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CHARACTERISTICS OF THE EFFECTIVE USE OF INFORMATION TECHNOLOGY IN THE PROVISION OF HEALTH CARE SERVICES

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ABSTRACT **DOI No: 10.36713/epra21086** **Article DOI: https://doi.org/10.36713/epra21086**

The key indicators describing the healthcare system of the Republic of Uzbekistan for the period from 2000 to 2023 have been compared, and based on the implementation of digital technologies in the information exchange processes within healthcare institutions, a forecast of indicators for the medium-term period (2024–2030) has been developed, aimed at improving the efficiency of institutional operations. The conducted analysis covers the most important indicators of the healthcare system, including the number of hospital beds, the population per doctor ratio, as well as the number of doctors working within the system.

KEYWORDS: ***Medicine, Information, Forecast, Medical Institution, Doctor, Hospital, Outpatient Clinic.***

INTRODUCTION

The results of the analysis of data on key indicators of the development of the healthcare system of the Republic of Uzbekistan in 2000-2023 have determined the need for the introduction and use of information technologies in the processes of creating, forming, collecting, processing, analyzing and transmitting medical data, both within medical institutions and between institutions.

In turn, in the course of our research, the " Software product of the automated system of medical accounting documents in medical institutions" developed on the basis of the algorithm-model for the movement of information in medical institutions - the approval processes of information technology implemented in medical institutions, the introduction of information technologies in medical institutions , medical, allows to achieve social and economic performance indicators.

More than half of health care spending in developed countries is spent on treating chronic diseases. Of the $3 trillion spent on health care in the United States each year, 84 percent goes to treating chronic diseases. In addition, 5% of patients account for 50% of the health care system's annual spending on chronic diseases [1].

Advances in modern science allow to radically change the possibilities of medicine, pre-clinical diagnosis of many diseases. Active and mass use of modern screening technologies in preventive medicine, deeper involvement of the patient in taking care of his health allows to significantly reduce morbidity among the population and prolong the life of the population.

LITERATURE REVIEW

The statistical data analyzed in the article are mainly from the Agency for Statistics under the President of

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the Republic of Uzbekistan and the Ministry of Health of the Republic of Uzbekistan. Also, A.Uralov's (2020) article "The Estimation of the Covid-19 Pandemic on the Macroeconomic indicators suggestions for Uzbekistan" provides an opinion on the impact of the pandemic period on the country's economy and macroeconomic factors [2]. K.I.Kostyuk. (2020) "Information Technologies in Science, Management, Social Sphere and Medicine"" analyzes opinions on the effectiveness of using information technologies in medicine [3]. O. Korobkova, (2020) published an article entitled "Information Security of Healthcare Services in the Conditions of a Digital Economy" that discusses the storage of big data [4]. B. Mahkamov's (2023) article "Research on the Development of the Digital Economy Sector Based on Local Characteristics" provides information on the work being carried out in our country in the areas of digital economy development, e-commerce, and online shopping, and the factors influencing it [5]. B. Mahkamov, G. Ismoilova et al.'s (2023) article "Electronic Commerce Infrastructure and Its Geoeconomic Significance" analyzes the work being carried out by the authors to develop and improve electronic commerce infrastructure .[6]

RESEARCH METHODOLOGY

In this article, the main indicators in the health sector from 2000 to 2023 were taken, and medium-term (2025-2030) forecast indicators were compiled based on the application of digital information technologies to the information exchange processes of health institutions.

ANALYSIS AND RESULTS

The emergence of information technologies in the healthcare system is ushering in a new era in medicine. The emergence of portable diagnostic gadgets simplifies and improves the quality of life of people. Wireless sensors connected to the human body using a smartphone read physiological data: blood pressure, heart rate, changes in the purity of heart contractions, body temperature, eye pressure, blood sugar, intracranial pressure and many other indicators. Thus, smartphones are becoming a tool for physical examinations. The transformation of mobile phones into interactive 3D scanners has achieved significant progress. And turning a smartphone into a powerful digital microscope allows you to detect a number of infectious diseases. Together with digital infrastructure, this creates the basis for virtual doctor visits [7].

