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NEEDS ASSESSMENT FOR NATIONAL PAEDIATRIC HOSPITAL IN SOFIA

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Final

Advisory support for the National Paediatric Hospital (NPH) - Bulgaria, to support the development of the first National Paediatric Hospital (NPH) to be located in Sofia (the "Municipality") that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

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Assignment Title: Advisory support for the National Paediatric Hospital (NPH) - Bulgaria, to support the development of the first National Paediatric Hospital (NPH) to be located in Sofia (the “Municipality”) that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

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Abbreviations

ACMCH	Advisory Centre for Maternal and Child Health
CCSCDCD	Centre for Comprehensive Services for Children with Disabilities and Chronic Diseases
CP	Clinical Pathway
EIB	European Investment Bank
EU	European Union
FSC	Financial Supervision Commission
HICPH	Health Investment Company for Paediatric Hospital Joint Stock Company
GP	General Practitioner
JSC	Joint Stock Company
LMI	Law on Medical Institutions
MoH	Ministry of Health
MHAT	Multispecialty Hospital for Active Treatment
NCPHA	National Centre for Public Health and Analysis
NFC	National Framework Contract
NHIF	National Health Insurance Fund
NPH/NCH	National Paediatric Hospital/National Children Hospital
NSI	National Statistics Institute
RHI	Regional Health Inspectorate
VHIC	Voluntary Health Insurance Company
WHO	World Health Organization



Picture 1. The First Paediatric Ward in Bulgaria, currently Alexandrovska Hospital. Photographer: George Wolz, circa 1910. The first children's sector was opened in 1901 in Aleksandrovska and was the first children's structure. The children's department was headed by Doctor Stefan Vatev.

Needs Assessment for National Paediatric Hospital in Sofia

FINAL

1. EXECUTIVE SUMMARY

Project Background

The assignment supports the development of the first **National Paediatric Hospital** (NPH) to be located in Sofia, that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

To meet the needs and expectations of citizens for the construction of a National Paediatric Hospital which would provide modern and comprehensive hospital care, the Bulgarian state established in 2020 the Health Investment Company for a Paediatric Hospital, a commercial company with 100% state ownership. Its principal is the Minister of Health. The main goal of the company is to create and control the entire process of designing, construction and commissioning of a Site of National Importance for a "National Multidisciplinary Paediatric Hospital".

The history of the construction of a national Paediatric Hospital in Bulgaria is long and convoluted. It began in 1978, with the start of construction works on a multidisciplinary paediatric hospital, which was to meet the needs of children from all over the country – “the Institute of Paediatrics”. It went through different developments and transformations through the years to be brought back to life in recent years since 2019. In the summer of 2020, by a decision² of the Council of Ministers, a Health Investment Company for Paediatric Hospital JSC was established. In 2022 a plot has been assigned in a suburb of Sofia (Gorna Banya) in 2022 selected among several locations and along with that a detailed layout plan for the NPH has been approved, as basis for the following design and construction of the hospital. The hospital was declared a site of national importance to overcome potential administrative barriers.

Currently, the Health Investment Company for Paediatric Hospital JSC together with the MoH has the lead and their activities are supported by a Public Council to monitor the implementation of the project. The NPH is referenced in several national strategic documents (National Healthcare Strategy 2030, National Strategy for Child and Adolescent Health and Pediatric Care, National Health Map of Republic of Bulgaria and Annexes, National Programme for Improvement of Maternal and Child Health 2021 – 2030, National Map of Longterm Care Health Services) as a priority project along with a basic concept and structure developed, that includes the clinics and wards already existing as well as other structures that are not existing.

¹ <https://nmdb.online/>

² Decision of the CoM #3, 21.07.2020

This analytical report is intended to present a full-scale and in-depth analysis of the state of paediatric health care at both the regional and the national level – including the needs of human resources and equipment, of the interrelationships between the individual structures, levels and elements of the healthcare system – and, on this basis, to formulate conclusions and recommendations to inform the provision of efficient, high-quality and affordable healthcare services.

The analysis steps on objective data on the needs for paediatric health services, which will serve as a basis for precisely defining the structure, scope and functionality of the NPH. The guiding principle in the preparation of the analysis is to follow best international and European practices and standards in the development of such analytical and strategic documents.

Proposed Concepts

After the analysis and study of demand and supply at the national and regional level, it becomes clear that the construction of a multidisciplinary hospital for the treatment of children's diseases of the 3rd level of competence, providing complex and comprehensive medical care in all paediatric specialties, is needed. It should also be the centre of a coordinated network of interconnected and complementary regional inpatient and outpatient paediatric institutions.

Population demographics, demand and supply of health services have been analysed, showing clear trends and developments. The establishment of a National paediatric hospital is beyond the simple model of new hospital beds, but rather a development strategy in childcare and a way to reorganize paediatric healthcare to be accessible, timely and offer high quality medical services.

Paediatrics is an integral specialty, the essence of which is to monitor the development of the child - both healthy children and children with various diseases. Patients with a certain pathology need to be promptly and accurately diagnosed, receive adequate treatment, and follow-up after discharge. In this context, the need to build a multidisciplinary university hospital (to be a 3rd level of competence) is determined by the need to cover all of children's health problems in one medical facility. At the moment, specialists working with children are scattered over several medical facilities in Sofia and throughout the country. The current organization of children's health care, together with the lack of qualified staff, puts the lives and health of children at risk.

The lack of an integral approach to the diagnosis and treatment of children affects the quality of medical education of students and specialists in the field of paediatrics. This, in turn, naturally leads to a decrease in interest to specialize in paediatrics. Therefore, the creation of a national paediatric hospital - a single hospital complex with all paediatric medical specialties represented, both therapeutic and surgical, including diagnostics - will positively affect the training of students and the specialization of doctors, and this, in the long term, will reverse the trend of staff shortages in the positive direction.

At the same time, the new hospital should be a generator of ideas for policies for the development of children's health care - that is, it should be a scientific and methodical centre in the field of paediatrics. This necessitates building close functional links with all medical universities and faculties in Bulgaria and abroad.

National Health Strategy Bulgaria 2030³, which formulated its main conclusion as follows:

3

https://www.mh.government.bg/media/filer_public/2020/12/29/proekt_na_natsionalna_zdravna_strategiia_2021-_2030.pdf

“Despite the partial implementation of interventions in the field of maternal and child health, Bulgaria is still lacking a comprehensive and integrated national policy to guarantee the necessary structure, resources and organization of the paediatric assistance adapted to the needs of Bulgarian children. One part of the lack of such a policy is the so far unfulfilled dream of a National Paediatric Hospital.”

From that conclusion also follows the formulation of a main priority to be implemented by 2030, namely “modernization of the paediatric care system at the regional and national levels, including the construction of a National Paediatric Hospital.” The National Map of Long-term Healthcare Needs⁴ determines the need for future investments in paediatric hospital care based on existing health institutions for inpatient and outpatient care, as well as identified needs of healthcare services. The mapping of existing hospital care indisputably shows serious regional imbalances in the provision of paediatric care at the three levels of competence and a need for a complete restructuring and rearrangement of hospitalization infrastructure which, together with outpatient care, should guarantee a balanced access to children's health care. The map also outlines the necessary investments in hospital infrastructure.

The conclusions obtained from the overall analysis of the supply and demand of paediatric care, i.e., from the snapshot thus created, clearly show that the main need at the national and regional level is not related to an acute shortage of hospital beds, but to a need for restructuring the entire system of paediatric care in the medium term as well as providing more doctors and healthcare professionals in the long term.

The analysis of data cited in this report, as well as the identified expectations of the main stakeholders, lead to **two possible models for the creation of a National Paediatric Hospital:**

Model 1. Suboptimal. This option focuses only on the National Paediatric Hospital to be opened.

In this option, through an administrative act of the Minister of Health, all existing paediatric structures in multispecialty hospitals in Sofia, are physically merged in a newly to be constructed hospital building to be equipped with highly specialized equipment. The existing paediatric clinics in the other medical facilities in Sofia are accordingly closed.

Additional clinics/departments are established providing treatment that is presently most frequently sought abroad, i.e., oncological diseases and tissue and organ transplants. The total number of beds provided is a arithmetic sum of the number of existing beds in Sofia, both for general paediatric and specialized care, with including an additional 30% of the current number of beds in anticipation of referrals from the rest of Bulgaria and for children currently being treated abroad.

The hospital is of the 3rd level of competence, a university center for training medical students and specialists.

