

	2011	2014	2018	Dynamics 2018/2011	Plan for the year 2019
Revenues from health contribution (ZUS, KRUS) in thousands PLN	58,001,348	64,402,927	79,802,788	138%	84,370,511
Total net revenues	60,084,386	66,909,138	83,895,654	140%	88,665,706
Total costs of medical services, incl:	56,663,995	64,517,195	81,359,868	144%	83,657,338
- primary health care	7,347,291	7,727,318	10,665,140	145%	11,114,070
- outpatient (specialized) health care	4,175,970	5,540,596	5,022,839	120%	4,658,233
- hospital care	24,144,121	31,101,102	42,110,915	174%	38,814,383
- medicines (except hospitalization)	8,551,097	7,938,896	8,408,541	98%	8,204,435
- other	12,445,516	12,209,283	15,152,433	122%	20,866,217
Other costs of tasks[11]	2,310,513	2,474,752	2,655,601	116%	3,682,787

Source: own study based on [32], NHF financial plans for the years 2011, 2014, 2018 and 2019 (22.11.2019).

In the subsequent years, the value of the public payer's financial plan increases regularly. In 2018, the public payer's financial plan was increased by about 15% (PLN 4 billion) compared to the previous year (2017, not shown in the table), and the increase in funds was recorded in primary care, long-term care and rehabilitation. Although there has been a decline in the area of specialist outpatient care, it is only a way of presenting the data in the plan and new financing rules, which cause that in a large part this care was included in the hospital lump-sum (global budget). The largest proportion in public payer's expenditure is

[11] Obligatory deduction for the general reserve, commissioned health policy programs, emergency medical teams and others.

represented by inpatient care, in which the level of financing is constantly increasing. As mentioned above, the full comparability of the data is not possible because the principles and ranges of financing health services are constantly being changed, of which the most important changes took place in 2017.

In 2017, a significant modification of spending public funds for inpatient and outpatient treatment was introduced in Poland. There was also brought in the so-called a network of hospitals [22, 29], within which six levels of provision of inpatient services were identified:

- 3 basic levels of health care provision, including hospitals I (the lowest level), II and III level
- specialized levels of health care provision, including oncology, pulmonology and nationwide hospitals (clinical hospitals, institutes).

The qualification for particular groups took place automatically in most cases, by fulfilling appropriate criteria required at a given level by the analyzed entity. Unfortunately, the indicated criteria have greatly limited the possibility of joining the network by private hospitals.

Hospitals covered by the indicated network receive a significant part of the financial resources in a lump-sum form, i.e. the global budget [21]. The amount of the lump sum depends on the number and structure of medical services provided in previous periods. In addition, the requirements of the hospital network have resulted in some outpatient services being part of this lump sum, which is a manifestation of the implementation of the coordinated health care system. The lump sum payments exclude those medical services which, due to the necessity of adequate access to them, are subject to financing on the terms previously applied, i.e. contractual agreements concluded in a competition mode [23].

Considering the subjective criterion, which distinguishes sources of financing for health care entities (micro scale), there are revenues obtained from:

- contracts concluded (contracts, budgets) with the National Health Fund (NFZ) and private fees (natural persons, employers),
- contracts concluded with other medical facilities – subcontracting,
- subsidies for a public entity from the founding body, the Ministry of Health and other state institutions,
- funds provided by the Ministry of Health, National Health Fund for programs in the field of public health protection,[12]
- other.

The structure of proportional individual sources of financing varies, and depends on the legal form of the conducted activity, the scope of services provided, the referral level of the institution.

[12] There is a trend to limit state direct expenditure on health care.

3 Materials and methods

The overall goal of the research is to present and interpret selected issues about the health care market development in Poland – its directions, risks, barriers and incentives of further expansion. The specific objective is to identify areas of development potential and highlight the aspects that are particularly important in the implementation of the state's health care policy.

The conducted research is based on a meta-analysis of the literature, analysis of reports of organizations dealing with the subject of health care, as well as statistical data collected in the system of national official statistics (GUS) and international statistics (OECD). Conducted considerations and final conclusions were developed using the descriptive method, inductive reasoning.

