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ANALYSIS OF THE DYNAMICS OF EXPENDITURES ON PHARMACEUTICAL SUPPORT OF POPULATION IN UKRAINE, BELARUS REPUBLIC AND IN EUROPEAN UNION

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Мета: порівняльний аналіз динаміки змін витрат (%) на фармацевтичне забезпечення населення від загальних витрат на охорону здоров'я на макроекономічному рівні в Україні, Республіці Білорусь (РБ) та країнах Європейського Союзу (ЄС).

Матеріали і методи. У дослідженнях використовувалися дані Всесвітньої організації охорони здоров'я та його Європейського регіонального бюро, а також дані законодавчо-нормативної бази, що регулює медичну та фармацевтичну діяльність в Україні, РБ та країнах ЄС. Використано історичний, аналітико-порівняльний, системний, логічний, графічний, математико-статистичний методи наукового пошуку та пізнання.

Результати дослідження. Встановлено, що по групі референтних країн показник витрат (%) на фармацевтичне забезпечення населення від загальних витрат на охорону здоров'я упродовж 1990-2015 рр. коливався у широкому діапазоні значень. Найбільший діапазон значень був характерний для Білорусі (від 3,2 % за даними 1992 р. до 29,8 % у 2015 р.), а найменший – для країн ЄС (з 16,7 % у 2011 р. до 18,8 за даними 2003 р.). Аналізуючи динаміку змін зазначеного показника, встановлено, що по країнах ЄС та в Україні спостерігалась тенденція до його зниження, а в Білорусі, навпаки, до збільшення. Так, у 2015 р. зазначений показник збільшився у 2,5 рази, порівняно з даними базового аналізу 1990 р.. За середнім значенням у порядку збільшення показника, що аналізувався, референтні країни були розташовані таким чином: Україна (10,82 %); РБ (14,87 %); країни ЄС (17,88 %).

Висновки. Встановлено наявність значних коливань значень витрат (%) на фармацевтичне забезпечення населення від загальних витрат на охорону здоров'я по групі країн, що досліджувалися. Крім цього, нестабільний характер змін показника, що досліджувався, насамперед, у Білорусі вказує на необхідність проведення подальших досліджень у зазначеному напрямку

Ключові слова: охорона здоров'я; витрати на охорону здоров'я; витрати на фармацевтичне забезпечення населення; система фармацевтичного забезпечення населення; фармацевтична допомога

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1. Introduction

In the modern definition, the system of pharmaceutical provision appears as a complex integration structure that functions in accordance with the rules that surprisingly combine the social, medical and pharmaceutical, business, scientific and information load of health care activities. It is hardly possible to find the same branch of the macroeconomic complex of the country, which, despite the significant influence of commercial factors of development, formed the objective and indisputable preconditions for social stability in the state. A striking example of this is the implementation of the state program "Available drugs" in Ukraine. Despite the fact that the vast majority of Ukrainian pharmacies are privately owned, every year the number of those institutions that actively participate in the program is increasing.

So, at present approximately 6,200 pharmacies participate in this program [1]. Since April 2017, patients with cardiovascular disease, bronchial asthma or type 2 diabetes received medications for over 32 million recipes worth more than 1.6 billion UAH. It should be noted that such an active social position is characteristic of pharmacies not only in Ukraine. For example, at the International Pharmaceutical Federation's 78th World Congress of

Pharmacy and Pharmaceutical Sciences held in Glasgow (2–6 September 2018), under the slogan "Pharmacy: transforming the outcomes", the question of reviewing the current role and tasks the activities of pharmacists in the conditions of increasing the requirements for the effectiveness of medical and pharmaceutical assistance in society has become fundamentally new. At the same time, any activity in the health care system should be based, first of all, on scientifically sound socio-economic approaches. Under these conditions, the analysis of the financial component in the organization of providing pharmaceutical assistance to the population, determining the trend of their changes, acquire a special social significance.

