ANALYSIS OF INNOVATIVE POTENTIAL IN HEALTHCARE MANAGEMENT OF THE REPUBLIC OF AZERBAIJAN

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ABSTRACT

In the paper we have studied the progress and results of reforms in the healthcare system of Azerbaijan, the role of national programs for the modernization of various health sectors in strengthening public health in context of the problems facing the Azerbaijani economy. A notable progress is being made in the transformation of the delivery system medical care for the population over the years of reform. Particular attention is paid to the issues of medical science, improving the system of training medical personnel, increasing the reliability of medical data, and the introduction of information and communication technologies in the health sector. There is a need to develop and implement a model of the medical information system for medical institutions as a key element in the development of priority national health programs. The paper pays attention to the improvement of the organization, management, and financial support of the medical care system. In this regard, it is noted that it is necessary to apply the most effective ways of organizing medical care and using the available resource potential based on the introduction of innovative management technologies.

Keywords: healthcare management, health system of Azerbaijan Republic, national health program, innovation, medical information system.

INTRODUCTION

The strengthening of the social orientation of economic development, which is taking place at the present stage, necessitates the improvement of the management of the branches of the social sector of Azerbaijan. In this regard, the problems of increasing the efficiency of industries that provide the population with various kinds of services of a socio-cultural, material, domestic, and other nature, including health care, acquire great theoretical and practical importance. The purpose of the article is to research the transformation of the healthcare sector in Azerbaijan and develop recommendations for increasing the innovative potential in the healthcare management of the republic. During the study, such methods as comparative analysis, evaluation methods, and statistical data were used.

The scientific hypothesis is to substantiate the position that the key problem that prevents the formation of a healthcare system adequate to today's challenges in the republic is the low susceptibility of modern healthcare management to social and managerial innovations. The conducted research demonstrated that a complex interweaving of factors that promote and hinder the introduction of innovations in the healthcare of the republic forms the rate of implementation of innovative solutions in the organizational and economic mechanism of managing healthcare institutions. As the analysis demonstrated, the transition of healthcare to a modern innovative growth model is carried out at a slow rate, in particular, an unacceptably low level of innovative activity in the management of this area remains. At the same

time, the healthcare sector in Azerbaijan, as well as the entire social sphere, is in dire need of widespread use of innovations in economic mechanisms, management, and technological development. It is necessary to expand the field of innovation in the industry, which activities directly shape the quality of life of the citizens of the republic.

Taking into account the features of the healthcare sector, where the human factor plays a decisive role, it is necessary to promote the all-round dissemination of innovative technologies that can reduce the costs of institutions, relieve the authorities of the sphere from secondary tasks and, thereby, direct their attention to solving strategic problems. It is noted that the elimination of the main problems of innovative management in healthcare from the point of view of the development of medical science, education, standardization, informatization, etc. requires significant resource and time costs.

The analysis carried out in the work made it possible to identify a number of areas, the further development of market relations in the industry, the improvement of the legislative framework, the development of institutional infrastructure, the system of standards for the provision of medical care, as well as the development of insurance principles for financing and training management personnel, which are especially important for the development of public policy in the field of innovative development of healthcare. The research on the innovative potential of the healthcare sector of Azerbaijan and the proposals put forward for its improvement will help to effectively solve the problems of social development, and increase the country's human capital.

The conclusion is substantiated that strengthening the innovative potential of management is in modern conditions the most important direction in improving the effectiveness of health care, which makes it possible to significantly increase the efficiency of the use of resources in this area.

During the period of socio-economic reforms, due to a significant increase in state funding for health care (14.5 times), a number of large-scale state programs were implemented in this area: national programs for the modernization of various health sectors; human resource development in public health; the program "Electronic Azerbaijan", etc., which made it possible to increase the provision of medical institutions of the republic with modern equipment, increase the volume of medicinal, preventive and high-tech medical care for the population of Azerbaijan. At the same time, positive changes were observed in the health status of the population: mortality rates decreased, and morbidity rates stabilized (see Table 1).