The limitation for the results of the conducted research is the multiplicity of sources of statistical data and discrepancies in the presented data concerning the same subject scope and the same period. The limitation is also incomplete delivery of data by the statistics system, which results from the adopted assumptions as well as organizational and formal constraints.

Moreover, in the detailed scope of the considerations, especially in the area of attributes, challenges and threats to the development of the health care market in Poland, it is undoubtedly possible to identify additional factors that shape them. Due to the limited frame, only some of them were selected and discussed.

4 Results

The basic contribution to the state and development potential of every health care system is the appropriate level of its financing. There is a permanent increase in the health care spending in Poland, as well as the share of public expenditure is much more higher than the share of private expenditure. It is typical for an insurance model of health care system with mandatory health insurance (Table 2).

Table 2. Health care expenditures and other financial indicators

	Poland (in million PLN)		
	2004	**2013**	**2015**
Current health care expenditures (SHA2011-since 2013)	54,756	105,849	114,142
- incl. public expenditure:	37,093 (68%)	74,878 (71%)	79,886 (70%)
- incl. private expenditure	17.663 (32%)	30,971 (29%)	34,256 (30%)
Current expenditure in % GDP (average for OECD in 2015 9%)	5.93%	6.38%	6.34%
- incl. public expenditure	4.02%	4.51%	4.44%
- incl. private expenditure	1.91%	1.86%	1.9%
Per capita health spending (total) in USD (OECD average in 2015 – 4,004; in 2005 – 2,759)	867 (2005 y)	1,530	1,798 (2016 y)

Source: based on [2], [5], [6], [8], [13].

- The expenditure on health care in Poland is still much lower than the average level in other countries, which for OECD countries amounted to 4.004 USD (in Hungary in 2015, USD 2.101 per capita). Poland ranks 4th from the end, overtaking only Turkey, Mexico and Lithuania. The government recently adopted a plan for the gradual increase, so that in 2025 the level of public spending on health care would reach 6.0% of GDP. However, it should be emphasized that it is important not only to increase public spending on health care, but also to increase the efficiency of resource management in this sector. A positive step in this direction was certainly the launching of the process of pricing (valuation) of health care services in Poland, carried out by the Agency for Health Technology Assessment and Tariff System (AOTMiT). This process was started in 2015. From that date, the agency received tasks related to the tariff plan for health care services, such as [26]:
  - determining the tariff system,
  - the development, verification, collection, sharing and dissemination of information on the methodology for the assessment of medical technology, medical technology developed in the country and abroad, the principles of determining the tariff system,
  - developing proposals for recommendations on standard costing,
  - conducting training.
- As a result of the work carried out, an appropriate, reasonable in relation to costs, allocation of funds for health care was sought.

This trend is also characteristic for other countries of Central and Eastern Europe, in which the processes related to getting to know the real costs of medical procedures and allocating the appropriate margin included in their valuation are visible [18]. Meanwhile, a universal financing of hospital services in the form of a lump sum was introduced in Poland from 1 October 2017, using, in part, information on unit costs of services, but not including the price-cost relationship of the health care service. Such a solution may undoubtedly contribute to the deterioration of the rationality of spending public funds from a cost perspective. The introduction of a lump sum for services provided is in part related to the return to retrospective financing of medical care, based on a historical budget, derived from the previous period data. This budget is subject to periodic correction of the value of inpatient care and other services (e.g. re-treatment rate, indicator of specialist outpatient and other outpatient services). It can therefore be concluded that the method of financing which was applied in Poland before 1994 was partially restored.

A positive effect resulting from economic growth, increase in welfare and maturity of societies, as well as growing health awareness is the increase in life expectancy. The level of financing health care also has an impact on this area.

This trend is also visible in Poland, where in 2005-2015 the life expectancy increased by over 2 years among women, while among men by 1.7. Unfortunately, in this second group, this indicator is much below the average for OECD countries, which is 77.9. Therefore, the difference is over 4 years, and Poland ranks 6th from the end (Table 3).

