

# INVESTIGATING THE INFLUENCE OF MEDICAL PRACTICES ON HUMAN CAPITAL AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

Mira Kantemirova<sup>1</sup>, Gaina Arsakhanova<sup>2</sup>, Azamat Chiviev<sup>1</sup>

<sup>1</sup>North Ossetian State Medical Academy, RUSSIA

<sup>2</sup>Kadyrov Chechen State University, RUSSIA

[kantemirova.mira@mail.ru](mailto:kantemirova.mira@mail.ru)

## Abstract

*This study explores the intricate relationship between medical practices and human capital development, highlighting how healthcare systems significantly impact economic growth and sustainability. By examining various medical practices across different regions and historical contexts, the research aims to understand their effects on individual health, productivity, and overall economic performance. The analysis begins with a review of existing literature on the interplay between health outcomes and economic development, emphasizing the role of a healthy population as a cornerstone of human capital. Key indicators of human capital—such as education, workforce participation, and productivity—are assessed to establish how medical practices influence these dimensions. Additionally, the study employs case studies to illustrate successful healthcare models that have effectively enhanced human capital. It examines how investments in preventive care, access to quality medical services, and health education contribute to a healthier workforce, thereby promoting sustainable economic development. Through quantitative and qualitative methodologies, the research identifies barriers to effective medical practice implementation and suggests strategies for integrating healthcare improvements into broader economic policies. Ultimately, the findings aim to provide policymakers, healthcare professionals, and stakeholders with insights on optimizing medical practices to foster human capital development and achieve long-term sustainable economic growth.*

**Keywords:** medical practices, human capital, sustainable development, health influence, economic productivity, access to healthcare, population health, health investments

## I. Introduction

The intersection of medical practices and human capital is increasingly recognized as a critical factor in achieving sustainable economic development. As nations strive for economic growth and improved living standards, the health of their populations emerges as a foundational element that drives productivity, innovation, and social well-being. Medical practices encompass a wide range of healthcare services, interventions, and policies designed to promote health, prevent diseases, and manage existing health conditions. These practices not only influence the physical well-being of individuals but also significantly impact their cognitive abilities, educational attainment, and overall economic contributions.

Human capital, defined as the collective skills, knowledge, and experience possessed by individuals, is essential for fostering economic development. Healthier populations tend to exhibit higher levels of productivity, as good health enhances the ability to learn, work, and engage in economic activities. Conversely, poor health outcomes can hinder individuals' capacity to participate in the labor force and can lead to increased healthcare costs, reduced income, and lower economic output.

Moreover, sustainable economic development requires a holistic approach that integrates health into economic planning. Policies that prioritize medical practices not only enhance individual well-being but also contribute to broader economic goals such as poverty reduction, gender equality, and social equity. As such, understanding the influence of medical practices on human capital is vital for policymakers, healthcare professionals, and economists alike.

This investigation aims to explore the various dimensions through which medical practices affect human capital and, consequently, their contribution to sustainable economic development. By examining existing literature and empirical evidence, this study seeks to highlight the importance of investing in healthcare systems, improving access to medical services, and promoting health literacy. Ultimately, this exploration underscores the integral role of health in shaping a resilient and sustainable economy, emphasizing that the well-being of individuals is inextricably linked to the prosperity of societies. The complex of modern vectors of socio-economic development of Russia includes the increase of human capital, which can be achieved through the improvement and development of the healthcare system. Among the problems arising in the modern regional sphere of medical care, there is insufficient resource provision of medical and preventive institutions, an increase in the number of paid services, a shortage of primary care specialists and their low salaries, which leads to reduced motivation of personnel for high-quality work. Taking into account the above problems, in January 2019, the national project (NP) "Healthcare" was launched, which includes 9 federal projects (FP) and was developed by the Ministry of Health of the Russian Federation in order to implement the Decree of the President of the Russian Federation dated May 7, 2018 No. 204. The activities of the national project under consideration are aimed, first of all, at increasing the population and ensuring maximum accessibility of medical and preventive institutions for citizens. In this regard, the study of indicators of medical care in the Republic of North Ossetia-Alania (ROA) in the context of the implementation of the NP "Healthcare" is very relevant.