Health characteristic	1990	1995	2000	2005	2010	2015	2020	2021
Mortality	9.1	6.7	5.9	6	6.5	6.7	6.8	6.9
All causes of death (per 100 thousand people), including:	606	672	589	606	599.7	583.6	51,107	50,217
- from diseases of the circulatory system	293.8	340.6	330.5	348.0	364.4	385.6	41,228	41,708
- from neoplasms	68.1	62.9	64.1	77.6	74.3	65.1	9,879	8,509
The life expectancy of men	67.0	65.2	68.6	69.5	70.9	72.1	73.1	73.2
The life expectancy of women	74.8	72.9	75.1	75.2	76.2	77.2	77.6	77.7
Infant mortality rate	23.0	23.3	12.8	12.8	11.2	10.6	9.2	7.5
Maternal mortality rate	17	53	44	34	15.7	14.0	15.8	17.8
Morbidity per 1000 people	245	212	171	177	180	183	179	177

Table 1. Dynamics of the Health of the Population of Azerbaijan Source: Energy Statistical

Azerbaijan indicators in 2021

During the period of accelerated economic growth, the health care system managed to ensure the dynamics of reducing mortality rates from individual causes; the availability of free medical care for the population has been preserved; implemented a set of measures to restructure the system of medical care and improve its efficiency; increased salaries for medical workers.

In particular, progress in reforming the medical care system has been made in the following areas:

− expansion of measures for disease prevention, expansion of the scale, and efficiency of medical examination of the population.

− reorganization of the network of hospitals in the direction of their enlargement and reduction of low-capacity and inefficient departments.

− development of hospital-replacing medical care.

− formation of a three-level system of medical care, and creation of inter-district centers in the regions of Azerbaijan, in which diagnostic and human resources of specialized care are concentrated in municipalities.

− development of the sector of high-tech medical care, and expansion of the volume of this assistance, including in regional medical institutions.

− improvement of the medical personnel training system (Aras O., Suleymanov E. 2016).

At the same time, many important issues of improving the organization, management, and financial support of the medical care system still remain unresolved. In the speeches of the country's leadership, and in scientific publications, the discrepancy between the requirements of the modern period of development of Azerbaijan and the possibilities of its healthcare sector is emphasized. Problems in the development of the health care system that affect the vital interests of citizens are found in almost all of its structures - a low level of management, insufficient funding, a shortage of qualified medical personnel, etc.

The policy documents adopted in recent years: the Development Concept "Azerbaijan-2020: a look into the future", and "Strategic roadmap for the development of the national economy and its main sectors" (World Bank, 2010.) notes: to improve the situation with the state health of citizens, it is necessary to ensure a qualitative breakthrough in the healthcare system. The domestic healthcare sector needs innovative developments in the field of prevention, diagnosis, and treatment of diseases, an effective management system, training of medical personnel, and qualified specialists capable of solving the problems of innovative development.

In our opinion, the low perceptivity of modern healthcare management to social and managerial innovations is one of the main problems that make it difficult to form a balanced socio-economic system adequate to today's challenges. The task of reaching the level of developed countries in terms of well-being gives orders to new requirements for the healthcare management system, and the use, and implementation of innovative management technologies (Zaretskaya, 2011). In this regard, a whole range of scientific and practical problems arise, united by one concept: Azerbaijan needs to ensure that, with the resources that the republic can allocate to the development of the healthcare sector, the maximum possible effect is obtained in terms of improving the quality of life of citizens, improving the health of the population of the republic. Such a task is unsolvable with technologies that have been established since Soviet times, and because of this, the innovative vector of development for this area is no less important than for the branches of material production. At the same time, innovations are needed not only within the framework of the production of medical services (innovative medical education programs, high-tech medical care, etc.) but also, above all, in the management of the healthcare complex, which can give a much greater socio-economic effect.

However, in this direction there is a certain lack of scientific developments: in particular areas of innovative development of the social sphere have already been considered in separate publications, but in the republican literature there have been practically no attempts to comprehensively consider the innovation process in the management of the healthcare sector. This article analyzes the innovative potential of healthcare management in modern Azerbaijan and identifies ways to improve it in the future.