Table 3. Life expectancy at birth

	Poland	
	2005	**2015**
Total population	38,173,835	38,437,000
Life expectancy at birth by sex (f-women; m- men) OECD average in 2015: 83,1(f), 77,9 (m)	79.4 (f) 70.8 (m)	81.6 (f) 73.5 (m)
Life expectancy at age 65 (total) OECD average in 2015: 19.5	n.a.	17.9
Share of the population aged 65 and over (OECD average 2015 approx. – 17%)	13,2	Approx. 15%

Source: [3], [7], [10].

The life expectancy at birth by sex indicator for the Hungarian population is even worse than in Poland. In the group of women, it amounted to 79.0 in 2015 and 72.3 in the group of men. A similar situation applies to Life expectancy at age 65 (total), which in 2015 in Hungary was 16.4 and was the lowest among all OECD countries.

Looking for the reasons for the constantly lower life expectancy, the insufficient level of financing for health care is undoubtedly the first place to point to, as presented above. However, life expectancy is also affected by other worrying health-related phenomena, such as obesity, smoking, alcohol consumption and the state of the natural environment.

Similarly, the indicators showed negative development in the area of cigarette smoking, almost 23% of Poles' population smokes every day, while the average for OECD countries is 18.4% (in Hungary, this indicator was 25.8% in 2015).

Liters of alcohol consumed per capita in a year on average among OECD countries amounted to 9.0 in 2015, 10.5 in Poland, and, for example, in Hungary, 10.9. Although this indicator is not high in Poland, it is stressed that Poland is one of the OECD countries with the highest growth rate in recent years of alcohol consumption, alongside countries such as Latvia, Belgium and Iceland.

The problem of obesity can be expressed as a percentage of population with BMI higher than 30. The average for OECD countries amounted to 19.4 in 2015, in Poland 16.7 and in Hungary as much as 30%. It should be added that for Hungarians it is the 4th position from the top. The first place is occupied by Americans with the 38.2% of population, then Mexicans 33.3, and New Zealanders 31.6.

While the current obesity index is not negative for Poland, we can observe phenomena that will have negative impact on it in the near future. For example, the daily vegetable eating indicator expressed as % population aged 15 years and over among adults is below the average for OECD countries in Poland (55.7 versus 59.8). A positive phenomenon is that the adequate index for fruit is slightly above average. However, in the group of children up to the age of 15, both indicators are well below the average for OECD countries. Self-reported overweight in 15-year-olds has increased in most OECD countries in the past decade (average 15.3% in 2013-14), but the biggest increases occurred, inter alia in Poland, where overweight rose by more than 50%.

An important factor that negatively affects the health condition of society in Poland is air pollution.

This results in increased morbidity and mortality on lung cancer, respiratory and cardiovascular disease and low birth weight. What is more, it should be noted that air pollution also reduces the quality of life, affects the decrease in physical activity.

The air pollution index expressed as the mean annual exposure to PM2.5, mg/m3 was 15.1 on average in the OECD group, while in Poland 24.3 and Hungary 23.1, which places these countries among the four most vulnerable ones, just after Turkey (36.4) and Korea (28.7). It is also worth adding that according to the WHO report [11], among the 50 most polluted cities in Europe, 36 are in Poland (among the first 10 cities 7 come from Poland, 3 from Bulgaria). Among these 50 cities

there is none from Hungary, while 7 are in Bulgaria, 2 in the Czech Republic and 5 in Italy). The cities of India, China and Saudi Arabia dominate among the most polluted cities in the world.

In Poland, the index of main causes of mortality induced by circulatory system diseases and cancer is much higher than the average in OECD countries.

The level of access to health care is also in Poland, as in United States and Greece, one of the lowest among OECD countries. Waiting times for elective surgery are long in a number of countries, particularly Estonia, Poland and Chile.

In Poland, an example of the particularly long waiting time for health services is cataract surgery (number of days from referral to procedure is 464), which places our country at the forefront. However, since 2017, a public payer has been providing significant funds for this type of surgical procedures (as well as several others showing similar characteristics), so undoubtedly this index will certainly be lowered in the next OECD ranking.