⁴ <https://www.mh.government.bg/bg/novini/ministerski-savet/pravitelstvoto-prie-nacionalnata-karta-na-dlgosroc/>

Model 2. Comprehensive (Optimal) Model. This model envisages establishing a National Paediatric Hospital and, simultaneously, restructuring the paediatric care in Sofia, Western Bulgaria and at the national level. To implement this model, at least the following actions are recommended:

Merger of the main specialized paediatric structures in the multidisciplinary hospitals for [active treatment](#) in the territory of Sofia with the aim of creating a National Paediatric Hospital providing integrated inpatient and outpatient services for diagnostics, treatment and follow-up monitoring of children with diseases encompassing all medical specialties. The hospital should guarantee the comprehensiveness of diagnosis and treatment by implementing highly specialized medical activities, providing high-tech equipment, and ensuring the availability of sufficient numbers of competent medical staff. The hospital should be a resource centre both for treatment and medical expertise for patients, but also for advisory assistance to the other medical institutions within the national paediatric network and for the training of medical specialists: doctors, nurses and rehabilitation professionals.

New hospital clinics and wards would also be opened in order to provide treatment for all childhood diseases, and therefore an increase in the number of beds is foreseen to allow admission of patients from all over the country, including a part of the cases currently treated abroad – e.g., oncological diseases and tissue and organ transplants. The total number of beds is the sum of the existing beds in the specialized institutions which will be merged into the future hospital, increased by up to 30% due to the newly established units and ensuring extra capacity to admit children referred from the province for receiving highly specialized treatment.

Preservation of the existing general paediatric hospital structures of the 2nd competence level in the main multispecialty hospitals in Sofia, which will guarantee access to hospital care in the largest Sofia districts. Restructuring of the network of existing general paediatric hospital structures of the 2nd competence level in main multispecialty hospitals in the province centres both in the serviced region and of the other regions.

Catchment Area Defined

It is set in the assignment that the first **National Paediatric Hospital** (NPH) shall be located in Sofia, that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

The definition of the catchment area of the new NPH is a complicated exercise considering the nationally accepted levels of competence but also those areas of influence where the hospital may function as a lead partner in the paediatric healthcare ecosystem. Thus, several potential roles of the hospital are considered which differentiate three functional areas:

- The hospital acting as a first level of entry for the territory of Sofia City (capital).
- The NPH contributing to overcoming regional disparities in paediatric healthcare service provision where the 2nd level of competence is offered for Sofia and the region of Sofia, but also the surrounding area of Southwest Bulgaria (Sofia District, as well the districts of Blagoevgrad, Kyustendil and Pernik) and some of the districts in the Northwest of the country – Vratsa and Montana. The geographical location, transport connectivity and demand analysis verify the potential of influence of the new medical institution.
- The NPH serving high-needs patients at a nation-wide scope and corresponding to the 3rd level of competence but also providing for a model where inpatient care of high quality goes along with development and sustaining innovative approaches and good practices of hospital care to influence the overall performance of the national health care system.

Findings

- Bulgaria's healthcare system is compulsory insurance-based health system, with both public and private healthcare providers. All workers have a Social Health Insurance, paid for by them and their employers to the National Health Insurance Fund (NHIF), and may contract additional or redundant services with a Voluntary Health Insurance Company (VHICs). Being a member of the UN, the EU and the WHO, Bulgaria has adopted and committed to achieve the objectives of a series of international documents and strategies dedicated specifically or integrating policies for improvement of children's well-being and protection of children's rights.
- The analysis of the regulatory framework shows that all the main aspects of children's health care are already enshrined in the relevant legal documents: laws and by-law regulations and ordinances, so that the children's right to health care is guaranteed from their birth. However, the different periods in which these legal documents were created and came into force, the lack of recent updating, as well as the lack of interconnectedness and subordination between them leads to their insufficiently effective application and inadequate impact on the state of children's health care in practice. The recently adopted National Strategy for Child and Adolescent Health and Paediatric Care 2030⁵ should play the role of coordinator of all efforts, activities and initiatives related to child health. With this regard, at the very beginning of the implementation of the Plan for the Strategy, an analysis and update of the existing legal acts should be carried out to develop a model of child health care that is integrated in all its components.
- The number of children follows the global negative trends of decreasing numbers of children in recent years but approaches the pan-European levels for the share of children and young people in the total population of the member states. The total birth rate is close to the EU average. The infant mortality rate in Bulgaria has decreased over the last 5 years, from 5.8 ‰ in 2018 to 4.8 ‰ in 2022. Despite this positive trend, however, infant mortality rate continues to be the highest in Europe.
- The child population is mainly concentrated in urban centres, with significant regional differences in the number of children between them. According to NSI data for 2022, the largest number of children are concentrated in five districts: Sofia city, Plovdiv, Varna, Burgas, and Stara Zagora, where 47.5% of all children in the country live. Almost 20% (1/5) live and grow up in Sofia.
- Basic indicators of child health have deteriorated compared to the average European indicators: significantly higher infant mortality rates; high frequency of prematurely born babies; higher incidence of children with disabilities; higher frequency of children diagnosed with chronic diseases; high rates of overweight and obese children; persistent trend of high frequency of diseases in children caused by unhealthy lifestyle and/or risky behaviour, a large percentage of children and young people using alcohol and cigarettes, spending a lot of time on the Internet and social media.
- Bulgarian health system provides medical care for children in medical facilities for primary and specialized outpatient care and medical facilities for inpatient medical care throughout the country. The lack of sufficient investments in prevention, in combination with the following problems also indicated in the National Health Strategy 2030: territorial disproportion in

⁵ <https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1639>, Adopted with CoM Decision No 674 from 29 September 2023

the distribution of health care for outpatient and hospital care; lack of specialized medical assistance for children and students; difficult access to quality health services in remote and hard-to-reach settlements which further exacerbates the challenges facing children's health, and existence of population groups not covered by prevention and health care. There is an urgent need to focus on preventive activities for both children and adults.

- The main problem that is identified herein is the lack of sufficient medical specialists on the one hand and, on the other, a lack of habits to observe the rhythm of prevention after the first three years of the child. The workload of doctors deprives them of the opportunity for proactive action to carry out mandatory prophylaxis. The parents' lack of established habits for personal health prevention is transferred to the children, thus shifting responsibility to the medical professionals, and expecting them to be the leading party in this process. The lack of sufficient medical specialists is also a major challenge for school health care: based on available data, it can be argued that in smaller municipalities, and in individual settlements, there is a complete lack of medical care in schools and kindergartens, regardless of the statutory obligation for its existence.
- Another big problem is the distrust among large groups of the population towards all forms of prevention and especially immunizations: a problem that is increasing after the COVID-19 pandemic. All this leads to a reduction in the share of children who have undergone a preventive examination: just 83.6% of the total number of children for 2021/22, which in turn causes late detection and treatment of several diseases that could be prevented at an earlier stage of their detection.
- Paediatric inpatient care is carried out in hospitals for active treatment with functioning paediatric units, as well as in facilities of other medical specialties in which treatment of children up to 18 years of age is carried out according to the profile of the disease. There are 3,935 paediatric beds available in the country. *Only 215 of these are paediatric specialty beds which are located mainly in hospitals in Sofia, Plovdiv, Varna and Pleven.* According to the regulatory framework, treatment of paediatric diseases outside the scope of the general profile specialty can also be carried out in paediatric facilities of the 3rd level of competence, which means that also in the other paediatric facilities (at the regional level in the country) hospitalization is possible under certain specialties.
- The analysis of the performance indicators for existing elements of the health system focused on child healthcare demonstrates serious deficiencies in key segments at every level of the system. These deficiencies exacerbate the failure to respond to the health needs of children and families and create even greater inequalities in access to child healthcare not only at the national and regional level, but even within a single municipality.
- The lack of paediatricians and specialist doctors with a paediatric focus is the main reason for the appearance of two types of 'internal „migration“ of patients: at first, from the hospitals in the smaller settlements to the provincial centres, and then, at the next stage of treatment, from the provincial hospital to Sofia and also even before receiving a clear diagnosis and starting treatment, seeking referral directly to Sofia in search of specialists and certainty in the diagnosis and treatment of their children. In Sofia, patients and their parents are faced with another problem: the dispersal of different paediatric medical structures among separate hospitals, as well as the lack of a single structure to refer to the necessary diagnosis or treatment.
- Thus, a paradoxical situation transpires in which, despite the large number of paediatric medical facilities in Sofia, the availability of medical specialists and highly specialized

equipment therein, patients are referred from one hospital to another and yet another hospital due to the medical specialists and the specialized equipment being dispersed between different, distant facilities. This creates serious difficulties for children's access to medical care and, thus, children's right to timely access to specialized multifaceted medical care, even in Sofia, is insufficiently guaranteed.

