Analysis of the structure and efficiency of national health care systems

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ABSTRACT

It was noted that the right to health care is a key topic of discussion around the world, and ensuring the realization of this right and the opportunity to access the necessary medical care is in the spotlight. The realization of the right to health care in each country directly depends on the national health policy. The analysis is focused on assessing the effectiveness of health care systems of states according to several models. The data for this study were obtained from the existing WHO database, which provides accumulated data for groups of countries. Thus, it was possible to compare different countries, whose state health statistics may have their own characteristics. For data processing, an input-oriented analysis model of a dynamic network data shell was used. The analysis combines the use of traditional and non-traditional methods for measuring health performance. The analysis shows that there are no pure health systems financing models, most states use mixed funding models. The only way to reduce dependence on direct payments is for the government to encourage the use of a prepayment and risk pooling approach.

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1. INTRODUCTION

The formation of an effective healthcare system is a priority for any state in the world, and the financial costs of states are increasing every time due to pandemics, wars, and the movement of people. Analyzing the structure and effectiveness of national health systems is the most effective way to manage resource resources. Such analysis provides insight and motivation for governments around the world to create expanded budgets to finance national health systems, as well as reform existing universal health coverage (UHC) recommendations. The current topic of research is also the lack of healthcare resources around the world, which is extremely important to take into account for healthcare systems, both in high-income countries (HIC) and in low- and middle-income countries (LMIC), it is necessary to focus on the use of their basic resources with taking into account long-term forecasts, also according to forecasts of the World Health Organization (WHO).

Today, the achievement of the highest attainable level of health is a major factor in achieving peace and security and depends on the close cooperation of individuals and states [1]. The right to health care is a key topic of discussion around the world, and ensuring the realization of this right and the ability of the population to access the necessary health care is in the center of attention. The countries of the world are facing various health problems. According to the World Bank and the World Health Organization, at least half of the world's population cannot get the necessary medical services, in many countries of the world people are still dying without access to preventive and curative services. Developing countries continue to struggle with the
incidence of accidental infectious diseases, the spread of acquired immunodeficiency syndrome (AIDS),
malaria and other diseases, while facing a growing burden of accidental deaths, child mortality, poor sanitation
and other environmental factors [2]. Wealthier countries are also fighting with pressure on their health systems
due to population aging, rising prevalence of chronic diseases, comorbidities, and demand for access to new
health technologies [3].

There are four main sources of funding for health systems:
- funds from taxation;
- contributions to the social insurance system;
- contributions to voluntary health insurance;
- direct payments from the population [4].

The first two sources can be attributed to the mandatory, regulated (established) legislative acts of
countries. The last two sources are voluntary, decisions on which are made by the citizens themselves. Many
health systems rely on a combination of all these sources of funding. Singaroyan et al. [5] came to the
conclusion that increasing the efficiency of healthcare does not always lead to an improvement in the quality
of life of the population. Mobley and Magnussen [6] emphasized that poor outcomes in health care are
associated with low efficiency and the chosen model. Helling et al. [7] confirmed that increased efficiency also
improves the quality of care provided. The results of an effective healthcare model are an increase in life
expectancy at birth, and a decrease in infant mortality.

Afonso and Aubyn [8] use the drug enforcement administration (DEA) and free disposal hull (FDH)
approaches to assess the effectiveness of health care and education in 24 The organization for Economic
Cooperation and Development (OECD) countries. Raty and Luoma [9] critically review the study, pointing out
the performance differences that can be created by using more appropriate input and output forms. They criticize
the input-output-oriented interpretation of the results of the DEA model. Raty and Luoma [9] performed the same
performance evaluation process for each country. However, the authors used revised data and excluded
the number of hospital beds from the original data because they do not consider this to be significant for the analysis.

Medeiros and Schwierz [10] only confirmed that performance measurements can be done in two ways.
On the one hand, by improving health outcomes while maintaining current costs (result-based models). On the
in the case of international comparisons of the level of health systems to examine the effectiveness
between public health and medical care as components of the entire health system.