ANALYSIS OF THE SCIENTIFIC POTENTIAL OF THE HEALTH OF AZERBAIJAN

The innovative model for the development of healthcare in the republic provides for close interaction between the healthcare system and medical science, the use of modern management methods, the planning of scientific medical research depending on the needs of healthcare, and the active implementation of scientific results in medical practice, as well as targeted training of specialists capable of ensuring the implementation of scientific achievements.

In our opinion, the problem of innovation at the present stage of development of Azerbaijani health care is a key one. Advanced innovative technologies in the field of healthcare management could contribute to a qualitative breakthrough in the healthcare system and improve the availability of medical care.

As known, the innovation potential combines the characteristics of all types of resources directly involved in the implementation of the innovation process, a set of technological, commercial, and managerial competencies for the generation, dissemination, and use of innovations (Aras, Suleymanov. 2016). It characterizes the possibility of further development of innovative processes, the creation of new products, as well as the diffusion of innovations into other areas of economic activity.

At the moment, there are elements of innovative potential in Azerbaijan, incl. components necessary for the development of innovative technologies in healthcare: a scientific base and personnel with great potential, investors, as well as companies importing foreign innovative developments.

The unity of science, education, and practice should ensure national health care not only with fundamentally new methods of diagnosing and treating a wide variety of diseases but also with modern methods of management in health care.

The scientific potential of medicine serves as a starting point in the implementation of the initial stages of the innovation process, being one of the most important components of the innovation potential. The level of development of medical science determines the prospects for improving the entire healthcare system. At the same time, the current state of medical science in the republic is characterized by a blurring of priorities, low innovation potential, fragmentation of state regulation, poor communication with state customers, and a system for implementing scientific results in practical healthcare.

Currently, there are 11 specialized research institutes and centers in Azerbaijan, including cardiology, traumatology, oncology, preventive medicine, surgery, etc. These medical institutions account for about 1% of the republican healthcare budget (see Table 2).

	2005	**2010**	**2020**
Polyclinics and clinics	19,7%	16,7%	15,9%
Hospitals	66,5%	55,3%	56,0%
Other health care services	2%	2,0%	2,1%
Research activities in the field of healthcare	0,8%	0,8%	0,9%
Other health-related services (including government health programs)	5,2%	25,1%	26,0%

Table 2. Structure of the State Healthcare budget in 2005-2018 (in %) Source: Ministry of Finance of the Republic of Azerbaijan, 2021.

At the same time, it is necessary to note the imperfection of the mechanisms for introducing the results obtained by these medical institutions into the process of developing health care development policies and improving medical technologies.

One of the goals of the reforms being carried out in the healthcare system of the republic is the development of Azerbaijani healthcare to the standards of developed countries. From this point of view, one of the important and significant tasks is to adapt in a certain form the medical specialties used in our republic to the register of specialties and curricula adopted in developed countries (Borodın 2014).

In this regard, the Ministry of Health has prepared an improved list of medical specialties used in healthcare institutions of the republic. This list covers 40 specialties, and in accordance with them, the official nomenclature of specialists working in medical institutions was approved (Sheiman, Shevskiy, 2015).

The analysis shows that, despite the growth of investments in healthcare, Azerbaijan lags behind developed countries in terms of funding and indicators that determine the level of development of medical science. In developed countries, investment in "human sciences" accounts for at least 30% of total spending on basic research. (Gosovich et al., 2006)

The development of health care is inextricably linked with government initiatives and measures to stimulate and introduce innovations in the main areas of its implementation. The continuous progressive process of updating medical technologies requires the formation and adequate financial support of nationally targeted scientific programs in priority areas of healthcare development (see Table 3).

Further development of modern scientific research in the field of healthcare is possible only with an integrated approach based on the involvement of the developments of fundamental biomedical, natural and exact sciences, as well as new technological solutions (Sheiman).

One of the main directions in the development of the healthcare system of the republic is the introduction of new medical technologies, primarily diagnostic equipment, as well as medicines. Within the framework of state programs, a network of regional diagnostic and perinatal centers has been created. This makes it possible to provide emergency medical care using high technologies not only in the capital but also in the regions of the republic.