- Another existing problem occurs when it is necessary to treat diseases of a multispecialty nature, with the need for simultaneous follow-up and treatment by several doctors with different medical specialties. The current structure of paediatric hospital care at the national level and in Sofia does not provide sufficient conditions for this, putting at risk the effective treatment of children with such diseases.
- The city of Sofia being the capital and the largest city in Bulgaria has the profile of "health service centre" with many hospitals and hospital beds. The service though is provided by many hospitals – multidisciplinary with different clinics and wards. The largest number of competence level 3 facilities are also situated in Sofia.
- With the high number of hospitalizations for conditions that could be treated effectively in an outpatient setting, Bulgaria's healthcare system is hospital oriented. Medicines are another dominant component of health care spending: although in absolute terms per capita spending is over 25% lower than the corresponding spending in the EU, medicines account for the largest share of spending among EU countries at 36.1%, which is twice more than the EU average.
- There is a serious imbalance between the different cities and towns in the provision of medical care, and some of them – especially those in remote and under-served regions lack any healthcare facilities. This leads to a significant regional difference on one hand, and between the regions and Sofia city, on the other hand, as well as to health inequalities in access to health services among children in these regions. The data also shows a persisting trend of a disbalance in health investments, namely between the more substantial funds being invested in hospital care and far less being invested in prevention. This leads to the deterioration of basic health indicators for children. This imbalance is particularly evident against the background of data from the other EU countries.

Recommendations

- One of the main risks facing the National Paediatric Hospital project is the apparent lack of common communication between all participants and stakeholders in the process. The analysis carried out show that all participants in the study are convinced of the need to create the Hospital, each of the parties has its own point of view on the main parameters of the hospital and what it wants to achieve with it. However, there is a lack of communication between the parties to coordinate their expectations, opportunities and efforts, which can be avoided by creating a single unit that coordinates, analysis and unites the activity of all participants in the process and does not allow the expenditure of energy in independent, sometimes overlapping, and sometimes contradictory activities. This unit could be a dedicated structure within the Health Investment Company, tasked with coordination and communication activities between all stakeholders unrelated to the investment process.
- Along with the construction of the National Paediatrics Hospital, it is necessary to find the right balance between the possibilities of good access and providing services in the community, close to the patients and ensuring the appropriate level of hospital treatment. In this regard, it is a key area of importance to support the paediatric structures to provide the necessary volume and quality of care. . This will avoid the emergence of the phenomenon

of “the one and only hospital”, to which the high expectations of patients from all over the country are directed. Only in this way will the professionalization of doctors from paediatric structures in other cities be overcome. In other words, the decision on the scope, structure and functionalities of the Paediatric Hospital should be part of a decision to restructure the paediatric health care system both in Sofia and at the national level.

- It is necessary to develop a comprehensive strategy for staffing the paediatric healthcare system with short-term and medium-term tasks for planning the necessary number of doctors, nurses and other personnel related to the operation of the system. To achieve the most effective model of paediatric health care, it is necessary to build sustainable collaboration with other sectors – such as social, educational, etc. – which is an important condition for achieving this goal.
- The review of the regulatory framework related to medical activities, to the scope, structure, and functionality of hospital treatment facilities, as well as to the norms for design of medical facilities leads to the conclusion that changing and updating these documents is also needed in order to enable the creation, design and construction of a medical facility that meets modern standards for hospital care, especially one aimed at children.

CHAPTER 1. INTRODUCTION

The assignment supports the development of the first **National Paediatric Hospital** (NPH) to be located in Sofia, that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

The reforms carried out in the healthcare system in Bulgaria after 1999, the activities comprising children's healthcare, especially its outpatient part, were largely disintegrated and merged into the general structure of the healthcare system. The status of general practitioners was established and primary, special outpatient, and inpatient hospital care were separated from one another. District paediatricians, centralized children's consultations, patronage care, school healthcare and the connections thereof to paediatric hospital departments were abolished thereafter. This, on the one hand, had the positive effects of increased freedom of choice for patients but, on the other hand, at the same time the formerly existing links between the individual levels of paediatric care were broken without creating alternative mechanisms to safeguard the continuity and comprehensiveness of children's healthcare.

Currently, the healthcare system provides medical care for children in medical facilities throughout the country which are selected by the families, and which provide primary and specialized outpatient care as well as inpatient medical care.

Specialized medical care for children with disabilities and chronic diseases is also being provided in several newly opened medical facilities, Centres for Comprehensive Services for Children with Disabilities and Chronic Diseases (CCSCDCD), created as part of the process of deinstitutionalization of children with disabilities.

Health promotion and medical care in the event of emergencies are also being provided by the health offices in kindergartens and schools. Emergency medical care for children is provided through the Emergency Medical Care Centres and Emergency Departments of the hospitals to which they are referred.

Against this background, the lack of a single hospital complex providing modern, comprehensive and adequate treatment for children at the national level is self-evident. In order to meet the needs and expectations of citizens for the construction of a National Paediatric Hospital which would provide modern and comprehensive hospital care, the Bulgarian state established in 2020 the Health Investment Company for Paediatric Hospital, a commercial company with 100% state ownership. Its principal is the Minister of Health.

1.1. Objectives of the Assignment

The present assignment is a result of the arrangements between the European Investment Bank and the Health Investment Company for Paediatric Hospital JSC.

The overall goal is to execute a full-scale and in-depth analysis of the state of paediatric health care at both regional and national level – including the needs of human resources and equipment, of the interrelationships between the individual structures, levels and elements of the healthcare system – and, on this basis, to formulate conclusions and recommendations to inform the provision of efficient, high-quality and affordable healthcare services.

The analysis should present objective data on the needs for paediatric health services, which will serve as a basis for precisely defining the structure, scope and functionality of the National Paediatric Hospital. Based on the comprehensive data compiled and used therein, the analysis will

inform and enable strategic decision-making for the development of children's healthcare in the context of the country's demographic development policies, so that the highest attainable standard of healthcare would be guaranteed to every child through access to prevention and health services.

The guiding principle in the preparation of the analysis is to follow the best international and European practices and standards in the development of such analytical and strategic documents, including but not limited to:

- The National Sectoral Strategy Papers for the Health Sector - National Health Strategy - 2021 - 2030, Annual Report on the State of the Nation's Health, National Map of Long-Term Health Care Needs, etc.
- WHO Hospital care for children: quality assessment and improvement tool
- The European strategic documents in the field of healthcare and in particular children's healthcare, etc.

The analysis should determine the main factors and parameters to allow planning of the scope of the activity, structure, and capacity of the National Paediatric Hospital.

The Analysis is performed taking into account the commitments of Bulgaria as a member of the European Union (EU), the United Nations (UN) and the World Health Organization (WHO) in the implementation of documents such as:

- the UN Convention on the Rights of the Child,
- the Goals of the 2030 Agenda for Sustainable Development of the United Nations,
- the Global Strategy for Women's, Children's and Adolescents' Health (2016–2030),
- the EU Council Recommendation of 22 May 2019 on High-Quality Early Childhood Education and Care Systems,
- the 2018 WHO, World Bank and UNICEF Nurturing Care Framework for Early Childhood Development, and
- the 2020 Framework on Early Childhood Development in the WHO European Region.

1.2. Methodology

The analysis is determined to follow an assessment of the health and demographic status according to key indicators, including child mortality, as well as the implementation of national programs related to the improvement of child and adolescent health and paediatric care in Bulgaria (the National Program for the Improvement of Maternal and Children's Health 2014 – 2020, the Children's Health Program, the Maternal Health Program, etc.).

When preparing the analysis, a review of the current legal framework and regulations as well as the adopted general and sectoral strategic documents is carried out. It is based on the existing demographic and medical statistical data compiled from the National Statistical Institute, the National Centre for Public Health and Analysis, the Ministry of Health, and the National Health Insurance Fund. Also, data provided by the Regional Health Inspections, Eurostat, WHO, and other international sources is included.

Taking into account that the construction of a new hospital is a complex project that involves a significant number of stakeholders – the Ministry of Health, hospitals, the paediatric population of Bulgaria, parents, paediatricians, nurses, NGOs, etc. – all relevant stakeholders related to the implementation of the project and the operation of the future Hospital are analysed.

The analysis covers a 5-year retrospective period, as well as set forecasts (based on the prognostic model presented in the document) for development for a period of 10 years.

The findings and conclusions of the analysis aim to inform and support the decision-making process related to the functionality and scope of health services that the future hospital should provide in the long term.

The following **key aspects of the assignment** are identified:

- The outcome of the analytical work to be implemented by the Consultant is a hospital services needs assessment related to the construction of the National Paediatric Hospital (NPH) in Sofia.
- Review and assessment of the current healthcare supply capacities against demand to identify gaps in the healthcare services for Sofia region is in the focus.
- At the same time the analysis reviews the three levels of healthcare for children (primary, secondary and tertiary) at country level aiming to outline the model of the future NPH as a service provider both for the designated area and the high-need patients at national scale.
- The definition of tasks within the scope of the assignment varies from context and state of art analysis to definition of specific targets for the new facility which determines the role of the analysis at long term to serve as a basis for a clear action plan for the establishing the NPH.