In recent years, the issue of the organization of efficient financing of the process of providing pharmaceutical assistance to the population in Ukraine and in other countries of the world has received a lot of attention from domestic and foreign scientists. Studies conducted in this direction are characterized by a wide range of their implementation.

Analyzing the data of the special literature we can state follows. Researches on the problems of the organization of pharmaceutical provision of population at the

macroeconomic level, which were carried out in Ukraine in recent years, envisaged the solving of specific tasks in the national health care system. For example, increasing the effectiveness of the implementation of the National Drug Policy and State Regulation of Pharmaceutical Activities (prof. Nemchenko A. S., prof. Khomenko V. M.), the introduction of effective mechanisms for drug reimbursement (prof. Kotvitskaya A. A.) and pharmaco-economic approaches in the organization of pharmaceutical provision of the population (prof. Yakovleva L. V., prof. Kosyachenko K. L., prof. Zaliska O. M), etc. At the same time, it has been determined that such an important macroeconomic indicator as "expenditure volumes (for pharmaceutical assistance to the population) – % of total expenditure of health care" was not considered by Ukrainian scientists. That's why the results of our research are of particular relevance today during the period of systemic changes in the national health care, first of all in such an important direction as the organization of pharmaceutical provision of the population.

Currently, Ukraine is at the crossroads of solving a whole range of problems, among which increasing the level of affordability of pharmaceutical assistance to the population is one of the priority areas. This is due to the fact that the effective provision of medical and pharmaceutical assistance to citizens allows them to realize their basic need for life and health. The latter, as indicated earlier, forms objective conditions for the sake of social stability in a state that is so time in a country that is in a state of deep systemic crisis from 2014.

Under these conditions, it is important to develop a consistent and scientifically grounded position about the organization of socially-oriented models of financing the process of providing the population with pharmaceutical assistance and services, based on the results of the analysis of these indicators in relatively well-off, from a social point of view, countries, primarily in the Republic of Belarus (RB) countries of the European Union (EU). The analysis of the main macroeconomic indicators characterizing the development of public health care has an important socioeconomic value for the purpose of forming rational models of relations between different subjects in the system of pharmaceutical provision of the population of any country. The above-mentioned macroeconomic indicators in the retrospective years are of particular relevance in the case of systemic reform and structural reforms that are currently being conducted in Ukraine.

This indicated and stipulated the main purpose of our research.

The subject of research was the data of the European Regional Office of the World Health Organization (WHO) according to such indicator as "expenditures (%) for pharmaceutical provision of population in total health care expenditures" over the period from 1990 to 2015 [2].

In our research, we used the definition of the term "General Expenditures for Medicines (Pharmaceuticals) in % of Total Healthcare Expenditures" used by WHO and adopted by the Organization for Economic Cooperation and Development (OECD). The mentioned organization was established in 1961 on the basis of the European Organization for Economic Cooperation, established for the management of assistance from the United States and

Canada under the Marshall Plan for the Reconstruction of Europe after the Second World War [3]. Thus, the indicator is interpreted by WHO as follows: "Expenditures of consumption of prescription pharmaceutical drugs purchased for self-medication" (often referred to as non-prescription drugs).

This statistic does not include the cost of hospitals for the purchase of medicines. Where applicable, these costs include the amount of VAT and turnover tax. The costs of hospitals for medical treatment are included in the cost of providing in-patient care" [3]. An important stage of our research was the formation of a group of reference countries.

In our opinion, it would be interesting to compare the dynamics of changes in the indicator in countries whose health systems operate on different organizational and economic grounds or are at the stage of their reformation. An important factor in the process of selecting countries has become a historical affinity for the development of national health systems [4]. Based on the results of the preliminary processing of the data of special literature, we have formed a group of reference countries, which included the Republic of Belarus (RB), Ukraine and the EU countries (the average for all EU countries).