## II. Methods

Open data from the EMISS register of the Federal State Statistics Service, as well as the portal of the budget system of the Russian Federation "Electronic Budget" were taken into account for indicators reflecting the effects of the implementation of federal projects of the NP "Healthcare" in the Republic of North Ossetia-Alania and the Russian Federation for the period from 2020-2023. Relative deviations were calculated for the studied indicators using MS Excel 2016 and SPSS "Statistics" software.

## III. Results

A very large federal project is the "Development of the Primary Health Care System" (FP N1), which includes ensuring optimal accessibility of primary care for all segments of the population, including citizens living in remote areas, as well as increasing the coverage of the number of patients who have undergone preventive examinations. Table 1 presents an analysis of the dynamics of changes in the indicators characterizing the development of FP N1. As can be seen from the table, in the Republic of North Ossetia-Alania, starting from 2021 to 2023, the share of citizens undergoing annual medical examinations and professional examinations has been steadily increasing by 11% and 54%, respectively. A similar trend can be seen in the Russian Federation as a whole. In addition, the share of outpatient institutions that took part in the implementation of the "New Model of Organizing Medical Care" has significantly increased in the republic by 26% (2022) and 27% (2023).

**Table 1:** Dynamics of changes in indicators for the primary health care development system

Name	2021 %	2022		2023	
		%	Relative deviation to 2021, %	%	Relative deviation to 2022, %
<i>(N1) The proportion of citizens who undergo annual preventive medical examination and/or medical check-ups in the total population</i>					
RF	26.3	34.7	132	46.3	133
RSO-A	25.8	28.6	111	44	154
<i>(N1) The share of polyclinics and polyclinic departments participating in the creation and replication of the "New Model for Organizing the Provision of Medical Care"</i>					
RF	61.7	70.8	115	75.1	106
RSO-A	45.9	57.9	126	73.7	127

Analyzing the implementation of Federal Program No. 1, it can be said that in the Republic of North Ossetia-Alania there is a tendency towards the development of primary health care, which is confirmed by a number of transformations according to the data of the Ministry of Health of the Republic of North Ossetia-Alania, including the construction of a medical outpatient clinic in the village of Predgornoye (Mozdok district), the renovation of medical outpatient clinics in the villages of Vinogradnoye, Priterechny (Mozdok district), and Nogir (Prigorodny district); a feldsher-midwife station in the village of Krasnykh Khod ( Alagirsky district); polyclinics in the village of Oktyabrskoye (Prigorodny district), and the village of Chikola ( Irafsky district).

Another important milestone of the NP "Healthcare" was FP N2 "Combating cardiovascular diseases", which implies equipping cardiology and vascular departments of medical institutions, as well as the formation of conditions for the prevention of cardiovascular diseases in the population. As can be seen from the data in Table 2, starting from 2020, mortality from diseases of the circulatory system in the RNO-A has had positive dynamics. Thus, in 2021, compared to the previous year, mortality decreased by 2%, and in the following years by 7% (2022) and 16% (2023). A similar trend can be seen in the Russian Federation as a whole, with the exception of 2021, when mortality remained virtually unchanged.

Speaking about FP N3 "Combating Cancer", it is important to note that the project is aimed at re-equipping regional oncology centers, organizing outpatient care centers for cancer patients, developing reference centers for effective diagnostics of malignant neoplasms. RUB 983.4 billion was allocated for the implementation of this project, which is half of the financial support for NP "Healthcare". According to statistics, starting from 2020, the share of malignant neoplasms detected at stages I - II has slightly decreased in 2021 (1%), and increased by 3% and 8% in 2022 and 2023, respectively, compared to 2020. Similar positive dynamics are observed throughout the country, which indicates the effective implementation of FP N3.