THE NAME OF THE PROGRAM	Budget Investments (million manats)		
	2005	2020	2021
Chronic Renal Disease Program	13,0	14,4	20,0
Diabetes Program	12,0	13,8	17,3
Hemophilia and Thalassemia Program	9,1	9,2	11,1
Program to provide cancer patients with basic anticancer drugs	-	5,0	10,2
Immunization program	1,9	1,1	5,1
Maternal and Child Health Program	4,8	5,2	5,2
Blood donation program	0,7	0,8	3,0
Program "Electronic Azerbaijan"	-	2,1	-
Costs associated with the introduction of compulsory health insurance	-	4,0	50,2
Public Health Human Resource Development Program	-	1,4	0,1
Costs associated with the introduction of "electronic health cards" and "medical examination cards"	0,4	1,6	-
HIV/AIDS Prevention and Control Program	-	-	1,98
General expenditures on the implementation of state programs in the field of healthcare	42,2	58,6	124,2

Table 3. State Health Programs, 2005-2018 Source: Ministry of Finance of the Republic of Azerbaijan, 2018.

Procurement of medical equipment, devices, and equipment for medical institutions in the system of the Ministry of Health is carried out centrally. This is done by the Innovation and Procurement Center established under this ministry in 2005. All public health institutions annually submit their applications to the Ministry of Health, where they are analyzed and approved. After approval by the Ministry of Health, the Innovation and Supply Center announces an open tender for procurement. The procurement process in the private sector and departmental healthcare institutions is not regulated by the Ministry of Health and is carried out based on the decisions of the owners of the institutions. Expensive medical equipment - such as CT scanners and MRI (nuclear magnetic resonance) tomographs - is used less in the public health system.

Currently, many areas of modern medicine require serious technological equipment. At the same time, the use of modern technologies in domestic healthcare institutions is constrained by the lack of effective mechanisms for the admission of these technologies to the market.

The developments created by domestic pharmaceutical enterprises and medical universities are in little demand. This is due, first of all, to insufficient funding for healthcare and the legislative insecurity of domestic developments. The issues of maintaining the necessary condition of medical devices and the

use of state budget funds and extra-budgetary sources allocated for their production, purchase, proper operation, and disposal are not sufficiently resolved.

Further development of this situation leads, in particular, to the purchase of expensive foreign equipment, the introduction of domestic developments through foreign firms, and, as a result, an increase in the cost of domestic healthcare.

An analysis of the scientific and innovative potential of the republic's health care has shown that progress is being made in many respects. At the same time, there are several problems in the organization of innovative activities in the scientific sphere, among which the most important are the problem of insufficient funding, the need to form a clear position and prioritize the support of scientific potential, awareness of the role of medical science in the implementation of innovative processes, in ensuring long-term reproduction of the innovative type health development.

INFORMATION AND COMMUNICATION COMPONENT OF THE INNOVATIVE POTENTIAL OF DOMESTIC HEALTHCARE

Information support for health care, which has recently reached a new qualitative level, expands the possibilities of effective management since it provides managers, financiers, and heads of medical institutions at all levels with modern methods of processing and analyzing information necessary for making managerial decisions, ensuring innovation.

Azerbaijan has been developing and implementing healthcare informatization programs since 1992. To date, elements of the information and communication infrastructure for the needs of medicine have been created in the country, and the use and dissemination of modern ICT in the healthcare sector have begun. Medical information and analytical centers, and automated information systems of insurance medical organizations have been created in the republic.

However, since at the district level, local authorities finance medical institutions and regulate their activities - the Ministry of Health, this separation of functions hinders the flow of information about the activities of healthcare providers in the field. The Ministry of Health does not receive timely and sufficiently detailed information from local authorities, as reporting systems are not computerized and need to be improved. Despite all attempts to improve, there is still no unified health information system that could be used to collect, report and analyze data on the activities of medical institutions, the services provided, and the quality of medical care. Due to the fragmentation of this system, there is no exchange of potentially useful information between various structures of the health care system. Another factor limiting the ability of the Ministry of Health in monitoring the quality of medical care and the health status of the population is the degree of reliability of medical data.