Aim of research was to conduct a comparative analysis of the dynamics of changes in cost indices for pharmaceutical provision of population from total health care expenditures in Ukraine, the Republic of Belarus and the countries of the European Union.

2. Planning (methodology) of research

Given the fact that the aim of the study was to compare the macroeconomic indicators that determine the state of development of the pharmaceutical supply system in different countries, the choice of basic materials (objects) of the analysis had to be based on a single statistical basis. Following preliminary content analysis on selected research topics and systematizing the results presented in the specific literature, we have decided to use the World Health Information Base (WHO) and its European Regional Office. The selection, validation and display of statistical indicators characterizing the state of development of national health systems and pharmaceutical supply of the population is carried out by the specified organization in a centralized manner using standardized methods and modern theoretical and applied approaches. All statistics are available for free use by interested users. Therefore, comparing identical in meaningful content of macroeconomic indicators between different countries in the dynamics of years seems logical and scientifically justified.

The next important step in our research was the choice of a time interval to analyze the dynamics of relevant indicators. Given the fact that Ukraine and the Republic of Belarus gained independence in the historical plan quite recently, we considered it necessary to analyze the changes in the macroeconomic indicators characterizing the state of development of the pharmaceutical supply system of the population in the dynamics of the process of state formation (since the end of the 1990s) by conditions for the formation of new, from a political and socio-economic point of view, relations in society. All

statistical calculations were performed using the StatSoft statistical package. Inc. (2014). STATISTICA version 12.0, and Excel spreadsheet. A p-value <0.05 was considered statistically significant.

The final stage of the work involved conducting a comparative analysis of macroeconomic indicators that characterize the state of development of pharmaceutical supply systems in the reference countries (Ukraine, Belarus, EU countries), as well as their studies in the dynamics of years on a country-by-country basis. According to the results of the conducted researches, the basic tendencies and problems of development of national systems of pharmaceutical providing of the population were substantiated.

3. Materials and Methods

In the economically and socially developed countries, the pharmaceutical component in the structure (%) of the total cost of health care needs is becoming increasingly important every year [5, 6]. Majority of pharmacies in the EU countries work in the conditions of a progressive increase in the social burden on them [7, 8]. Table 1 presents the results of the analysis of the above indicator

in the RB, Ukraine and the EU countries for the period from 1990 to 2015. As we can see, Ukraine is officially missing data from 1990 to 1992, as well as from 2010 to 2015, and for EU countries – from 2012 to 2015. It has been found that the average for the RB is 14.87 %, for Ukraine – 10.82 %, and for the EU countries – 17.88 %. In the group of reference countries, the maximum value of the studied indicator was 29.8 % (RB, 2015), and the minimum value was 3.2 % (RB, 1992).

Thus, the value of the variational dimension was 26.6 %. If we analyze the dynamics of the change in the indicator for Ukraine, then the maximum value was observed in 2003 (13.8 %), and the minimum – in 2002 (4.2 %), and the variation scale of the indicators was equal to 9.6 %. In the EU countries, the maximum indicator of spending on pharmaceutical supply (%) in total health care expenditure was observed in 2003 (18.8 %), while the minimum was in 2011 (16.7 %), the variation rate of the indicator was only 2.1 %. Comparing the data obtained in the reference countries, it can be argued that the largest fluctuations of this indicator are observed in the Republic of Belarus, and the smallest – in the EU (Table 1).