The use of modern data and new technologies has been a revolutionary event in neonatal medicine. Today, in the United States, neonatal whole genome sequencing can be performed in less than 24 hours, and this is not only a vital source of information about the newborn baby, which is necessary for decision-making now, but also for the rest of life [8]. The issue of introducing and using advances in digital medicine is very relevant for Uzbekistan, because the health of children is of great importance for the country.

It is an important issue to form the processes of adaptation to health care, socio-economic, environmental changes.

Digital healthcare is a means of increasing the transparency of the healthcare market and, accordingly, reducing costs and risks, increasing revenues for private medical institutions , as a result of which patients benefit from competitive offers and convenient services. One way to optimize health care costs is to implement decision support systems that help detect disease at an early stage.

[2] *Uralov A., Uralov S. The Estimation of the Covid-19 Pandemic on the Macroeconomic indicators suggestions for Uzbekistan// Asian Journal of Multidimensional Research, Vol 9, Issue 6, June , 2020: 121-128, [Electronic resource] / Mode dostupa : https://www.tarj.in/Ajmr-Vol-9-Issue-6-june-2020.html*

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Table 1
Comparative analysis table of key indicators of the healthcare sector of the Republic of Uzbekistan[9]

T/p	Indicators of the health sector	Unit of measurement	2000	2023	Growth snapshot (quantity)	Growth rate (in percent)
1	Population of the country	THOUSAND PEOPLE	24813.1	36799.8	11986.7	148.1
2	Treatment number of institutions	GRAIN	6009	9443	3434.0	157.1
	Including:					
3	Hospital number of institutions	GRAIN	1162	1432	270.0	123.2
4	Number of outpatient clinics	GRAIN	4847	8011	3164.0	165.3
5	Hospital the number of seats is i, total	THOUSAND PLACES	138.6	172.6	34.0	124.5
6	This indicator is per 10,000 inhabitants	PLACE	55.9	46.9	-9.0	83.9
7	In hospitals treated in one-year number of patients, total	A THOUSAND PEOPLE	3514.4	6208.7	2694.3	176.7
8	One hospital instead of correct coming population	PERSON	179	213.2	34.2	119.1
9	Outpatient polyclinic institutions power, one on shift number of trips , total	A THOUSAND PEOPLE	391.5	621.8	230.3	158.8
10	All specialties number of doctors, total	A THOUSAND PEOPLE	81.5	105.7	24.2	129.7
11	One to the doctor correct coming population:	PERSON	304	348	44.2	114.5
12	Secondary qualified medicine number of employees , total	A THOUSAND PEOPLE	259.7	373.7	114.0	143.9

As a result of our analysis, we will try to determine the prospective indicators of the key indicators characterizing the healthcare system of our country for 2025-2030, and thereby justify the current need for information technologies in the activities of existing medical institutions in the system.

We have determined the future figures for the important indicators of our country's healthcare system , including the number of qualified doctors in all specialties, the number of qualified doctors per ten thousand population, the number of population per doctor, the number of hospital beds, the number of population per hospital bed, and the total number of patients treated in hospitals, for 2024-2030. Table 2 below presents a comparative analysis of the future indicators of our country's healthcare system for 2025 and 2030.

Table 2
Outlook for key indicators of the healthcare sector of the Republic of Uzbekistan until 2030[10]

T/p	Indicators	Unit of measurement	Years		in 2030 compared to 2023, %
			2023	2030	
1	Population	Thousand People	36,799.8	41 476.9	112.7
2	All qualified in the specialty doctors number	Thousand People	105.7	114.7	108.4
3	One to the doctor correct coming population number	Person	348	363	104.4
4	Hospital places number	thousand places	172.6	185.25	107, 3
5	One hospital instead of correct coming population number	person	213	226	106, 0
6	In hospitals treatable of patients total number	thousand person	6208.7	7422.35	119, 5

[9]Developed by the author based on data from the Statistical Agency under the President of the Republic of Uzbekistan (www.stat.uz) and the Ministry of Health of the Republic of Uzbekistan (www.ssv.uz)
[10]Developed by the author based on research results

Looking at the data presented, we can see the prospects for growth in most indicators. At the same time, it should be noted that by 2030, the number of qualified doctors working in the healthcare sector may increase by 108.4% to 114.7 thousand doctors, but the number of patients per doctor, which amounted to 348 patients in 2023, is expected to increase to 363 patients in 2030. This, in turn, is characterized by the fact that the dynamics of the number of qualified doctors working in the healthcare sector lags behind the dynamics of population demographic growth.