The methodology of the analysis is structured to complement a multi aspect research effort of the paediatric care in Bulgaria. A multi methodology approach is applied combining quantitative and qualitative instruments of data collection, analysis and assessment.

CHAPTER 2. ANALYSIS OF THE CONTEXT

2.1. Overview of the National Health System

All Bulgarian citizens have a guaranteed right to healthcare based on the Constitution.

Bulgaria's healthcare system is compulsory insurance-based, with both public and private healthcare providers. All people who are employed have a Social Health Insurance, paid for by them and their employers to the National Health Insurance Fund (NHIF), and may contract additional or redundant services with a Voluntary Health Insurance Company (VHICs). Public and private healthcare providers that have a contract with the NHIF (the National Framework Contract or NFC) to provide the services included in the compulsory insurance are reimbursed by the regional bodies of the NHIF for these procedures.

The Bulgarian legal framework for human medicines sets standards to ensure a high level of public health protection. The legal framework includes laws and secondary legislation in force.

The health system in Bulgaria is regulated through various mechanisms, including legislative, administrative (permissions and licenses issued by the Ministry of Health, the Financial Supervision Commission and other government bodies and agencies) and market dynamics (the contractual relations between purchasers and providers).

The Constitution of Republic of Bulgaria provides for the protection of health of Bulgarian citizens, the right to health insurance, the right to affordable medical assistance and medical care. Article 52, Paragraph 1 of the Constitution regulates the right of Bulgarian citizens to health insurance, affordable medical care and free use of medical care. Article 47, paragraph 2 of the Constitution provides special protection for women - mothers.

The **Health Law**, adopted in 2004, regulates the National Healthcare System with citizens' health as a national priority, establishes and defines the management competences and the national health information system's administration.

The **Law on Medical Institutions (LMI)** adopted in 1999, regulates the structure and the activity of the medical institutions in the Republic of Bulgaria. The legal act sets requirements for the structure, management, and personnel of the medical institutions. It provides for the establishment, registration and authorization procedures for medical institutions, as well as financing of the medical institutions.

The **Health Insurance Law** adopted in 1999 regulates the role of third-party payers in the healthcare system. The law describes the role of the National Health Insurance Fund (NHIF) in guaranteeing insured citizen's access to healthcare. The act also establishes the National Framework Contract as the tool for the NHIF to contract healthcare providers and the involvement of professional associations of physicians in its elaboration. Voluntary Health Insurance Providers are subject to this law as well, and it defines their guaranteed capital, overseeing organisms and asset investment.

Ordinance No 49 of 18.10.2010 on the essential requirements which need to be fulfilled by medical institutions for hospital care and centres for medical and social care in terms of structure, operation and internal order sets up provision for:

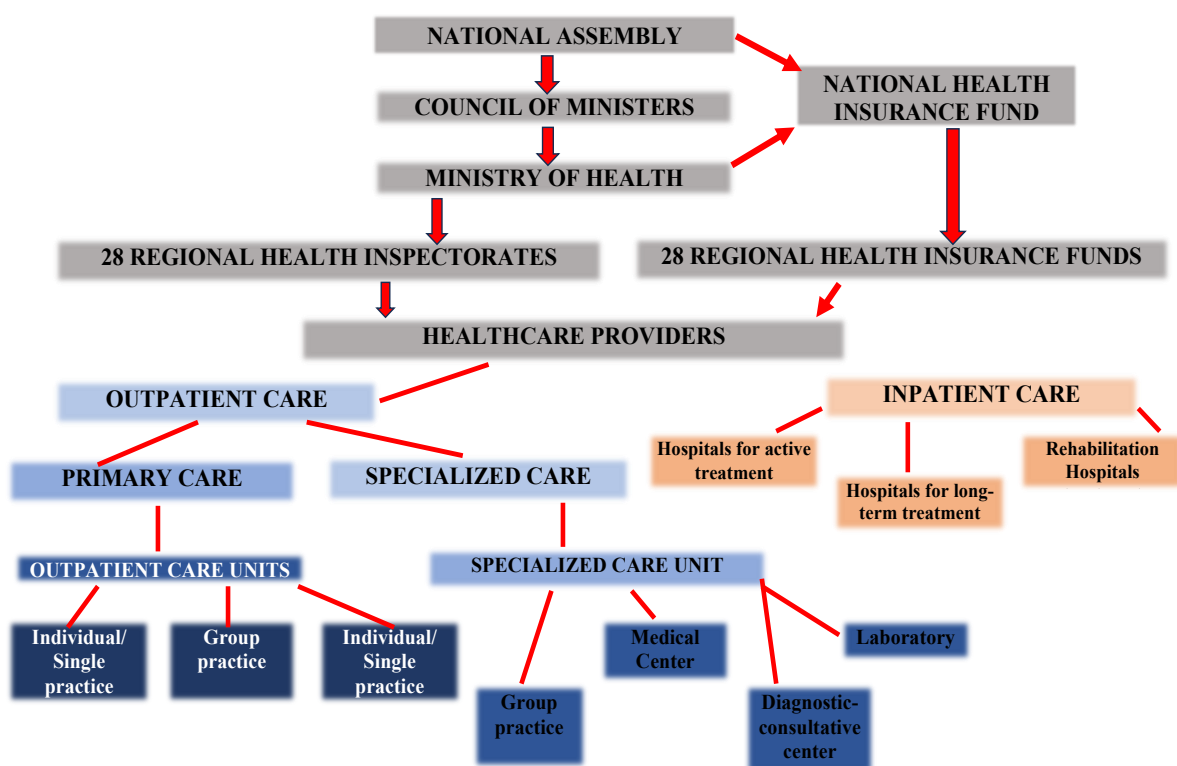
Paediatrics Medical Standards: define the characteristics of the medical specialty and the activities under its scope. The Standard sets the requirements for paediatricians, HCPs and any other staff member dealing with paediatric issues, as well as the standards for the medical institution, depending on the type of care that it will provide, whether outpatient, hospital care, long-term care, palliative care, or tailored for patients with disabilities and chronic diseases.

Medical institutions are a significant part of the national healthcare system in Bulgaria. By virtue of the Health Law, medical institutions are one of the providers of medical care in Bulgaria. The legal regulation of the organization, management, and operation of medical institutions for hospital care is provided in chapter six of the Law on Medical Institutions.

Healthcare-providing facilities are subject to the 1998 Healthcare Establishments Act, which defines the divisions between types of medical institutions and some of the operational, registration and administrative requirements. Other laws they must comply with are the Trade and Cooperation Laws, Medical Standards, Health Insurance Law, Labour Code, etc.

The following figure gives an overview of the organization of the Bulgarian health system as per 2023.

Figure 1: Bulgarian Healthcare System



The Law on medical facilities defines the scope of a medical facility as a location in which doctors/dentists can carry out some (or all) of the following activities:

- diagnosis, treatment and rehabilitation of patients.
- monitoring of pregnant women and providing maternity care.
- monitoring of chronically ill and persons at risk of illness.
- prevention and early detection of diseases.
- measures to strengthen and protect health.
- transplantation of organs, tissues, and cells.

The law also gives medical assistants, nurses, midwives or rehabilitators the right to create their own structures in which they can carry out some (or all) of the following activities:

- provision of medical and health care.
- carrying out manipulations.
- health promotion, prevention of diseases.

The law also defines the types of medical facilities and distinguishes between two large groups:

- **Medical facilities for outpatient care**
- **Medical facilities for hospital (inpatient) care**

A. OUTPATIENT CARE facilities include:

1. Primary care ambulatory (outpatient) clinics, which can be:

- individual (single) practice for primary medical care;
- group practice for primary medical care.

Primary care medical facilities carry out:

- diagnosis, treatment, rehabilitation and monitoring of patients.
- consultations.
- prevention.
- regular monitoring and follow-up examinations at so-called dispensaries.

The doctors working at these facilities can prescribe laboratory and other types of tests and medicines, carry out a certain volume and type of medical activities and manipulations which are mandated to be carried out in outpatient care, carry out monitoring and provide medical assistance during pregnancy and maternity; to monitor, control and care for the physical and mental development of persons up to 18 years of age, to carry out health promotion and prevention activities, including prophylactic examinations and immunizations, as well as to refer patients for consultation and hospital care if necessary.

2. Outpatient clinics for specialized medical care, which can be:

- individual practice for specialized medical assistance.
- group practice for specialized medical assistance.
- medical centre and medical-dental centre.
- a diagnostic-consultative centre where, in addition to outpatient care, up to 10 beds can be opened for 48-year monitoring.

3. Independent medical diagnostic and technical laboratories, which can be either general or specialized laboratories.

4. Dental care centres.

5. Health care ambulatory (outpatient) clinics, which can be:

- individual (single) health care practice.
- group health care practice.

B. Medical facilities for HOSPITAL CARE, which can be:

- Hospital for active treatment.
- Hospital for long-term treatment.
- Hospital for rehabilitation.
- Hospital for long-term treatment and rehabilitation.