As you can see, the developed information systems, as a rule, are of a narrowly focused nature, focused on providing private functions and tasks. The lack of a unified approach to their development during operation leads to certain problems. As a result, existing information systems are complex with disparate workstations, and not a single information environment.

The level of equipping the healthcare system with modern information and communication technologies is extremely heterogeneous and is mainly limited to the use of several computers as autonomous automated workstations.

Some facilities are implementing systems to keep patient records, conduct an analysis of activities and generate routine reports. In general, common information space is not being formed in healthcare institutions, so electronic data exchange between them is difficult.

The only type of software installed almost everywhere in healthcare institutions is the developed programs for accounting for registers of services provided, as well as components of information systems for providing subsidized medicines.

Thus, the current level of informatization of the health care system does not yet allow for quick resolution the issues of planning and managing the industry.

To solve the problems of data collection and quality in the information system as a whole, the Ministry of Health is actively developing the Concept of creating an Integrated Health Information System. With

the introduction of new provider payment mechanisms, there will be an opportunity to fundamentally improve the health information system.

In 2005, the President of the Republic of Azerbaijan I. Aliyev signed the Decree “On Approval of the State Program for the Development of Communications and Information Technologies in the Republic of Azerbaijan for 2005-2008. (Electronic Azerbaijan). In this program, several ambitious goals were set - from improving the access of the population to the Internet to the formation of an "electronic government". The action plan for the implementation of this program also included tasks related to the healthcare sector:

− the creation of a national health monitoring center and several electronic medical registers.

− the creation of a system of "electronic health cards" for citizens.

− development and implementation of a model of a medical information system for medical institutions.

In 2006, the Cabinet of Ministers approved the "Rules for the implementation of the system of electronic health cards". To implement this system, the Ministry of Health launched the Electronic Health Cards project, the financing of which was organized by a special state program. Within the framework of this program, the Ministry of Health has created a separate Information Center, which acts as the main information data bank for the system of electronic health cards. It is planned that in the future all hospitals, polyclinics, outpatient clinics, pharmacies, and other healthcare institutions will be equipped with the necessary equipment to read the information contained in electronic health cards, as well as enter new data into these cards. The Ministry of Health began issuing readers at the end of 2007. An electronic health card allows you to enter, save and change information, including information about the identity of a citizen, his state of health, as well as insurance data.

The introduction of electronic health cards started with the children's population - at first, all newborns were provided with them, then the adult population, and gradually the coverage of this system will become universal. The introduction of the system of electronic health records in full will allow the creation of various electronic medical registers for immunization and prenatal care. In addition, it can become the basis for the creation of a medical information system for primary care institutions. The exchange of information between medical institutions will be greatly simplified.

In the future, the Electronic Health Card System will become an integral part of the compulsory health insurance system, since the electronic health card is supposed to include information about the insurance of its owner.

At present, the development of the system of electronic health cards has just begun, therefore, it is too early to assess its effectiveness and the progress made in the implementation of the tasks of the health sector set in the State Program for the Development of Communications and Information Technologies.

The republic is also working on the introduction of innovative medical developments, including organizational and medical diagnostic technologies, medicines, medical products, including medical equipment.”

There is still no systematic approach to assessing the quality of medical services in both public and private medical institutions, and there are no mechanisms for monitoring patient safety. At the same time, to improve the quality of medical care for the population in the republic, concerted efforts are being made to voluntarily introduce national clinical guidelines. At present, the principles of evidence-based medicine are the only official approach to the development of national clinical guidelines. By 2018, 30 clinical guidelines for the management of specific diseases had already been developed, 27 of which were approved by the Ministry of Health. These guidelines address the management of diseases that are mostly preventable by primary health care, as well as diseases that have the most serious impact on the health of the population.

Currently, the process of training medical workers in the application of these clinical guidelines in practice is underway; in addition, efforts are being made to revise postgraduate medical curricula to bring them into line with the content of these guidelines and the principles of evidence-based medicine.