Table 1
Analysis of the dynamics of specific gravity (%) of expenditures for pharmaceutical provision of population in the structure of total health care expenditures

Years	RB		Ukraine		EU countries	
	%	ki+1*	%	ki+1	%	ki+1
1990	12.1	–	–	–	17.3	–
1991	6.1	0.50	–	–	17.4	1.01
1992	3.2	0.52	–	–	17.7	1.02
1993	6.4	2.00	11.0	–	17.7	1.00
1994	8.0	1.25	15.2	1.38	18.0	1.02
1995	9.9	1.23	12.0	0.79	17.7	0.98
1996	10.1	1.02	9.2	0.77	18.0	1.01
1997	11.4	1.13	6.9	0.75	18.1	1.01
1998	12.3	1.08	7.0	1.01	18.3	1.02
1999	13.6	1.11	10.2	1.46	18.4	1.01
2000	13.2	0.97	11.6	1.14	18.5	1.01
2001	17.5	1.33	13.3	1.15	18.6	1.01
2002	20.1	1.15	13.5	1.02	18.7	1.01
2003	17.8	0.89	13.8	1.02	18.8	1.01
2004	17.8	1.00	12.5	0.91	18.5	0.98
2005	16.1	1.00	10.7	0.86	18.3	0.99
2006	16.4	0.90	10.8	1.01	17.9	0.98
2007	11.0	0.67	11.0	1.02	17.6	0.98
2008	11.2	1.02	11.1	1.01	17.2	0.97
2009	13.0	1.16	4.2	0.38	17.0	0.99
2010	16.0	1.23	–	–	16.9	0.99
2011	18.0	1.13	–	–	16.7	0.99
2012	21.0	1.17	–	–	–	–
2013	28.0	1.33	–	–	–	–
2014	26.6	0.95	–	–	–	–
2015	29.8	1.12	–	–	–	–
Average indicator	14.87	1.07	10.82	0.98	17.88	1.00

Note: * – the chain index of the growth / decrease coefficient, where $ki + 1$ is determined by the ratio of the data of the next year to the corresponding data of the previous

4. Result

Thus, the average value of the growth / decrease ratio for the EU countries was 1.00, in Ukraine it was 0.98, and in the Republic of Belarus there was a systematic increase of the indicator in the dynamics of years ($k = 1.07$). Taking into account the considerable interval of observation of this indicator in time, we subsequently conducted the analysis of data on reference countries with the allocation of indicative time points in the 1990 regime "+5 years". Thus, data was collected for years such as 1990, 1995, 2000, 2005, 2010, and 2015. According to these years, appropriate graphs have been

constructed demonstrating the changes in the data on the proportion (%) of pharmaceutical expenditure in total health expenditure I in the reference countries (Fig. 1).

Analyzing the data of Fig. 1, draws attention to the significant increase in spending indicators (%) on the pharmaceutical provision of population from total health care expenditures in the Republic of Belarus. As it is shown in Fig. 1, the indicator, which is being analyzed in 2015, has increased 2.5 times in comparison with 1995 data. There is also a significant increase in the indicator from 2010 to 2015. Thus, in just five years it has increased from 16.0 % to 29.8 %, in 1.9 times.

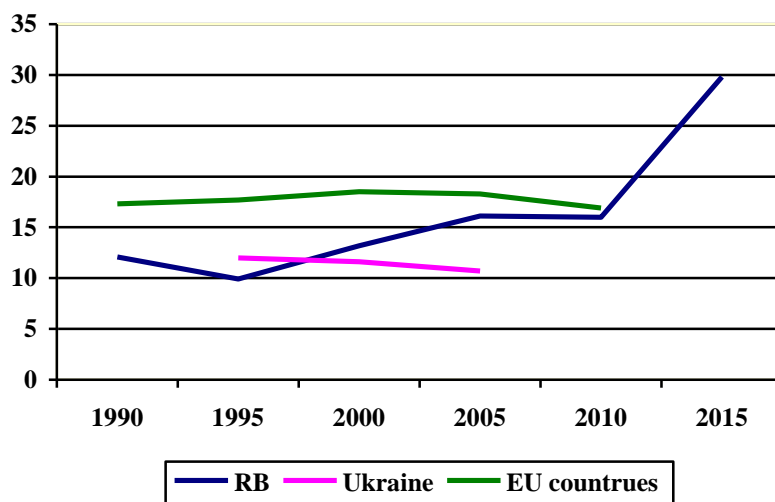


Fig. 1. Dynamics of the change of indicators, which is investigated in the reference countries (indicative points of the comparative analysis)