2. METHOD

Reporting and analytical information, as well as an information base, were utilized during the research
process [1–25]. For the study, a dialectical method was employed to identify contradictions in methodological
approaches for determining the characteristics of national health systems, based on the provision of national
health statistics, each with its own unique features. Using the systemic-structural method, grounded in the
principle of systematically researching socio-economic phenomena and processes constituting the innovative
development process, the modern national healthcare system of certain countries was determined. Employing
the historical-logical method, innovation drivers for the development of national healthcare systems were
identified. The investigation utilized methods of quantitative and qualitative comparisons, observations over
time, pattern recognition, comparisons of the state and structure of indicators, and the dynamics of production
of national healthcare systems.

The investigation focuses on assessing the performance of countries' healthcare frameworks across
several models. The data for this study were obtained from the existing WHO database, which provides
aggregated information for numerous countries. Thus, it was possible to compare different nations, each with
its unique national health statistics [12]. For data processing, an input-oriented analysis model of a dynamic
network data shell was employed. The performance of the WHO healthcare systems was comprehensively
examined and evaluated, both collectively and separately for two sectors: the public health sector and the
medical services sector. The investigation combines the use of both conventional and non-traditional strategies
for measuring health performance [13].

The accumulated national experience in ensuring national, social, and economic security within
the healthcare system has allowed the formulation of models for socio-economic national systems based on
institutional resource capabilities. The German, English, and American health systems are considered classic
models [14]. From these, we will examine three models—Bismarck, Beveridge, and the market model—whose
synthetic characteristics are shown in Table 1 [15]. Typically, in developed countries, except for the United
States, one of the three mentioned models predominates, known as the Beveridge, Bismarck, and Semashko
models. The U.S. model is commonly referred to as the residual model. A comparative feature of these models
is presented in Tables 1 and 2.
When analyzing the health care system using the above models, two circumstances should be taken into account [16]. First, the model is a synthetic description of the system of each country or group of countries, where the systems are almost identical. Secondly, it is a tool for comparing systems that operate differently in each country.

### Table 1. Institutional characteristics of social insurance models from the standpoint of ensuring social and economic security

<table>
<thead>
<tr>
<th>Model selection criteria</th>
<th>Scandinavian model (Beveridge Model)</th>
<th>Anglo-Saxon (Bismarck Model)</th>
<th>Continental (Bismarck Model)</th>
<th>Southern European model (Rudimentary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main responsibility</td>
<td>State</td>
<td>State</td>
<td>Labor market</td>
<td>Family and church</td>
</tr>
<tr>
<td>Solidarity type</td>
<td>Public</td>
<td>Mostly individual</td>
<td>Economical</td>
<td>Family</td>
</tr>
<tr>
<td>Redistribution of income</td>
<td>High</td>
<td>High</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>Level of provision of services</td>
<td>Medium/High</td>
<td>Medium/High</td>
<td>Differentiated</td>
<td>Low</td>
</tr>
<tr>
<td>Degree of coverage of social services</td>
<td>All residents</td>
<td>All residents</td>
<td>Occupied</td>
<td>Mostly poor</td>
</tr>
<tr>
<td>Financing</td>
<td>Taxes</td>
<td>Taxes</td>
<td>Insurance contributions</td>
<td>Insurance contributions and other sources</td>
</tr>
<tr>
<td>Management</td>
<td>State/trade unions</td>
<td>State</td>
<td>Self-governing insurance organizations</td>
<td>Self-governing insurance organizations</td>
</tr>
</tbody>
</table>