#### IV. Discussion

The development of medical care for the population under 18 years of age is also reflected in the directions of the NP "Healthcare". Thus, within the framework of the implementation of FP N4 "Development of children's health care, including the creation of a modern infrastructure for the provision of medical care to children", it is expected to reduce infant mortality to 4.5 cases per 1 thousand newborns; reconstruction and improvement of children's hospitals, clinics, departments; training of health workers in simulation centers of Russia. Analyzing the mortality of children in

the Republic of North Ossetia-Alania from 0 to 17 years old, we can say that in 2021, compared to the previous year, this figure increased by 21%, a similar negative trend is observed in subsequent years. Thus, in 2022, mortality increased by 18%, and in 2023 - by 1% compared to 2020. However, comparing the data for 2022, it can be said that child mortality has decreased by 2% compared to 2021, and by 15% in 2023 compared to the previous year. In addition, according to statistics, 100% of children's healthcare institutions are equipped with modern infrastructure for providing medical care to children.

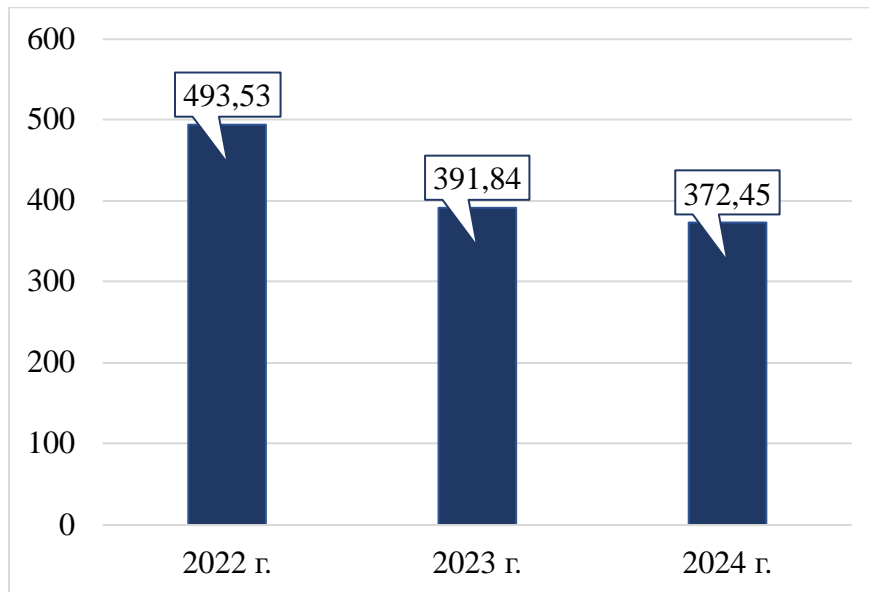
**Table 2:** Dynamics of temporary changes in some indicators reflecting the development of federal projects of the NP "Healthcare"

Name	2020, person	2021		2022		2023	
		person	Relative deviation to 2020, %	person	Relative deviation to 2020, %	person	Relative deviation to 2020, %
<i>(N2) Mortality from diseases of the circulatory system (per 100 thousand population)</i>							
RF	640.8	640.3	100	566.8	88	556.7	87
RSO-A	596.6	586.2	98	553.7	93	499.4	84
<i>(N3) Proportion of malignant neoplasms detected at stages I - II</i>							
RF	56.3	57.9	103	59.3	102	60.5	102
RSO-A	54.6	54	99	55.5	103	59.1	108
<i>(N4) Mortality rate of children 0-17 years (per 10,000 population of the corresponding age)</i>							
RF	44.6	47.1	106	43.4	97	40.7	91
RSO-A	36.1	43.6	121	42.7	118	36.5	101
Name	2020, %	2021		2022		2023	
		%		%	Relative deviation to 2022, %	%	Relative deviation to 2022, %
<i>(N4) Number (proportion) of children's clinics and children's clinic departments with a modern infrastructure for providing medical care to children</i>							
RF	-	89.2		98.1	110	98.3	100
RSO-A	-	100		100	100	100	100
<i>(N5) Staffing of medical organizations providing outpatient medical care with doctors</i>							
RF	81.1	81.1	100	82.2	101	89.3	109
RSO-A	90.6	89.7	99	96.9	108	100	103
<i>(N5) Staffing of feldsher stations, feldsher-midwife stations, and medical outpatient clinics with medical workers</i>							
RF	84.6	85.2	101	85.6	101	91.4	107
RSO-A	90.9	95.5	105	96	101	100	104