According to the scope of their activity, hospitals can be multi-specialty or specialized. Hospitals should carry out some or all activities concerning:

- Diagnosis and treatment of diseases when the treatment goal cannot be achieved in the conditions of outpatient care.
- Childbirth assistance.
- Rehabilitation.
- Diagnostics and consultations requested by a doctor or dentist from another medical institution.
- Transplantation of organs, tissues, and cells.
- Collection, storage, supply of blood and blood components, transfusion supervision.
- Regular monitoring and follow-up examinations at so-called dispensaries.
- Clinical trials of medicinal products according to the legislation in force in the country.
- Educational and scientific activity.

Paediatric care can be provided in all these facilities for inpatient and outpatient care, as part of the operation of individual or group outpatient clinics for primary or specialized care or of multispecialty or specialized hospitals.

Financing of medical facilities for outpatient and inpatient care

Sources of financing for medical institutions can be:

- The National Health Insurance Fund (NHIF).
- Ministry of Health.
- State and municipal budgets.
- Insurance companies.
- Local and foreign legal and natural persons.

The Ministry of Health (MoH) provides investments in state medical institutions for capital expenditures, vis-a-vis repairs, or purchase of equipment. In municipal hospitals, such investments can be made by the municipality (as the owner of the respective hospital).

MoH also finances activities that go beyond the scope of contracts with the NHIF. Funding is implemented in the form of subsidies, which can be for:

- Providing hospital care in case of epidemics
- Providing medical care for mentally ill patients
- Emergency assistance
- Paediatric care – hospital (inpatient) as well as outpatient, for funding various programmes

The revenues of the medical institutions are formed by revenues from:

- Contracts for rendered medical aid with NHIF.
- Direct payments by individuals and legal entities.
- Reimbursement of incurrent expenses by a third party.
- Targeted subsidies from the state budget, should such a provision exist in the State Budget Act.

- Targeted subsidies from the municipal budgets, should such a provision exist therein.
- Rental of equipment, premises, and acreage according to the current legislation.
- Donations, wills, aid, and other sources.

Medical services included in the package of the compulsory health insurance and delivered in facilities under the National framework contract (NFC) are paid for by the NHIF. These treatments and payments are pipelined through the Clinical Pathways (CPs). CPs are defined medical procedures (diagnosis and treatment of specific medical conditions) and conditions for billing, such as maximum permitted amounts and covered actuations and materials.

Balancing an operational deficit: The state and municipalities may finance state or municipal medical establishments through targeted subsidies, approved by the State Budget Act or Municipal budgets.

In cases where medical services are not provided under contract with the National Health Insurance Fund and are not provided as per Article 82 of the Health Act (concerning emergency care and psychiatric care which are paid by the Ministry of Health), medical institutions calculate a corresponding price.

2.2. Strategic Framework

Being a member of the UN, the EU and the WHO, Bulgaria has adopted and committed to achieve the objectives of a series of international documents and strategies dedicated specifically or integrating policies for improvement of children's well-being and protection of children's rights among which the UN Convention on the Rights of the Child, the UN 2030 Sustainable Development Goals, the Global Strategy for Women's, Children's and Adolescents' Health (2016 - 2030), the Nurturing Care Framework for Early Childhood Development launched by WHO, UNICEF and the World Bank.

In addition, several healthcare specific strategies outline **the global European context** and shall predetermine the strategic development of the national policy framework in Bulgaria. Some of them are listed below:

The EU Global Health Strategy "Better Health for All in a Changing World"⁶

The main message of the strategy is that the EU needs to reassert its responsibility and deepen its leadership in the interest of the highest attainable standards of health based on fundamental values, such as solidarity and equity and the respect of human rights.

The Strategy focuses on three interrelated policy priorities inviting Member States to follow:

- Deliver better health and well-being of people across the life course.
- Strengthen health systems and advance universal health coverage.
- Prevent and combat health threats, including pandemics, applying a One Health approach.

The policy priorities are supported by twenty guiding principles, among which:

- Tackling the root causes of ill health on the first place as a fundamental ground for prevention of diseases, paying attention to the most vulnerable and disadvantaged groups.
- Equitable access to full range of essential health services from health promotion to affordable quality treatment, rehabilitation, and palliative care, paying particular attention to women, children, and young people.

⁶ EU Global Health Strategy "Better Health for All in a Changing World", 2022

- Improve primary healthcare with built-in surge capacity and enhance core public health capacities to meet the challenge of increased number of patients.
- Foster digitalization as a fundamental enabler - providing digital health and care services may facilitate access to expertise even in geographically remote locations e.g., through m-health (mobile health) and telemedicine.
- Boost global health research to develop the technologies and countermeasures which are necessary to improve health etc.

Looking towards 2030 targets, the Strategy is strongly related to the 2030 SDGs focusing on fundamental health issues like strengthening the health systems, universal health coverage, primary health care, public health, health determinants, workforce imbalances with particular attention to vulnerable persons. The Strategy also identifies several key project initiatives globally, regionally and at bilateral level to support the actions outlined.

The EU Strategy on the Rights of the Child⁷

The EU Strategy on the Rights of the Child has been valued as a unique opportunity to make child rights part of the political agenda of the EU refreshing the relevance of the implementation of the UN Convention on the Rights of the Child in 21st century.⁸ The Strategy claims to take on board the views and the suggestions of 10 000 children. Adopted on March 24, 2021, it defines 6 core thematic areas which outline the ambition “to build the best possible life for children in the European Union and across the globe”. Inclusive and child-friendly societies, health and education systems thematic area marks the relation of the Strategy to the fundamental right of every child to the highest attainable standard of healthcare and quality education.

The document is imperative in terms of utilization of the EU funding instruments to support the achievement of the policy objectives. Between 2021 and 2027, Member States with a rate of child at-risk-of-poverty or social exclusion higher than the EU average (in 2017-2019) must earmark 5% of the European Social Fund Plus (ESF+) for combatting child poverty, while all others should equally allocate appropriate amounts. The European Regional Development Fund (ERDF) and the Recovery and Resilience Facility are also designed to promote policies for children and youth, and enhance economic, social, and territorial cohesion.

The EU Child Guarantee⁹

The recently adopted EU Child Guarantee initiative (June 14, 2021) aims at breaking the cycle of disadvantages and exclusion across generations by addressing children poverty and social vulnerability at an early age. It provides guidance for Member States to support children at risk and complements the second thematic area of the EU Strategy on the Rights of the Child.

The EU Child Guarantee is a strategic initiative of the EC to guarantee effective access for children in need to a set of key services:

- free early childhood education and care
- free education, including school-based activities and at least one healthy meal each school day.
- free healthcare
- healthy nutrition and

⁷ EU Strategy on the Rights of the Child, https://commission.europa.eu/strategy-and-policy/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en

⁸ UNICEF, <https://www.unicef.org/eu/european-union-strategy-rights-child>

⁹ European Child Guarantee, https://commission.europa.eu/strategy-and-policy/policies/justice-and-fundamental-rights/rights-child/eu-strategy-rights-child-and-european-child-guarantee_en

- adequate housing.

National Action Plans are adopted covering the period till 2030 and operationalizing the implementation of the EU Child Guarantee. The National Action Plan of Bulgaria was adopted in November 2022 and comprises of several areas of intervention. Healthcare area of intervention includes the following measures:

- Improving the coverage and access of children and pregnant women to medical treatment, health care and services, as well as to medical products, dietary foods for special medical purposes, and medical devices for children with chronic and rare diseases
- Improving children's mental Health
- Improving the competences of medical and non-medical specialists in the field of maternal and child health
- Developing health and integrated health and social services to prevent health related complications with children with disabilities and with chronic diseases.
- Ensuring health care for refugee and migrant children.

The strategic and programming framework of the paediatric care in Bulgaria through the years has been placed in the broader context of the concepts and the reforms related the development of the healthcare sector in general.

National Healthcare Strategy 2030¹⁰ is the guiding document for a long-term vision of the development of the health sector. The draft of the National Health Strategy 2030 has been developed according to art. 3, para 2 of the Health Act and proposed for approval to the National Assembly of the Republic of Bulgaria.

The vision for 2030 is structured around several key elements: conditions for achieving the full health potential of all citizens, stimulation of healthy life and work style, resilient, accessible and equal health system, a focus on personalized and digitalized healthcare model which prioritizes prevention and health promotion, integrated and patient centered primary healthcare, citizens are involved in the decision making process and professionals in the healthcare system benefit of opportunities for professional development , personal well-being and respect from the society.

The document identifies three strategic objectives and three priorities. Improving maternal and child health as well as the paediatric care is defined as a specific aspect in the public health framework thus among the key policy lines of Priority 3: Implementation of focused strategies to impact specific problems of the public health. The establishment of the National Paediatric Hospital, among others, is included as a task of highest priority, the role of the Hospital being crucial for providing adequate and of high-quality complex care for children.