### Table 2. Comparison of models of healthcare systems

<table>
<thead>
<tr>
<th>Determinant</th>
<th>Bismarck model (insurance)</th>
<th>Beveridge model (services)</th>
<th>Residual model (pluralistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The idea of creating a system</td>
<td>Protection from the impact of accidental events, as a result of which the economic and material situation of a citizen may get worse</td>
<td>Guarantee of citizens' safety at the level of basic, basic needs</td>
<td>Exemption of the state from the obligation to ensure citizens' access to medical services</td>
</tr>
<tr>
<td>Financing services</td>
<td>Insurance funds collecting mandatory contributions from employees and employers</td>
<td>The state budget, which is created at the expense of taxes</td>
<td>The sphere of public health is the state budget; sphere of individual health – voluntary (private) insurance</td>
</tr>
<tr>
<td>State participation</td>
<td>Performs integrity oversight; creates a legal field for the functioning of the system; insurance organizations are organized and function without state administration</td>
<td>Controls the entire health care system; responsible for access to health care services; monopolist hiring employees; in legal acts, the need for insurance is defined as the basis</td>
<td>State control over spending is limited; refusal of the state to guarantee access to medical services</td>
</tr>
<tr>
<td>Consumer privileges</td>
<td>Individuals who have high incomes, exempted from the obligation of insurance, can use private insurance</td>
<td>Freedom of choice is limited to the choice of the doctor of first contact</td>
<td>Especially needy patients (elderly, from lower social strata) are provided with protection guaranteed by the state</td>
</tr>
<tr>
<td>The right to benefits</td>
<td>It arises from the insurance agreement: the insured pays contributions, which is a condition for providing him with services</td>
<td>All citizens have equal access to medical services</td>
<td>In the private sector, access depends on the level of wealth of the citizen</td>
</tr>
<tr>
<td>Country</td>
<td>France, Germany, and Benelux countries</td>
<td>Great Britain, Scandinavian countries, and Ireland</td>
<td>USA</td>
</tr>
</tbody>
</table>

As already noted, the health system is the totality of all institutions, organizations, material and human resources involved in activities to improve health. For its successful functioning, it is necessary to effectively solve problems in the following main areas: personnel; infrastructure; equipment and medicines; logistics; progress tracking; financing. As the World Health Organization notes, limited access to essential health care in many developing countries is due to the dire state of their health systems. However, in some developed countries, many people, and often entire groups, due to the unfair organization of social protection, price increases provoked by the unproductive use of resources, do not have access to such assistance or this access is very limited [17].

### 3. RESULTS AND DISCUSSION

#### 3.1. Foreign experience in the functioning of the healthcare system

World rankings, aimed at determining the best healthcare system and ensuring the realization of citizens' right to healthcare, do not yield a single answer regarding the global leader in this field. This is primarily due to the use of various evaluation criteria [18]. For instance, according to the Prosperity Rankings in 2019, Singapore tops the list for the best healthcare system in terms of efficiency, followed by Japan, with Switzerland securing the third position. Ukraine's healthcare system holds a specific rank in this assessment. On the other hand, the Global Health Security Index in 2019 ranks the United States, the United Kingdom, the...
Netherlands, and Australia as the best countries worldwide. Ukraine, in this ranking, occupies the 94th position. As per the European Health Consumers Index 2018 report, Switzerland, the Netherlands, and Norway secure the top positions [4], [19]–[21].

However, the same report acknowledges variations in specific aspects, such as the best provision of patient rights in the Netherlands and Norway, accessibility in Switzerland, treatment outcomes in Finland, Norway, and Switzerland, and range and access to services in the Netherlands and Sweden. It highlights prevention efforts in Norway and pharmaceutical preparations in Germany and the Netherlands. Globally, various models for the functioning of healthcare systems are employed to realize the right to healthcare, access to medical care, and treatment [22]. Most developed countries worldwide utilize health insurance as a specific form of healthcare system.