Note: "-" - the corresponding indicator is not present in the statistical report

The issue of staffing in the problems of organizing medical care has been particularly acute in recent years. In this regard, FP N5 "Provision of medical organizations of the healthcare system with qualified personnel" includes training specialists using distance learning technologies, increasing the number of accredited specialists, and developing interactive educational modules. Assessing the degree of staffing of outpatient organizations and departments with qualified doctors, it can be said that the share of such specialists in the Republic of North Ossetia-Alania in 2021 slightly decreased (1%), and in 2022 and 2023 compared to 2020 increased by 8% and 3%, respectively. Positive dynamics are observed in the change in the staffing of medical workers in

feldsher-obstetric stations and medical outpatient clinics. Compared to 2020, the share of such specialists increases significantly up to 2023, which indicates the successful implementation of FP N5.



**Figure 1:** Financial support for the Federal Program "Modernization of Primary Healthcare in the Russian Federation" (N9) in the Republic of North Ossetia-Alania, million rubles

In 2022, a new federal project "Modernization of the Primary Healthcare of the Russian Federation" (FP N9 ) was included in the NP "Healthcare", the implementation of which is expected to increase the availability of medical care for all groups of citizens through the creation of the optimally necessary infrastructure. As can be seen from the histogram (Fig. 1), the volume of financial support for FP N9 from 2022 to 2024 has a negative trend. Thus, in 2023, the volume of funding decreased by almost 21% compared to 2022, and as of October 2024 - by 5% compared to the previous year.

Within the framework of the implementation of federal projects of the NP "Healthcare", such as FP N1, N2, N3, positive dynamics in improving the availability of medical care and reducing mortality from certain diseases are observed. In particular, the share of citizens undergoing medical examinations and preventive examinations annually in the republic is steadily increasing, which indicates a very successful implementation of the corresponding FP. An important aspect is also the fight against cardiovascular and oncological diseases, which has led to a significant decrease in mortality from diseases of the circulatory system, as well as to a decrease in cases of confirmation of malignant neoplasms. However, a number of indicators related to child mortality require closer attention, despite the positive changes in equipping children's institutions with modern infrastructure. Thus, the set of measures implemented within the framework of the NP "Healthcare" has a positive impact on improving the quality and availability of medical care in the Republic of North Ossetia-Alania. To ensure long-term results from the implementation of projects, further integration of digital technologies and modern approaches to healthcare management is necessary, which will ensure the availability of medical services for the population, especially in remote regions. In addition, it is important to develop new training programs and improve the qualifications of medical personnel, with an emphasis on training primary care specialists.

The relationship between medical practices, human capital, and sustainable economic development is multifaceted and critical for understanding how health influences economic

outcomes. This discussion delves into several key areas, including the mechanisms by which medical practices enhance human capital, the socio-economic implications of health interventions, and the policy considerations necessary to promote sustainable development.

### **1. Mechanisms of Influence**

Medical practices influence human capital primarily through improving health outcomes and increasing productivity. Effective healthcare services reduce the incidence and severity of diseases, leading to a healthier workforce. This has several direct implications:

- **Increased Productivity:** Healthier individuals are often more productive at work. They tend to have lower absenteeism rates and higher performance levels, which contributes positively to economic output. Research has shown that every dollar invested in health can yield significant returns in productivity.
- **Cognitive Development:** Access to quality healthcare, especially during critical developmental periods (such as childhood), significantly affects cognitive abilities. Healthy children are more likely to perform better in school, leading to higher educational attainment and the development of a skilled workforce.
- **Life Expectancy and Workforce Participation:** Improved medical practices can extend life expectancy, encouraging older individuals to remain in the workforce longer. This can help alleviate labor shortages and ensure the sustainability of social security systems.