Several approaches, as described in the Strategy, may be associated with the National Paediatric Hospital project: application of a complex medical and social approach of childcare with a special attention to disabled and children of risk, interdisciplinary medical services for children with chronic diseases and special needs, integrated multi sectoral services for children and their families also aiming to prevent the institutionalization of childcare.

Improving the capacity of the medical professionals is also in the focus especially on early risk identification and treatment, effective communication with children and parents being the essentials of the quality of the child healthcare. The development of a National Strategy for Child and

¹⁰ National Healthcare Strategy 2030, draft,
<https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1604>

Adolescent Health and Paediatric Care is expected to provide for the integrity and the long-term perspective of the actions and policies implemented so far in the field of paediatric care.

The document is adopted by the Council of Ministers on September 27, 2023.

The recent **National Strategy for Child and Adolescent Health and Paediatric Care**¹¹ is the first national strategic document of its kind, which focuses on children's healthcare as an integral part of the overall public healthcare policy. The 2030 vision targets a state, which creates the necessary conditions for healthy mothers and healthy children, no children dying from preventable diseases and for all children to reach their full potential in good health and wellbeing. Four priorities identify the main areas of intervention, such as fostering healthy style of living, effective prevention of diseases and disabilities, establishing an integrated and complex system for paediatric care and a special focus on human resources development.

The strategy identifies a substantial list of deficits and weaknesses of the child healthcare system in Bulgaria, among which are the territorial disparities, the lack of high quality healthcare services adapted to the specific needs of the children, insufficient funding of services in primary and outpatient care, the lack of a coordinated system for hospital paediatric care at national and regional levels, insufficient opportunities for application of high technology methods for treatment especially in case of oncological diseases, the lack of targeted funding mechanisms in the paediatric healthcare system based on policy priorities and results achieved.

The integrity and the quality of the hospital healthcare for children are to be guaranteed at several levels:

- Basic hospital paediatric services provided at least for the territory of each district.
- Specialized hospital paediatric services for the territory of each region in the cities of regional significance – Sofia, Plovdiv, Varna, Burgas, Ruse, Pleven, Stara Zagora
- Highly specialized hospital paediatric services of national significance are provided in Sofia at least through the National Paediatric Hospital.

The profile of the NPH is described as an “one stop shop” which concentrates emergency and specialized consultative paediatric care, intensive treatment, neonatological care with opportunities to serve children born with high degree of prematurity and extremely low birth weight, comprehensive care for children with congenital anomalies, chronic, incl. rare diseases and disabilities and other severe diseases, long-term treatment services, rehabilitation and palliative care. The Hospital is also to lead the role in the methodological and consultative support for the rest of the paediatric structures in the country as well as in the training of the medical specialists.

The National Healthcare Roadmap (NHR)¹² is another instrument promoted as the basics for achieving the targets set and as a regulatory mechanism for the hospital care system. The current Roadmap is adopted by the Council of Ministers in May 2018 in accordance with art. 34, para 1 of the Law on Medical Institutions. The NHR consists of 28 regional maps and identifies the concrete needs for doctors, dentists and “Health care” specialists, for hospital beds and medical activities by type and level of competence in all the regions, existing medical institutions and facilities, state of the art analysis by regions.

The number of existing hospital facilities only for Sofia - capital district as presented in the NHR is 74, 27 of which are multi-specialty for active treatment, 34 are specialized for active treatment, 7

¹¹ National Strategy for Child and Adolescent Health and Pediatric Care, <https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1639>

¹² Annexes to the National Health Map of Republic of Bulgaria, <https://www.mh.government.bg/bg/politiki/nacionalna-zdravna-karta/>

– for long-term treatment and rehabilitation and 4 specialized for rehabilitation. The average level of hospital care at 100 000 citizens is 5.59 representing the overall trend at national level.

As for the existing paediatric hospital beds, the information is for 840 beds, 679 of which at 3rd level of competence facilities.

Related to the overall state of the art situation in the district as revealed in the 2018 NHR, it is worth mentioning that the necessary number of paediatricians and doctors with qualification in the different fields of paediatrics is estimated up to 420, while the current number of practitioners is 179.

Comparing the situation in Sofia – capital, Sofia region is presented by 13 hospitals, 33 paediatricians and 164 paediatric hospital beds.

The National Programme for Improvement of Maternal and Child Health 2021 – 2030¹³ and its development is justified through the need to ensure sustainability and to build upon the results achieved following the implementation of the former National programme 2014 – 2020, as well as to provide the necessary conditions for active health promotion and prevention of diseases, timely, qualitative, and complex medical and health care and integrated health and social care services for all.

The Programme steps upon a detailed analysis of the demographic and health situation in the country and reports about a significant improvement of the basic health indicators related to child mortality and the scope of the health services for children, pregnant women, and women in labour. Several challenges of significance are pointed out though affecting the health status of children and their families. Most of them bring to the fore the access to health services and territorial disparities in terms of general medical practices, the scope of the screening and rehabilitation programmes, the limitations of the health system for providing qualitative and timely rehabilitation and socialization services for children with chronic, genetic, and mental diseases.

The National Programme defines a 2030 strategic objective to improve the key indicators related to the health status of pregnant women, mothers, children, and adolescents through improving access to healthcare services outside the scope of the compulsory healthcare insurance, promoting health and enhancing support for good practices in the field of integrated health and social services. Five priorities relate the strategic objective to concrete areas of intervention, among which Priority 2: Improving the quality and the scope of the medical care for maternal and child health. The construction and establishment of a National Paediatric Hospital aligns with other initiatives to enable the implementation of the main priorities. The role of the Hospital for the overall development of the child healthcare in Bulgaria is prioritized with the ambition to concentrate emergency and highly specialized consultative paediatric services, intensive treatment, including conditions for long-term respiratory resuscitation, neonatal care, complex care for children with congenital anomalies, chronic illness and disabilities, long-term services treatment, rehabilitation, and palliative care. The multiple specialties profile and the complexity of the Hospital is justified by the necessity applying a holistic approach which comprise efforts in prevention of diseases, timely diagnosis, and intervention, follow up monitoring and assessment, and at the same time providing support to the families. Finally, the Hospital is to create conditions for training paediatric specialists if it will allow for a holistic knowledge in the field of child healthcare for those who have chosen the paediatric specialty.

¹³ National Programme for Improvement of Maternal and Child Health 2021 – 2030, chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.mh.government.bg/media/filer_public/2021/04/14/programa-majchino-detsko_zdrave-21-30.pdf

The Programme is adopted by Decision No 333 of the Council of Ministers on April 9, 2021.

The National Map on Long-term Needs of Healthcare Services¹⁴ presents an analysis of the needs of the population of healthcare services and corresponding structure of the healthcare system at national, regional and district levels in the context of the overall development of the country and the specific targets for development of the healthcare sector. The development of the analysis is part of the implementation of the reforms envisaged in the National Recovery and Resilience Plan and corresponds to the sectoral priorities, namely the National Healthcare Strategy 2030.

A substantial part of the analysis is dedicated to the mapping of the long-term needs of hospital care in Bulgaria. The main conclusions verify the findings of other analysis and strategic documents in terms of strong regional disparities, ineffective structure of hospital beds and lower number of long-term treatment beds as compared to beds for active treatment. Considering the classification of the urban structures according to the National Concept for Spatial Development of Bulgaria and the position of Sofia as a city of 1st level, several priorities are identified in the field of healthcare and health infrastructure:

- Establishment of a national centre for complex childcare which must integrate hospital and outpatient services for diagnostics, treatment and monitoring of children with illnesses in the whole medical specialties' spectrum.
- Establishment of a network of oncological centres involving different structures of high competence
- A national screening centre coordinating screening activities at regional and local level and a national platform for medical diagnostics are also in the focus.

The overall recommendation for the development of the territory leads to consolidating structures and resources to ensure efficiency and quality treatment and services for the patients.

The development of a new Healthcare Roadmap is in progress with a new methodology approved by the Ministry of Health. The methodology sets new parameters for the development of the district health roadmaps which are expected to overcome some of the gaps in the planning process. The number of the paediatric beds is limited between 10% and 15% of the overall number of beds at district level but a larger number of beds may be justified for inter municipal and regional purposes. The new Healthcare Roadmap is expected by the end of 2023.

The Integrated Territorial Development Strategy of the Southwest Region 2021 – 2027¹⁵ elaborates on the strengths and weaknesses of the healthcare system in the region which comprises the territories of several districts: Sofia – capital, Sofia, Blagoevgrad, Kystendil, Pernik. The objectives related to development of quality healthcare refer to equal access to healthcare services, including to those living in smaller and isolated areas, modernization of the healthcare facilities and supply of medical equipment, improving the capacities of the public healthcare system by prioritizing the primary healthcare, digitalization and e-government, awareness raising and promotion of healthy life models among marginalized communities.