3.1.1. Japan

Japan is consistently ranked as one of the healthiest countries globally, with a healthcare system widely recognized as among the best. Since the 1960s, Japan has operated a universal public health insurance system, ensuring comprehensive coverage for all its citizens. A notable aspect of the Japanese healthcare system is its provision of free access to medical facilities. Patients enjoy unrestricted access, allowing them to receive medical care at any facility across the country and determine the frequency of their treatment, irrespective of their insurance, status, or the severity of their condition. Only in certain cases are patients required to pay additional fees for tertiary care facilities if they lack a referral from a primary or secondary health facility [23]. This system in Japan is known as the "free access system," enabling patients to access necessary medical services at a fixed contribution rate, contingent upon insurance confirmation. The health insurance encompasses over 5,000 types of medical services, dental care, and medicines.

Enrollment in public health insurance is mandatory for all individuals staying in Japan for more than three months, regardless of nationality. Japanese legislation mandates specific public health insurance schemes based on employment status, age, and place of residence. These schemes include employer-based health insurance, residence-based national health insurance, and over-75 health insurance. Under Japan's healthcare system, patients bear 30% of medical costs, with the government covering the remaining 70%. Health insurance for individuals aged 75 and over is primarily supported by government funding, supplemented by health insurance premiums paid by employers and national health insurance.

3.1.2. USA

The US does not have a national health care system, there is no universal health care, and Americans buy health insurance to cover a large portion of their health care costs. Health insurance protects against health care debt, pays for regular checkups, lab tests, prescription vaccines, and drugs [24]. In the United States, acquiring health insurance involves selecting a health insurance plan, registering, and making regular payments to a health insurance company. Those with health insurance in the United States enjoy a range of services in the exercise of their right to healthcare. This includes prompt access to specialized doctors and the utilization of the latest technologies, innovations, and advanced methods of treatment. American hospitals lead the world in research and development, contributing to the global development and use of many drugs and technologies.

However, a significant challenge in the United States is the existence of a substantial number of uninsured individuals. Those without insurance often face the burden of expensive medical care. Hospitals may only address emergencies without prepayment and can refuse treatment without proof of insurance or a deposit. This results in uninsured individuals being more likely than those with insurance to delay or altogether refuse medical care, leading to serious consequences [25]–[27].

For instance, medical care for a broken leg can cost up to $7,500, and the average cost of a three-day hospital stay is approximately $30,000. While a majority of U.S. citizens have health insurance, typically provided by their employer and extending to their immediate family, some insurance plans are offered by federal or state governments, labor unions, or private individuals. After retirement, citizens can receive assistance through the government insurance program Medicare, while families and low-income individuals can seek help through the government insurance program Medicaid.

3.1.3. Australia

In contrast to the United States, healthcare in Australia serves as an exemplary model of a reliable and well-managed system, characterized by a blend of public and private healthcare providers. Australians have access to a broad spectrum of services, encompassing health support, preventive measures, and treatment for more complex conditions that may necessitate specialist or hospital care. The healthcare system in Australia comprises two main components: the public health system and the private health system [28].

Australia achieves universal coverage through the taxpayer-funded Medicare insurance program. This program involves individuals contributing a percentage of their income to cover the costs of most medical services, including doctor and hospital services, as well as prescription drugs. The existence of Medicare

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ensures that individuals receive high-quality and affordable healthcare, incorporating free treatment in public hospitals and free or subsidized payments to private healthcare providers for specific services nationwide. Additionally, Australia has a voluntary private health insurance system, granting access to private hospitals and certain services not covered by the public system.

3.1.4. Switzerland

Switzerland has the best healthcare system in Europe. Along with this, the Swiss healthcare system is one of the most expensive in the world. Unlike other European countries, Switzerland’s health care system is not based on taxation and is not funded by employers. On the other hand, everyone living in Switzerland pays contributions and can get basic health and accident insurance to get treatment. Many people supplement basic coverage with additional private health insurance. Consequently, only those who have at least basic health insurance have access to the health care system. Basic health insurance covers about 80-90% of health care costs, includes: accidents, alternative therapy, psychotherapy, rehabilitation after surgery or serious illness, cancer screening, emergency treatment of serious diseases of the mouth or jaw (dental care), general examinations and treatment (inpatient, outpatient and emergency), treatment of eye diseases, gynecological examinations and childbirth, expenses for medical devices, prescription drugs [29]. In addition, basic health insurance covers several vaccinations, in particular: pertussis, diphtheria and tetanus, hepatitis B, measles, mumps and rubella.