### **2. Socio-Economic Implications**

The impact of medical practices on human capital extends beyond individual health outcomes; it also influences broader socio-economic factors:

- **Equity and Access:** Disparities in access to medical practices can exacerbate social inequalities. Populations with limited access to healthcare services often experience worse health outcomes, which can hinder their economic contributions. Ensuring equitable access to healthcare is essential for maximizing human capital across all segments of society.
- **Public Health Investments:** Countries that invest in preventive healthcare (e.g., vaccinations, health education) tend to experience lower healthcare costs in the long run. By reducing the prevalence of diseases, these investments not only improve population health but also relieve pressure on healthcare systems and public finances.
- **Interconnectedness with Other Sectors:** Health intersects with various sectors, including education, employment, and social services. For example, a healthy workforce supports economic growth, which in turn can enhance funding for education and infrastructure, creating a virtuous cycle of development.

### **3. Policy Considerations**

To leverage the influence of medical practices on human capital for sustainable economic development, several policy considerations should be prioritized:

- **Strengthening Healthcare Systems:** Governments must invest in healthcare infrastructure, ensuring that all individuals have access to quality medical services. This includes funding for hospitals, clinics, and preventive care programs.
- **Promoting Health Education:** Increasing health literacy is crucial for empowering individuals to make informed health choices. Educational initiatives can foster better health practices, leading to improved individual and community health outcomes.
- **Integrating Health into Economic Planning:** Policymakers should recognize health as a critical determinant of economic growth. Strategies that promote health in economic development plans can enhance overall productivity and ensure a sustainable future.
- **Evaluating Outcomes:** Ongoing research and evaluation of health interventions are essential to understand their impact on human capital and economic development. Policymakers should utilize data-driven approaches to assess the effectiveness of healthcare investments and adjust strategies accordingly.

The influence of medical practices on human capital and their contribution to sustainable economic development is profound and far-reaching. By improving health outcomes, enhancing productivity, and addressing socio-economic inequalities, effective medical practices lay the foundation for a resilient and thriving economy. As nations navigate the challenges of economic growth in an increasingly interconnected world, prioritizing health as a cornerstone of development will be crucial for fostering sustainable progress. Policymakers must recognize this relationship and implement strategies that align healthcare initiatives with broader economic goals, ensuring that health and prosperity go hand in hand.

## References

- [1] Kravtsova, M. V. The role of national projects in solving the socio-economic problems of the state (on the example of the national project "Healthcare")/Economics and Management: scientific and practical journal. - 2023. - No. 2 (170). - P. 8-13
- [2] Polukhina, M. G. Prospects for the Development of Rural Health Care in the Context of the Implementation of the National Project "Health Care" /Economics of Agriculture in Russia. - 2020. - No. 10. - P. 93-99
- [3] Babaeva Z.Sh., Pogorelova L.A. Differentiation of the standard of living of the population as a reflection of socio-economic development//Journal of Monetary Economics and Management.- 2023.-№2. - P.50-58
- [4] Aliyeva M. L., Misirli R. R. Advantages and problems of big data management// Journal of Monetary Economics and Management. - 2023. - No. 1.- P.8-14
- [5] Gakaev, R. Creating forest carbon landfills: forest carbon / R. Gakaev, MS Bahaev, I. Gumaev // Reliability: Theory & Applications. – 2023. – Vol. 18, No. S5(75). – P. 222-230. – DOI 10.24412/1932-2321-2023-575-222-230. – EDN LIMMLH.
- [6] Fagan B. The Little Ice Age: How Climate Changed History. 1300-1850. Bombara Publishing House, 2021.
- [7] Monin A.S., Shishkov Yu.A. History of climate. L.: Gidrometeoizdat, 1979. 408 p.
- [8] Salamova A., Kantemirova M., Makazieva Z. Integrated approaches to poverty problems/ E3S Web of Conferences. 2nd International Conference on Environmental Sustainability Management and Green Technologies (ESMGT 2023). EDP Sciences, 2023. C. 05016.
- [9] Khotinsky N.A., Savina S.S. Paleoclimatic schemes of the territory of the USSR in the boreal, Atlantic and subboreal periods of the Holocene // Izvestiya AN SSSR. Ser. Geography. 1985. No. 4
- [10] Salamova A.S., Kantemirova M.A., Gishlakaev S. Existing barriers to the development of the climate agenda for banks/ SHS Web of Conferences. International Scientific and Practical Conference on Social Sciences and Humanities: Scientific Challenges of the Development of Modern Society (SHCMS 2023). Grozny, 2023.