The reason for the limited access to health care services is certainly the low level of funding, but also the availability of other resources, including in particular hospital beds and qualified medical personnel.

According to statistical data, the number of hospitals has been growing in Poland in recent years, although the number of hospital beds is decreasing (Table 4), which is related to the specialization and periodic establishment of the private market that develops mostly in a small, specialized scope in inpatient care.

Table 4. Number of general hospitals and their beds

Specification	2000	2005	2016
General hospitals:	716	781	956
Beds in facilities	190,952	190,387	186,607
Beds for 10 thous. population	49.4	49.1	48.6
In-patient in thous.	6,007	6,739	7,829
In-patient per 10 thous. population	1,554	1,765	2,037
Average length of stay in days	8.9	6.7	5.3
Number of stays per bed	31.5	37.5	44.3
Average use of bed in days	298	252	234

Source: based on [17], [19], [20].

In the years 2000 - 2016 there was a decrease in the number of beds in general hospitals, from 190,952 in 2000 (and in the previous 20 years, this drop also occurred in a much higher proportion) to 186,607 in 2016, i.e. by 2.2%. Along with the decrease in the number of hospital beds, the number of people treated rose from 6.007 thous. in 2000 to 7.829 thous. in 2016. The increase in the number of people treated in this time interval amounted to 30%, so there is a clear upward trend in the number of people treated. Such a situation is caused, among others, by an increase in the number of elderly people as well as an increase in the health awareness of the society, which does not improve the functioning of the entire system, because it significantly increases the cost of medical services and should be replaced by a much cheaper outpatient treatment.

However, despite the decreasing number of beds and the increasing number of inpatient care, in connection with the decrease in the average period of hospital stay (from 8.9 day in 2000 to 5.3 in 2016), it certainly indicates the improved efficiency of management. On the other hand, it seems, taking into account the average use of bed in days, that there is still an excess of hospital beds compared to the needs. Analyzes in this area are extremely difficult due to the need to maintain the so-called readiness to provide services, as well as meeting certain standards of the level of resources required by the payer. Still, this is confirmed by the data presented by OECD for 2015, where the average of beds per 1000 inhabitants was 4.7, while in Poland – 6.6).

An important issue is also the availability of medical staff. The average for OECD countries in the scope of availability of medical practitioners amounted to 3.4 per 1000 inhabitants in 2015, while in Poland – 2.3, and, for example, in Hungary – 3.1. A worse level of availability than in Poland is only in Korea, Turkey and Chile. The index in terms of availability of nurses is also dramatically changing (in Poland 5.2, OECD average 9.0).

An important threat and a challenge for health care in Poland is the aging of the society. There is an improvement in the populations' health all around the world. The results are also visible in the growing proportion of the population aged 65 and over (see Table 3). It is estimated that in the next twenty years, the number of people 65+ will increase in Poland by about 3 million to the level of 8.5 million. It is also estimated that this trend will be higher in Poland than in other countries (about + 6% per annum) [18]. Meanwhile, in 2019, NHF expenditure in terms of care and assistance services as part of long-term care is, according to the plan, higher than in the plan for 2018 only by approx. 2.2%, while in palliative and hospice care the increase was only 0.3% (see Table 1, though, these items are aggregated in the 'other' group).

Ageing of the population will imply the necessity to development of geriatric specializations. Such need has started to occur for last few years. Meanwhile in

Poland was in about 170 doctors specializing in geriatrics, while only 120 of them were active, but only 70 worked in their original specialization. Moreover, the average age of geriatrics doctors is the highest among all doctors specialization, as well as geriatrics is not a mandatory subject in higher education [15].

Strictly connected with aging population is accessibility to long-term care. One can observe that In 2005 in Poland were 21 long-term beds in institutions and hospitals per 1000 population aged 65 and more, while the average in OECD countries was 41. During the last few years, not only did Poland not improve in this respect, but quite the opposite – there were 18 long-term beds per mentioned population (an average for OECD countries increased to 49.7).