3.1.5. Netherlands

The health insurance system in the Netherlands combines private health plans with social conditions based on principles such as solidarity, efficiency, and value for the patient. Two types of health insurance exist in the Netherlands: compulsory basic insurance or basic insurance and optional supplemental insurance. Basic health insurance is mandatory in the Netherlands, providing entitlement to free medical treatment, including standard prescriptions. However, certain treatments, such as dental care and physical therapy, are not covered by public health insurance [30].

Anyone residing or working in the Netherlands for more than four months must acquire basic health insurance, either with or without additional coverage. Individuals with lower incomes can seek financial assistance for basic healthcare or additional services they cannot afford. To exercise their right to healthcare in the Netherlands, individuals must register with their local council to obtain a citizen service number (BSN). Subsequently, they can select and register for health insurance and choose a local doctor.

Notably, the Dutch government takes measures to address uninsured individuals. If a person fails to acquire basic health insurance within four months, the government initiates actions to rectify this situation. Initially, a letter is sent, urging registration for health insurance within three months [31]. Failure to comply within the specified period results in fines, with the amount set at 410.49 euros in 2019. Furthermore, if a person remains unregistered for more than six months, a second fine of the same amount is imposed. After nine months since the initial letter, local authorities will independently register the person with the insurer, charging monthly salary compensation.

3.2. Financing the healthcare system is an international experience

However, there are serious health problems in the US: 45 million Americans of working age do not have health insurance. Every year, Americans spend $2.7 trillion on healthcare, most of which is out-of-pocket. At the same time, 45,000 people who cannot afford to see a doctor die every year in the United States. The study showed that the lack of health insurance in the United States increases the risk of dying by 40%. Elderly users of the Medicare program can be considered protected only conditionally: the vast majority of doctors do not accept these policies, and the range of available services is very limited [32]–[34]. At the same time, according to the quality of medical care, the USA is in the fourth top ten of the list of countries.

None of these models is implemented in a “pure” form in any country, their combination with the predominance of one of them is observed Table 3. According to WHO estimates, the health care systems of France and Austria, based on the principles of social insurance, were recognized as the best in the world in 2006-2007 according to a set of criteria, including efficiency, accessibility, and meeting the needs of the population. However, there are other opinions regarding the effectiveness of a particular model.

<table>
<thead>
<tr>
<th>Source of financing</th>
<th>Germany</th>
<th>Netherlands</th>
<th>Great Britain</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget financing</td>
<td>13</td>
<td>45</td>
<td>86</td>
<td>35</td>
</tr>
<tr>
<td>Social Insurance</td>
<td>60</td>
<td>35</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Private insurance</td>
<td>16</td>
<td>13</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Payment of services by patients</td>
<td>11</td>
<td>7</td>
<td>10</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 3. Sources of financing - international comparison (%)
Khan et al. [35] assessed the national health care systems of 18 countries according to the criterion "expenditure - manageable indicators of public health". It was assumed that the system that is more effective is: 1) at lower cost provides similar (compared) or better indicators of public health; 2) at comparable costs allows to achieve similar (compared) or better indicators of public health:  
- with a larger proportion of the elderly in the structure of the population;  
- under less favorable social and climatic conditions of life (determined by the prevalence of tuberculosis);  
- there is a higher prevalence of bad habits in the adult population, including alcohol consumption and being overweight, with the prevalence of smoking as a separate factor not taken into account [36]–[38].

A comparative analysis of manageable indicators of public health and healthcare expenditures across countries is presented in Tables 4-6, grouped as: Group 1 (Mediterranean and German cultures), Group 2 (English-speaking and German culture), and Group 3 (Latin American countries, the Middle East, and Slavic post-Soviet countries).