Analyzing the indicators describing the conditions of treatment of the country's residents in inpatient medical institutions, it was found that the number of inpatient beds in hospitals that can be created in the next 6 years in our country is expected to grow by 107.3% and reach 185.3 thousand by 2030. However, we see that this indicator lags behind the natural demographic growth of our country's population, the number of people per hospital (expected to grow by 106%) and the total number of patients who can be treated in inpatients (expected to grow by 119.5%) have a negative impact on the growth prospects.

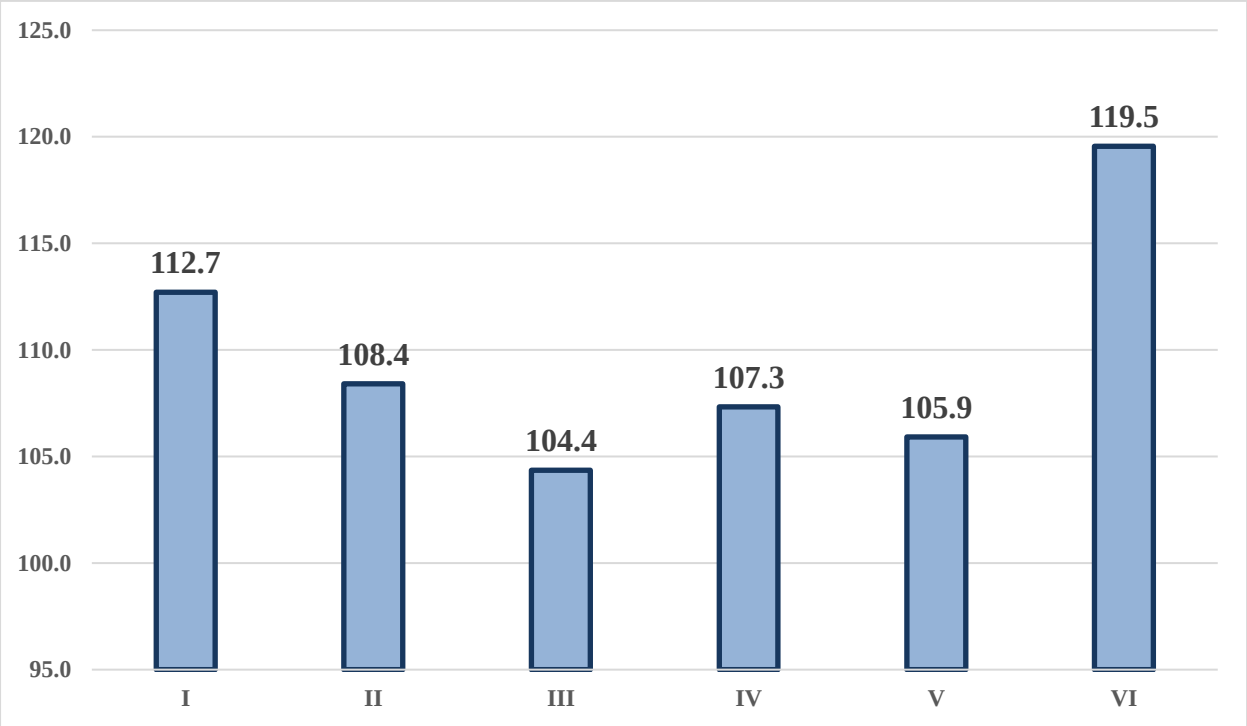

Figure 1. Prospects for the growth of important indicators of the health sector in 2030 compared to 2023 (in percent)[11]

In our opinion, one of the important directions of prevention of the problems mentioned in the healthcare sector of our country, which are highly likely to exist by 2030, is the wide use of information technologies in the processes of creating, forming, collecting, processing, analyzing and transmitting medical data in the activities of existing medical institutions in the field.