Specific objective 2.2 under Strategic Priority 2 Investments in human capital and overcoming of regional disparities in ensuring access to quality services integrates measures for improvement of healthcare and social services. Though stated that the healthcare system of the region is

¹⁴ National Map of Long-term Care Health Services,
<https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1592>

¹⁵ Integrated territorial development strategy, Southwestern Bulgaria,
<https://www.eufunds.bg/bg/oprd/node/11503>

comparatively well developed, a strong concentration of services in the city of Sofia is identified as an issue. Due to the inter-regional disparities some of the hospitals and the healthcare facilities in the capital are functioning to respond to the needs of both at regional and national level. The construction of the National Paediatric Hospital is included as part of the territorial development strategy as one of the projects of major significance.

Digitalization of Health

The EU is in the middle of transformative efforts to digitalize healthcare systems across the continent, with initiatives focused on everything from electronic health record (EHR) interoperability to more comprehensive digital tools and services for patients.

In their Communication from 2018 on Digital Health and Care from the European Commission on the Transformation and digitization of the health and care sectors, the Commission identifies 3 pillars around which the activities will be based: 1. Secure data access and sharing; 2. Connecting and sharing health data for research, faster diagnosis and improved health, 3. Strengthening citizen empowerment and individual care through digital services.

To help support these ambitious projects, the EU has implemented a €20 billion, seven-year budget overseen by the new Health and Digital Executive Agency (HaDEA), under DG Santé, the organization responsible for the EU Commission's policies on health and food safety.

Interoperability is one of the challenges in healthcare digitalization - the lack of interoperability among different systems and datasets. Common standards and technical specifications, promoting the harmonization of health data across EU need to be established. This interoperability enables seamless exchange and integration of data, allowing healthcare providers and researchers to access comprehensive information regardless of geographic boundaries.

The EU Communication¹⁶ on enabling the digital transformation of health and care in the Digital Single Market put forward actions aiming in particular to support the Member States' strategies on reforming health systems. Innovative digital solutions can boost people's health and quality of life and enable more efficient ways of organizing and delivering health and care services. For this to happen, they must be designed to meet the needs of people and health systems and be thoughtfully implemented to suit the local context. Digital technologies should be seen as an integral part of health and care and geared towards the wider objectives of health systems.

Innovative digital solutions can boost people's health and quality of life and enable more efficient ways of organizing and delivering health and care services. The Commission Recommendation on a European Electronic Health Record exchange format (EEHRxF) sets out a framework for the development of a European electronic health record exchange format in order to achieve secure, interoperable, cross-border access to, and exchange of, electronic health data in the Union. The Common Semantic Strategy for Health in the European Union, establishes a Common Semantic Strategy for the adoption of standards facilitating large-scale exchange of health information in the European Union, by facilitating convergence on interoperability standards for all MS/C. The European data strategy aims to make the EU a leader in a data-driven society. Creating a single market for data will allow it to flow freely within the EU and across sectors for the benefit of businesses, researchers and public administrations. The EU's Cybersecurity Strategy for the Digital Decade, cybersecurity is an integral part of Europeans' security. Whether it is connected devices,

¹⁶ eHealth Network GUIDELINE on the electronic exchange of health data under Cross-Border Directive 2011/24/EU, Release 3

electricity grids, or banks, aircraft, public administrations or hospitals they use or frequent, people deserve to do so within the assurance that they will be shielded from cyber threats.

Previous work from eHealth Network in the preparation and adoption of digital health interoperability guidelines such as: Guidelines on Patient Summary; Guidelines on ePrescription, Guidelines on Organizational Framework for the National Contact Point for eHealth, Guidelines on approved contact tracing mobile applications in the EU, etc. These guidelines have been instrumental for the establishment of cross-border infrastructures that are currently in routine operations.

The development of electronic health care is part of the policy for development of e-government in the Republic of Bulgaria and the Electronic Law management, ensuring interoperability, standards, procedures and technological means for their maintenance, construction, digitization and development of base registries and their integration, as well as ensuring reliability, network and information security and shared resources of e-government. The national strategy for electronic health care and digitization of health care system 2030 (in short, e-Health Sector Strategy) is a sectoral strategic document to the Updated Strategy for Electronic Development governance in the Republic of Bulgaria 2019 – 2025 was recently adopted in September 2023.

The specific areas of impact regarding eHealth within the priorities of the strategy are: National Health Information System to be created through use of modern technological solutions focused on prevention of the risk of chronic and non-infectious diseases in order to ensure effective and efficient care to achieve better health outcomes. Remote health services that will include development and implementation of a concept for telemedicine (especially for citizens in hard-to-reach and remote areas, as well as for citizens with specific needs - patients with chronic diseases, elderly people, etc.) and introducing innovative applications for mobile surveillance services the health status of citizens. Information systems in electronic healthcare that will include building and/or upgrading and integration of information systems in electronic health care with information systems in other areas, including drug supply with a view to improving prevention and the quality of life of citizens. Security of information and personal data focused on development of rules, procedures and measures for ensuring the cyber security of the NHIS and other electronic systems health care, as well as those for compliance with the legislation for the protection of personal data, including regarding anonymized and pseudonymized health data. Large bases of health data: creating functionalities for analyzing activities and the results of state health policy based on large arrays of health data and capacity to implement eHealth systems.

2.3. Legal Framework

The legal framework at national level which sets the ground for the overall functioning of the healthcare system in Bulgaria comprises the fundamental Health Act and sector specific laws and regulations.

The Health Law (HL) defines the scope of the healthcare system as a system which includes medical institutions established under the **Law on Medical Institutions**, the healthcare institutions established under the Health Act and the **Medical Products Act** as well as state, municipal and public authorities, and institutions responsible for the organization, management and control of the healthcare activities. The competent authorities in the field of healthcare management are the Minister of Health, the Regional Health Inspectorates, Healthcare departments within the municipal administrations.

The Health Law also defines the roles and the responsibilities of the Supreme Medical Council – a consultative to present opinions about the national priorities in the field of healthcare, established to support the Ministry of Health. The mandate of the Regional Health Inspectorates is defined within the competent district territory with their responsibilities related mainly to the implementation of the

state healthcare policies and control, control over the registration process and the healthcare activities of the medical institutions include.

The Law on Medical Institutions (adopted in 1999, recent amendments as from January 2022) regulates the structure and the activities of the medical institutions in Bulgaria. According to art. 4 of the LMI the medical institutions may be established by the state, by the municipalities or other legal entities or natural persons and must be registered under the Commercial Law or the Law on the Cooperatives. The services provided by the medical institutions, the medical and other specialists are following medical standards which guarantee the quality of service and the protection of the patents' rights, approved by the Minister of Health.

The Law on Medical Institutions (LMI) generally provides for three major groups of medical institutions, according to the medical activity performed, namely:

- outpatient care facilities.
- hospital care institutions.
- specific medical institutions (hospices, homes for medical and social care, centres etc.).

The LMI defines four main types of hospitals: hospitals for active treatment, hospitals for long-term treatment, hospitals for rehabilitation, hospitals for long-term treatment and rehabilitation. University hospitals as defined by the Law are multi-specialty or specialized hospitals which implement clinical or postgraduate training of doctors, dentists, pharmacists, healthcare professionals.

According to art. 19 of the LMI, hospital care institutions implement their activities in compliance with medical standards and rules of good medical practice.

The Medical standard on Paediatrics is approved by Ordinance No 7 as from November 3, 2016, of the Minister of Health. The standard establishes specific requirements for the structure and the equipment as well as other conditions for the functioning of the hospital care facilities at different levels. The standard also defines the minimum requirements in terms of:

- Personnel (number and qualification).
- Type and scope of medical services provided.
- Results of the paediatric services.
- Quality indicators related to the services.
- Quality indicators related to results.

As defined by the Standard a minimum of 6 doctors must work in a paediatric hospital of 3rd level of competence, 5 of which must be with paediatric specialty, at least 1 of them with additional qualification for ultrasound and at least 2 of them with second specialty in a paediatric field. The quality performance indicators for the third level hospitals are set at 38 patients per bed per year, number of patients transferred to other hospitals (below 3%), relevance of the final diagnosis (95%) etc. The standard also touches upon the need of life-long learning and qualification of the personnel involved in the hospital activities and especially those with paediatric qualification.

The Health Insurance Law (adopted in 1998, recent amendments as from March 2022) regulates the functioning of the health insurance system and the related coordination and interrelations among institutions, the functioning, and the responsibilities of the National Health Insurance Fund. Art. 53 of the Law constitutes the National Framework Contract as an exclusive condition for the implementation of the outpatient and hospital care in Bulgaria. The contract is signed between the National Health

Insurance Fund (NHIF) and the Bulgarian Medical Association for a period of 3 years with an option for update and revision on an annual basis.