National healthcare systems in countries employing the "state" model of healthcare generally exhibit higher efficiency, as evidenced by the criterion of the ratio "healthcare costs - managed population health indicators" Tables 4 to 6. This trend is observed when comparing them to culturally close and demographically comparable countries that predominantly use an "insurance" model [39]–[41]. The observed regularity is influenced by factors such as geographical location, culture, population, and economic development of the country.

### Table 4. Comparison of some indicators characterizing the effectiveness of health care systems of Group 1 countries (WHO, 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Countries of Mediterranean culture</th>
<th>Countries of German culture with a population of 8-10 million people</th>
<th>Countries of German culture with a population of up to 8 million people</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Italy</td>
<td>Sweden</td>
<td>Austria</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenditures on health care, % of Gross domestic product (GDP)</td>
<td>9.5</td>
<td>11.9</td>
<td>9.6</td>
</tr>
<tr>
<td>Total expenditure on health care per capita, US dollars, taking into account purchasing power parity</td>
<td>3022</td>
<td>4021</td>
<td>3757</td>
</tr>
<tr>
<td>Life expectancy, men/women, years</td>
<td>79/84</td>
<td>77/84</td>
<td>79/83</td>
</tr>
<tr>
<td>Healthy life expectancy, men/women, years</td>
<td>74</td>
<td>73</td>
<td>74</td>
</tr>
<tr>
<td>Maternal mortality per 100,000 newborns</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Neonatal mortality per 1,000 newborns</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Infant mortality per 1,000 newborns</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Mortality of children under five years of age per 1,000 newborns</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Probability of death aged 15 to 60, men/women per 1 thousand population</td>
<td>77/41</td>
<td>122/56</td>
<td>74/47</td>
</tr>
<tr>
<td>The country's place in the Bloomberg rating</td>
<td>2</td>
<td>13</td>
<td>9</td>
</tr>
</tbody>
</table>

### Table 5. Comparison of some indicators characterizing the effectiveness of health care systems of Group 2 countries (WHO, 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>English-speaking countries</th>
<th>German culture countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Great Britain</td>
<td>Canada</td>
</tr>
<tr>
<td>Expenditures on health care, % of GDP</td>
<td>9.6</td>
<td>11.3</td>
</tr>
<tr>
<td>Total expenditure on health care per capita, US dollars, taking into account purchasing power parity</td>
<td>3480</td>
<td>4404</td>
</tr>
<tr>
<td>Life expectancy, men/women, years</td>
<td>78/82</td>
<td>79/83</td>
</tr>
<tr>
<td>Healthy life expectancy, men/women, years</td>
<td>72</td>
<td>73</td>
</tr>
<tr>
<td>Maternal mortality per 100,000 newborns</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Neonatal mortality per 1,000 newborns</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Infant mortality per 1,000 newborns</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mortality of children under five years of age per 1,000 newborns</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Probability of death aged 15 to 60, men/women per 1 thousand population</td>
<td>95/58</td>
<td>87/53</td>
</tr>
<tr>
<td>The country's place in the Bloomberg rating</td>
<td>21</td>
<td>14</td>
</tr>
</tbody>
</table>

The comparison of healthcare systems doesn't yield a definitive answer in favor of a specific model [42]. Socially oriented healthcare systems typically offer more equity, but they often suffer from large bureaucracies and deficiencies in the management system [43]–[45]. In countries with a public healthcare...
system, reforms aim to establish clearer legislative and institutional frameworks for competitive relationships between buyers and sellers (manufacturers) of medical services [46].