It is worth noting that, as mentioned above, the implementation of scientifically based proposals and recommendations formed as a result of research in the activities of a small medical institution made it possible to achieve medical, social and economic efficiency in the activities of the institutions.

In the activities of medical institutions in the activities of family polyclinic No. 64 under the Yunusabad district medical association of Tashkent city in 2024 resulted in an increase in the number (volume) of patients receiving medical services per day in the polyclinic by 30.2% (95 patients). As a result of the medical and social effectiveness achieved in the activities of the healthcare institution, it is planned to provide medical services to an additional 28,658 patients in 2024 compared to 2023.

In turn, the implementation of scientifically based proposals and recommendations on the introduction of information technologies into the activities of medical institutions in the activities of the private outpatient clinic of the "Bakhtli Hayot" medical diagnostic center located in the Yunusabad district of Tashkent city

[11]*Based on the results of the analysis, the author developed: I - the level of population demographic growth, II - the number of qualified doctors, III - the number of people per doctor, IV - the number of inpatient beds in hospitals, V - the number of people per hospital bed, VI - the number of patients who can be treated in hospitals.*

allowed to achieve medical efficiency - an increase in the average number (volume) of patients receiving medical services per day in the clinic by 33.6% (47 patients) in October-December 2024, and economic efficiency - an increase in the average daily revenue from the provision of paid medical services to the population by 5,812.0 thousand soums. As a result of the medical, social and economic efficiency achieved in the activities of the health care institution, it is planned to provide medical services to an additional 14,133 patients in 2024 compared to 2023 and increase it by 1,760,982.0 thousand soums.

The results of the analysis of the prospective changes in key indicators of our country's healthcare system from 2024 to 2030, as well as the results of the implementation of scientifically based proposals and recommendations on research in public and private medical institutions operating in Tashkent, made it possible to formulate conclusions and proposals and recommendations on ensuring the sustainable development of our country's healthcare system and increasing the effectiveness of the introduction of information technologies into the activities of all existing medical institutions.

Our government must ensure the high rate of training of qualified doctors for all medical institutions in the republic's healthcare system , regardless of their ownership structure, because today the level of provision of doctors in the sector lags behind the demographic growth rates of our country's population.

CONCLUSIONS AND SUGGESTIONS

Having studied and analyzed the available statistical data over the past 23 years, and taking into account that the growth rate of the number of available hospital beds has lagged behind the natural population growth rate, it is necessary to build additional inpatient hospitals in order to provide the population with the opportunity to receive treatment in inpatient conditions.

These circumstances, in turn, require the introduction of large-scale investment projects in the medical field and the need for time for qualified doctors to gain the level of education and experience.

It should be emphasized that in the future, we believe that in order to solve the problems of a decrease in the level of provision of qualified doctors and a shortage of inpatient beds in hospitals, it is necessary to widely introduce information technologies into the activities of medical institutions in the healthcare system. In our opinion, information technologies will allow increasing the efficiency of treatment in the outpatient-polyclinic system and reducing the duration of inpatient treatment.

In our opinion, the introduction of information technologies into the healthcare system should be implemented primarily in the activities of primary health care institutions, family clinics and diagnostic and treatment institutions, which are directly involved in the prevention or prompt treatment of diseases in the initial stages of the population's health. This, in turn, creates the basis for ensuring the health of the population by making prompt medical decisions in the initial stages of diseases, implementing treatment processes, and improving the quality of medical services.

In the second stage, we believe it is advisable to introduce information technologies into the activities of all types of inpatient medical institutions. This, in turn, will increase the speed of internal information circulation within the institution, allowing for faster medical decisions on treatment, implementation of treatment processes, and, based on this, an increase in the quality of medical services.

At the next stage, it will be necessary to ensure the coordination and harmonization of existing information technologies in medical institutions in the system. This, in turn, will allow ensuring the effectiveness and quality of treatment based on the effectiveness of medical treatments at the primary stage or, additionally, at the next stage , receiving information from higher polyclinics, diagnostic and treatment or inpatient treatment institutions based on information technologies, without spending additional funds and time on laboratory and diagnostic processes.

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