At the same time, in the EU countries there is a slow decline in the indicators from 2000 (18.5 %) to 2010 (16.9 %). This fact indicates the existence of a consistent and balanced policy by regulators in relation to subjects of pharmaceutical relations, as well as a relative stable situation regarding the consumption of drugs. Of course, this fact should be defined as an important positive characteristic of the process under consideration [8–10]. Taking into account the lack of official data in Ukraine, from 2005, it is impossible to draw any substantiated conclusions, for at least ten years (from 1995 to 2005), expenditure indicators (%) on pharmaceutical provision of population in total health care expenditures in Ukraine, were gradually decreasing in a small range of values (from 12.0 % to 10.7 %).

6. Discussion

Taking into account the global trends of strengthening the influence of the pharmaceutical component in the organization of providing the population with effective medical and pharmaceutical assistance, research will be carried out on this topic in the future as well. One of the most important areas of perspective research is conducting of factor analysis, which involves the use of the method of integrated and systematic study and measurement of the impact of equal factors on the indicator that we considered. As well known, the system of pharmaceutical supply of any state is objectively under the influence of a whole range of factors, including corruption, and the assessment of the influence of these factors ac-

quires an urgent social significance [11–14].

These studies are especially relevant in the context of the reform of the pharmaceutical provision system in Ukraine in the direction of implementation of rational models for providing patients with the state program "Available medicines", as well as electronic security system – e-Health (Resolution of the Cabinet of Ministers of Ukraine dated April 28, 2018, No. 411). In addition, they are important for the purpose of forming an objective assessment of the effectiveness of the implementation of a set of measures aimed at strengthening the state regulation of pricing policy in the pharmaceutical markets of Ukraine and the Republic of Belarus.

For example, in RB, in August of the last year, the Presidential Decree No. 345 introduced direct rules for regulating prices for drugs (37 drugs) used in the treatment of cardiovascular and oncological pathologies [15]. Taking into account the slow nature of the development of Belarusian healthcare in the conditions of preservation of the model of the functioning of the conceptual model of the Soviet era O. Semashka, these measures can be fully accountable to be called radical in the system of pharmaceutical provision of the population of the Republic of Belarus. An objective limitation in our research is the lack of mathematically proven relationships between indicators of the development of national systems of pharmaceutical supply to the population in reference countries with macroeconomic indicators of the development of national economies. In addition, in our opinion, interesting is the use in studies of the so-called "socio-economic standards",

such as "minimum wage", "subsistence minimum", "minimum subsistence basket" and so on. These indicators directly affect the financial composition in the formation of effective relations in the pharmaceutical supply system of the population of any country. The mentioned restrictions form perspective directions of research in the indicated direction, especially in the conditions of systematic changes in the national health care and the system of pharmaceutical providing of the population, which declared in society works in the specified direction will not lose their relevance and socio-economic importance.

7. Conclusions

1. According to the results of our research, it has been found that, according to the group of reference countries, the expenditure indicator (%) for the pharmaceutical provision of the population from total health

expenditures over the years 1990-2015 ranged from a wide range.

2. Proved that, the largest range of values was characteristic of the RB (from 12.1 % to 29.8 %), and the smallest in the EU (from 16.7 % in 2011 to 18.8 according to 2003).

3. In the EU countries and in Ukraine, there was a tendency to decrease this indicator, and in RB, on the contrary, to increase (2.5 times in 2015 compared with the base data in the analysis of 1990).

4. By the average value in the order of magnitude of the analyzed indicator, the reference countries were located as follows: Ukraine (10.82 %); RB (14.87 %); EU countries (17.88 %).

Conflict of interest

No conflict of interest

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