Table 6. Comparison of some indicators characterizing the effectiveness of health care systems of Group 3 countries (WHO, 2020)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Latin American countries</th>
<th>Countries of the Middle East</th>
<th>Eastern Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chile</td>
<td>Cuba</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>Expenditures on health care, % of GDP</td>
<td>8.0</td>
<td>10.5</td>
<td>10.9</td>
</tr>
<tr>
<td>Total expenditure on health care per capita, US dollars, taking into account purchasing power parity</td>
<td>1199</td>
<td>431</td>
<td>1242</td>
</tr>
<tr>
<td>Life expectancy, men/women, years</td>
<td>76/82</td>
<td>76/80</td>
<td>77/81</td>
</tr>
<tr>
<td>Healthy life expectancy, men/women, years</td>
<td>70</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td>Maternal mortality per 100,000 newborns</td>
<td>25</td>
<td>47</td>
<td>40</td>
</tr>
<tr>
<td>Neonatal mortality per 1,000 newborns</td>
<td>5</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Infant mortality per 1,000 newborns</td>
<td>8</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Mortality of children under five years of age per 1,000 newborns</td>
<td>9</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Probability of death aged 15 to 60, men/women per 1 thousand population</td>
<td>116/59</td>
<td>120/78</td>
<td>115/69</td>
</tr>
<tr>
<td>The country's place in the Bloomberg rating</td>
<td>27</td>
<td>28</td>
<td>37</td>
</tr>
</tbody>
</table>

The effectiveness of healthcare system financing models is notably reflected in the average life expectancy of the population [47]. According to Table 7, Ukraine exhibits the lowest life expectancy compared to other economically developed countries. The difference in life expectancy between women and men is 10 years, whereas in other considered countries, the difference is no more than six years. Consequently, it can be argued that the Semashko model is no longer effective, indicating the need to change the financing model of the healthcare system in Ukraine.

Table 7. Average life expectancy of the population

<table>
<thead>
<tr>
<th>Country</th>
<th>Men, years</th>
<th>Women, years</th>
<th>Difference, years</th>
<th>Country</th>
<th>Men, years</th>
<th>Women, years</th>
<th>Difference, years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Модель Бісмарка</td>
<td></td>
<td></td>
<td></td>
<td>Beveridge model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>79.4</td>
<td>84.00</td>
<td>4.60</td>
<td>Great Britain</td>
<td>79.50</td>
<td>83.10</td>
<td>3.60</td>
</tr>
<tr>
<td>Belgium</td>
<td>79.2</td>
<td>83.90</td>
<td>4.70</td>
<td>Danemark</td>
<td>79.20</td>
<td>83.10</td>
<td>3.90</td>
</tr>
<tr>
<td>Italy</td>
<td>80.80</td>
<td>85.20</td>
<td>4.40</td>
<td>Ireland</td>
<td>80.40</td>
<td>84.00</td>
<td>3.60</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>79.90</td>
<td>84.40</td>
<td>4.50</td>
<td>Spain</td>
<td>80.60</td>
<td>86.10</td>
<td>5.50</td>
</tr>
<tr>
<td>Netherlands</td>
<td>80.20</td>
<td>83.40</td>
<td>3.20</td>
<td>New Zealand</td>
<td>80.20</td>
<td>83.60</td>
<td>3.40</td>
</tr>
<tr>
<td>Germany</td>
<td>78.70</td>
<td>83.40</td>
<td>4.70</td>
<td>Private model</td>
<td>76.10</td>
<td>81.10</td>
<td>5.00</td>
</tr>
<tr>
<td>France</td>
<td>79.60</td>
<td>85.60</td>
<td>6.00</td>
<td>USA</td>
<td>76.10</td>
<td>81.10</td>
<td>5.00</td>
</tr>
<tr>
<td>Switzerland</td>
<td>81.60</td>
<td>85.60</td>
<td>4.00</td>
<td>National model</td>
<td>79.90</td>
<td>84.00</td>
<td>4.1</td>
</tr>
<tr>
<td>Sweden</td>
<td>80.80</td>
<td>84.10</td>
<td>3.30</td>
<td>Canada</td>
<td>80.80</td>
<td>84.70</td>
<td>3.90</td>
</tr>
<tr>
<td>Japan</td>
<td>81.10</td>
<td>87.30</td>
<td>6.20</td>
<td>Korea</td>
<td>79.70</td>
<td>85.70</td>
<td>6.00</td>
</tr>
<tr>
<td>Ukraine</td>
<td>66.69</td>
<td>76.72</td>
<td>10.03</td>
<td>Semashko model</td>
<td>69.66</td>
<td>76.72</td>
<td>10.03</td>
</tr>
</tbody>
</table>