The analysis demonstrated that there are no special bodies involved in the assessment of medical technologies (including medicines, medical devices, equipment, procedures, and systems for organizing and supporting the provision of medical care), carried out in order to facilitate the adoption of strategic decisions, in the Azerbaijani healthcare system, and evaluations do not influence the process of making these decisions. However, national clinical protocols have been developed that are designed to ensure clinical and cost-effectiveness.

The task of improving the reliability of medical data was recognized as key in the development of priority national health programs (which, in particular, include programs for the protection of mothers and children). In this regard, the Ministry of Health is making consistent efforts to improve the quality of vital statistics and mortality data.

In our opinion, the tasks to correct this situation, along with several other planned activities, should be reflected in the Concept for the creation of the National Integrated Health Information System, which is under development.

In addition to other reform projects, it is planned to introduce a procedure for mandatory certification of doctors as a tool to improve the quality of medical care provided to the population in the republic's healthcare system.

Ensuring compliance with safety norms and standards and issues of infection control is handled by the system of sanitary and epidemiological supervision bodies, which have the right to check the sanitary and hygienic state of medical institutions and, if necessary, close them for disinfection. In addition, for non-compliance with relevant norms and standards, they can also impose a fine on a medical institution. Since 2009, the country has been developing standards for the optimal number of medical institutions and medical workers per capita.

CONCLUSION

As a result of the study of the problems of increasing the innovative potential of the healthcare system of the republic, the author made the following conclusions:

1. A necessary condition for domestic healthcare to reach the level of developed countries in terms of medical care is the accelerated diffusion of innovative management technologies into this area. As the analysis carried out in the article showed, during the period of socio-economic reforms, certain work was carried out to develop innovative activities in the health care of Azerbaijan, because this is one of the strategic objectives of the state policy. The availability and quality of primary health care have increased by strengthening the district service throughout the country, the indicators for reducing mortality from individual causes have been improved, and a set of measures has been implemented to restructure the system of medical care and improve its efficiency, in 2020 preparatory work was carried out to introduce the compulsory medical insurance system in republic. At the same time, in Azerbaijan, which is transitioning to a modern innovative model of economic growth, the elimination of structural imbalances in healthcare is slow, and an unacceptably low level of innovative activity in healthcare remains.

2. Elimination of the main problems of innovative management in healthcare from the point of view of the development of medical science, education, standardization, and informatization requires significant resource and time costs. Insufficient funding hinders the implementation of effective innovative projects, thereby reducing the overall level of innovative activity in healthcare. As for the possibility of private investment in innovative technologies, it is constrained, on the one hand, by insufficient information support, and, on the other hand, by the lack of clear state guarantees. In addition, close, permanent, and productive contacts between medical science and business have not yet been established.

3. Priority areas for the development of the healthcare system in terms of increasing innovative potential should be:

− development of market relations in this area, the active promotion of competition in the provision of medical care.

− improvement of the legislative framework that regulates all aspects of innovation in the development of management technologies in health care.

− development of institutional infrastructure in the field of innovative management technologies.

− development of a system of standards for the provision of medical care for diseases, optimization of the amount of funding with the costs necessary to meet these standards.

− development of insurance principles of healthcare financing. Even though the legal basis for organizing the collection of contributions for compulsory health insurance was created in 1999 by the Law on Health Insurance, so far, the compulsory medical insurance system, as an element of the main health care financing reforms in the republic, has not been introduced.

− introduction of new instruments of legal co-financing of medical care by the state and certain groups of the population (for example, co-payments for wealthy patients for types of medical care based on innovative medical technologies that are not included in existing state guarantees).

− training of managerial staff in the basics of development and application of the latest management technologies in the healthcare sector.

4. New goals related to stimulating and infrastructural support for the development of new management technologies, science, and innovation in health care are not being fully implemented. Their legislative and regulatory support is imperfect, moreover, it is late or postponed indefinitely. Significant changes are needed in the organization of medical care, the implementation of innovations in the mechanisms of its financing, and other optimization measures that correspond both to the new economic situation and the long-term objectives of the development of this sphere. Therefore, the next step in improving the healthcare sector should be the development and dissemination of advanced technologies in the field of management, capable of solving the problems of innovative development of healthcare, and, ultimately, helping to increase its efficiency.

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