Conclusion

In Poland, the health care market functions in a similar way to comparable European countries. Poland has to face problems that are rather typical for many European countries [27]. However, the scope and level of these problems are much more severe than in other countries [25].

Although the market is based on a universal and compulsory health insurance contribution, concentrated in the hands of a single payer controlled by the state, it shows some negative features as well as some indications of adverse phenomena which may occur in the future.

The main problem is accessibility to health care, particularly among older people and some of the arising civilization phenomena. At the top of the problems' pyramids are: air pollution and lack of resources devoted to solve health problems of aging population (e.g. nurses, medical doctors, specialized inpatient care). Particularly dangerous is the problem of obesity. It is true that the current obesity indicator for the Polish population is at a more favorable level than the average of OECD countries, however, phenomena associated with the consumption of vegetables and fruit allow to conclude that the obesity problem will escalate in the group of young people in the near future.

The number of hospital beds is the area where there is potential for managing the resources. Their adaptation to the location and specialties, also in the field of senile diseases, is the expression of the potential to increase economic efficiency

The new financing system introduced in the last year, which covers a large part of an inpatient care from the budget, presents a high risk. The effect may be restriction on expensive medical services as well as mismanagement in the allocation of resources and the use of financial resources.

Although the relative low value of resources (including human resources) on the Polish market constitutes a significant competitive advantage in relation to many other countries, the level of financing health care is still insufficient [12]. It is necessary not only to increase expenditures further, but also their reallocation towards the area of health care, health education and healthy food. This problem

occurs also in some other European countries, f.e. Hungary, where prevention and health promotion are underfunded [4] The state's health care policy should be provided on the bases of detailed statistical analyzes of databases collected f.e. by the public payer or other data sources so that the available resources are best located [14, 30].

Moreover, telemedicine services are an indication of development, which in the group of older people requires a gradual introduction of promotional and implementation activities. In this case, the passage of time is a positive supportive feature, as the share of older people with the awareness of the usefulness of computer systems and similar solutions is growing.

Last but not least, when comparing the current underfunding of health care with the premises for new problems, it is possible to predict that in the next 10-15 years Poland's position in the health care surveys of OECD countries will not be improved significantly.

References

[1] Arrow K. J.: Uncertainty and the welfare economics of medical care, The American Economic Review, 1963, vol. 53, no. 5, pp. 941-973.

[2] Basic data on health service in 2005 year, Central Statistical Office, Warsaw 2006.

[3] Demographic yearbook of Poland 2015, Central Statistical Office, 2015, Warsaw.

[4] Gaal P., Szigeti Sz., Csere M., Gaskins M., Panteli D.: Hungary: Health System Review. Health Systems in Transition, Vol. 13, No. 5, 2011, p. 213.

[5] Health and health care in 2014, Central Statistical Office, Warsaw 2015.

[6] Health and health care in 2016, General Statistical Office, 2017, https://stat.gov.pl (21.11.2018).

[7] Health at a Glance 2007, OECD Indicators, OECD Publishing, Paris, 2007.

[8] Health at a Glance 2015, OECD Indicators, OECD Publishing, Paris, 2015.

[9] Health service in Poland: Polish Medical Publishers, Warsaw 1975, p. 5, 15, 23.

[10] Health statistics, OECD, 2017.

[11] https://tech.wp.pl/najnowszy-ranking-50-najbardziej-zanieczyszczonych-miast-polska-dominuje-6249269556491905a, (21.11.2018).

[12] Kowalczyk M.: Finansowanie ochrony zdrowia w Polsce w latach 1999-2015, [in:] Zarządzanie nr 20, Zeszyty Naukowe Politechniki Częstochowskiej, Częstochowska, 2015, pp. 139-148.

[13] Narodowy Rachunek Zdrowia 2015, GUS, https://stat.gov.pl/obszary-tematyczne/zdrowie/zdrowie/narodowy-rachunek-zdrowia-2015,4,8.html (23.11.2018).