Based on a comparison of the life expectancy rate for women and men in countries classified according to their characteristic models, it was determined that Ukraine has the lowest life expectancy compared to other economically developed countries. Therefore, the functioning of the Soviet model in independent Ukraine is inefficient. On the contrary, the most effective is the English Beveridge model, the positive experience of which Ukraine needs to borrow for medical reform and the introduction of compulsory health insurance.

The authors note that the existing model has a number of shortcomings, which are more related to how the system is implemented and what its content is [48]–[52]:
- Insufficient implementation of insurance principles and their replacement by administrative management;
- Insufficient motivation among the participants of the cell-mediated immunity (CMI) system to take actions to improve its effectiveness;
- Weak focus of planning and distribution of volumes of medical care on solving problems of improving the quality of medical care and efficient use of resources;
- Instability of financial parameters of activity of insurance medical organizations and medical organizations;
Complete transition to new methods of payment for medical care;
- Weak justification of tariffs for medical care;
- Remaining barriers to the participation of non-governmental medical organizations in the CHI system;
- Insufficient grounds for effective competition of insurance medical organizations;
- Complete transition to a single-channel financing system.

An analysis of the realization of the right to health care and the functioning of health care systems in different countries of the world made it possible to conclude that in practice there is no single correct, universal model for the financial support of the healthcare system [53]. Foreign experience has shown that an important role in the functioning of health care is played by the culture of society and the social behavior of citizens of a particular country [54]–[56]. The health care financing mechanism can be successfully improved both within the framework of budget financing and social health insurance.

In Ukraine, to increase the effectiveness of the national health care system, it is necessary to develop and implement its own health insurance program, taking into account the socio-economic features of the state's development. For this, the existing national policy in this area should be reviewed and the main efforts should be focused on solving the most important health care problems, including the availability and timeliness of quality medical care, high efficiency of health care, and improving the quality of services [57]. The introduction of mandatory medical insurance in Ukraine will lead not only to the improvement of the provision of medical services, but also to the improvement of the management of the entire system and its financing. The analysis shows that there are no “pure” models of financing health systems. Most countries use mixed funding models. Almost all countries have some form of direct payment, sometimes called cost sharing [58].

4. CONCLUSION

The only way to reduce dependence on direct payments is for the government to encourage the use of a prepaid and risk-pooling approach. After analyzing the experience of highly developed countries, we propose to use a strategy of patient participation in payment for medical services, and also recommend taking into account at least two points. First, in any country there is a low-income population that is unable to contribute to the health budget either in the form of income taxes or through insurance contributions. This category of people will need subsidies, usually from the state budget, pooled into a special fund. Such support may take the form of direct access to government-funded services or through subsidies for insurance premiums.

Countries where the entire population has access to a certain set of services usually create funds with a relatively high level of funds - about 5-6% of GDP. Second, contributions must be mandatory, otherwise the rich and healthy will avoid paying, and funding will not be sufficient to meet the needs of the poor. Voluntary insurance schemes can raise some funds, as well as familiarize people with the benefits of insurance, but if there is no widespread involvement of the population in prepaid systems and there is no pooling of funds into a special fund, then voluntary insurance has limited ability to provide a range of services to the poor, unable to pay insurance premiums. When reforming the domestic healthcare system and concretizing the program of state guarantees of free medical care, it is extremely important to take into account international experience in this area and choose a cost-sharing method, based, among other things, on the mentality of the population.

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