[14] Nojszewska E.: Efektywność ekonomiczna jako narzędzie analitycze dla ochrony zdrowia, [in:] Problemy Zarządzania, Vol. 9, No. 3 (33), Uniwersytet Warszawski, Warszawa, 2011, pp. 11-26.

[15] Nojszewska E.: Zmieniające się otoczenie systemu ochrony zdrowia determinantą jego przyszłości, [in:] Problemy Zarządzania, Vol. 11, No. 1 (41), t. 2, Uniwersytet Warszawski, Warszawa, 2013, pp. 24-30.

[16] Owsiak S.: Finanse publiczne. Teoria I praktyka, Wydawnictwo Naukowe PWN, Warszawa, 2004, pp. 26-28.

[17] Podstawowe dane z zakresu ochrony zdrowia w 2001r. GUS, Warszawa 2002.

[18] PwC, Trends in Polish healthcare, 2017, https://www.pwc.pl/pl/pdf/trends-in-polish-healthcare-2017-en-pwc.pdf, (21.11.2018).

[19] Rocznik statystyczny GUS 2006, Warszawa 2007.

[20] Rocznik statystyczny GUS 2017, Warszawa 2018.

[21] Rozporządzenie Ministra Zdrowia z dnia 20 czerwca 2017 r. w sprawie określenia sposobu ustalania ryczałtu systemu podstawowego szpitalnego zabezpieczenia świadczeń opieki zdrowotnej na pierwszy okres rozliczeniowy, (Dz. U. 2018, poz. 1242).

[22] Rozporządzenie Ministra Zdrowia z dnia 13 czerwca 2017 r. w sprawie określenia szczegołowych kryteriow kwalifikacji świadczeniodawcow do poszczegolnych poziomow systemu podstawowego szpitalnego zabezpieczenia świadczeń opieki zdrowotnej, (Dz. U. 2018, poz. 1163).

[23] Rozporządzenie Ministra Zdrowia z dnia 19 czerwca 2017 r. w sprawie określenia wykazu świadczeń opieki zdrowotnej wymagających ustalenia odrębnego sposobu finansowania, (Dz. U. 2018, poz. 1225).

[24] Savedoff W. D.: Kenneth Arrow and the birth of health economics, Bulletin of the World Health Organisation, 2004, 82(2), pp. 139-140, doi: 10.1590/S0042-96862004000200012.

[25] Stańdo-Gorowska H.: Kształtowanie wydatkow na opiekę zdrowotną jako problem społeczno-ekonomiczny, Nierowności Społeczne a Wzrost Gospodarczy, nr 26, 2012, pp. 70-79.

[26] Szewieczek A.: Standarization of accounting in health care in Poland. New procedures for the valuation of medical services, [in:] Challenges, Research and Perspectives: 2016. Europe in a Changing World, Hofbauer G., Klimontowicz M. (eds.), Berlin: uni-edition, 2017 pp. 97-110.

[27] The future of healthcare in Europe. A report from the Economist Intelligence Unit, 2011, https://www.janssen.com/emea/health-policy-centre/future-healthcare-europe-0 (23.12.2018).

[28] Ustawa z dnia 6 lutego 1997r. o powszechnym ubezpieczeniu zdrowotnym (Dz. U. nr 28, poz. 153 ze zmianami).

[29] Ustawa z dnia 23 marca 2017 r. o zmianie ustawy o świadczeniach opieki zdrowotnej finansowanych ze środkow publicznych, (Dz. U. 2017, poz. 844).

[30] Uziałko J., Radosiński E.: Metody zarządzania zasobami na przykładzie służby zdrowia, [in:] Badania operacyjne i decyzje vol. 19(1), Oficyna Wydawnicza Politechniki Wrocławskiej, 2009, pp. 121-142.

[31] Włodarczyk W.C.: Reforma opieki zdrowotnej w Polsce. Studium polityki zdrowotnej. Vesalius, Krakow 1998.

[32] www.nfz.gov.pl/bip/finanse-nfz/, (22.11.2018).