Based on the national framework contract, different medical institutions for outpatient and hospital care sign individual contracts with the NHIF following an approval. New hospital facilities or new medical services cannot contract the NHIF in case the need for funding was not stated during the process of registration or the NHIF has rejected the request for funding. The restriction is not applicable in case of new circumstances and justified gap and insufficiency of concrete medical services on the territory of the district where the new facility is to be located. The latter shall be due justified by needs assessment in the National Healthcare Roadmap.

The Regulation on the criteria and the procedures for selection of medical institutions for hospital care, contracted by the NHIF, adopted by Resolution No 45 of the Council of Ministers on 09.03.2016 elaborates on the rules applied for selection of hospitals funded by the NHIF in regions where the number of beds for hospital treatment prevail the needs assessed in the National Healthcare Roadmap. A complex of criteria is set comprising:

- continuous and seamless diagnostic and treatment process
- complexity of the diagnostic and treatment activities
- volume and complexity of the diagnostic and treatment activities
- quality of the diagnostic and treatment activities
- satisfaction of the patients with the medical activities provided by the medical institution
- assessment of the fulfilment of criteria, which are specific for the specific medical activity and others.

The current Bulgarian legislation in the healthcare sector identifies the National Healthcare Roadmap and the National Framework contract as instrumental for the organization and functioning of the ecosystem in the country.

The current **National Framework Contract** for medical activities was signed between the NHIF and the National Medical Association in December 2019. Undergone several updates since then the contract determines the scope of medical activities and services to be funded by the NHIF as described in the Regulation No 9 of the Minister of Health about the complex of health activities guaranteed by the National Health Insurance Fund.

The National Framework Contract elaborates also on the financial thresholds of the different medical activities, the medical institutions eligible for funding under the NHIF, the contracting procedures etc.

Other sector specific regulations related to the present analysis:

The Commercial Act

The Cooperatives Act

National Health Insurance Fund Budget Act

Law on the Recognition of Professional Qualifications

Regulation No. 49 of 18. 10. 2010 about the basic requirements for the structure, the functioning, and the internal order of the medical institutions for hospital care and the medico – social centres.

Regulation No. 12 of 2018 on Health Requirements for Public Laundries

Regulation No 28 of 2008 on the device, order, and organization of the work of pharmacies and nomenclature of medicinal products

2.4. Standards and Guidelines

Alongside with the nationally adopted medical standards and rules of good medical practice already mentioned above, the following international guidelines and standards shall serve the purpose of the present context analysis:

Guidelines on Child-friendly Healthcare¹⁷

Adopted by the Committee of Ministers on 21 September 2011, the Guidelines are designed to serve as a practical tool for the governments of the Member States in endorsing, adopting, implementing, and monitoring a child-friendly healthcare approach based on the fundamental rights and children's specific rights, dignity, participation, equitable access to quality healthcare and child's best interest. Bringing together all the interesting parties – government, organizations of professionals, children, and families to create an integrated system for care and planning of future services for children is at the core of the approach. Combining the different perspectives of the different parties may be a powerful tool for the implementation of the child-friendly approach though priorities differ considerably between and within different Member States. The practical implementation of the approach is described as an “integrated learning system” based on 5 guiding principles:

- Participation (information, individual decision making, provision of feedback and involvement in the service planning process for both children and their families)
- Promotion (synergy between evidence-based interventions at several levels simultaneously)
- Protection (protection from physical, social, emotional, or financial harm while using the services)
- Prevention (proactive planning for primary, secondary, and tertiary prevention)
- Provision (prevention, identification, assessment, and interventions)

According to the Guidelines, the successful implementation requires the adoption, and where necessary adaptation, of the approach by all the agencies, organizations and professional groups contributing to services for children and families.

Standards for Improving the Quality of Care for Children and Young Adolescents in Health Facilities (WHO)¹⁸

The standards are developed by the World Health Organization in line with the vision of the organization in which “Every mother and newborn receives quality care throughout pregnancy, childbirth and postnatal period”. The first series of standards of care, issued in 2016, covered routine management of complications during labour, childbirth, and the early postnatal period, particularly for small infants, during the first week of life.

The second set of standards were published in 2018 to address the broader vision, in which “Every woman, child and adolescent receives quality care throughout the continuum of care”. These standards come to recognize that children's health, physical, psychosocial, developmental,

¹⁷ Guidelines on Child-friendly Healthcare, Council of Europe, 2011, chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://rm.coe.int/168046ccef

¹⁸ Standards for Improving the Quality of Care for Children and Young Adolescents in Health Facility, WHO, 2018, <https://www.who.int/publications/i/item/9789241565554>

communication and cultural needs differ from those of adults, and they need to be met and the risk of harm is minimized during health service delivery.

The document defines the Standard of care as a general description of what is expected to be provided to achieve high-quality care for children and adolescents in 8 domains of the framework of paediatric care:

- Evidence – based practices for routine care of children and management of illness
- Actionable information systems
- Functioning referral systems
- Effective communication and meaningful participation
- Respect, protection, and fulfilment of child rights
- Emotional and psychological support
- Competent, motivated, empathic human resources
- Essential child adolescent – friendly physical resources.

For each one of the domains a separate standard is proposed including quality statements, input, output, and outcome measures.

Hospital Care for Children: Quality Assessment and Improvement Tool (WHO)¹⁹

The tool is developed by the World Health Organization to serve as practical guidelines for a systematic, participatory assessment of the quality of care provided to children at hospital level, and for developing a plan of action to improve quality of care. The document defines “quality of care” as a key aspect of the maternal, newborn and child health agenda and proposes different instruments for evaluation of quality of services as well as for development of action plans for specific needs of improvement.

The assessment strategy is built around several components which allow the adaptation of the tool both for national healthcare systems and individual facilities:

- Support services (physical infrastructure, staff, availability of medicines, equipment, and supplies)
- Case management (case management practices for children at hospital level)
- Policies (existence, contents, and implementation of hospital policies to ensure infection prevention, guidelines development and dissemination, staff training, audit systems, access to hospital and continuity of care etc.)
- Collection of information (information on case management, organizational aspects of care, children’s rights, and overall services from the perspective of health professionals, mothers and other caretakers, children, and adolescents)
- Feedback on findings and plan of action (proposing and planning actions for improvement).

Except for the analytical background of the national and regional strategic documents in the healthcare sector and those related to regional development priorities, no specific studies or analysis do exist for the paediatric care in Bulgaria.

Overall assessment and profiling of the hospital care and the national health system are provided on regular basis by international organizations and as part of the European Semester country reports for Bulgaria. High out of pocket payments for healthcare services, unequal access to

¹⁹ Hospital Care for Children: Quality Assessment and Improvement Tool, WHO, Second edition, 2015, <https://qualityhealthservices.who.int/quality-toolkit/qt-catalog-item/hospital-care-for-children-quality-assessment-and-improvement-tool-a-systematic-standard-based-participatory-approach>

healthcare, low public expenditures, low effectiveness of the healthcare system are among the shortcomings listed.²⁰

2.5. Prefeasibility Concept Notes

The history of the construction of a national Paediatric Hospital in Bulgaria is long and convoluted. It began in 1978, with the start of construction works on a multi-specialty Paediatric Hospital, which was to meet the needs of children from all over the country – “Institute of Paediatrics”.

Through the years the project went through different transformations²¹. In 2004, it was decided that Bulgaria would build a completely new Paediatric Hospital with a loan from an Austrian bank and assisted by an Austrian company. The Ministry of Health at that time (headed by the economist Slavcho Bogoev) justified their decision with the facts that the abandoned building of the Institute of Pediatrics does not meet modern technological requirements for a hospital, does not meet modern legislation and is irreversibly damaged. It is also emphasized that with modern construction practices, erecting an entirely new building will be not only more efficient, but also cheaper than finishing the old construction. However, the National Assembly found irregularities in the proposed deal, rejected it, and the National Paediatrics Hospital project lost its priority position again.

In 2012, the Bulgarian Pediatric Association took an initiative to bring the topic back into the public and political dialogue. After years of fruitless correspondence with the institutions, in 2017 an initiative committee of professional and civil activists and organizations was established, insisting on the construction of a "Paediatrics Health Park" - a multi-disciplinary medical complex corresponding to the modern concept of pediatric care. In November 2018, at the suggestion of the then Minister of Health, financier Kiril Ananiev, the government took steps to restructure the Lozenets Government Hospital and turn it into a Paediatric Hospital. A month later, he renounced this decision and decreed that the construction in the courtyard of the Aleksandrovska hospital - already once assessed as unsuitable in 2004 - be completed.

In July 2019, the Ministry of Health announced a public tender for engineering for the New Paediatric Complex with value of nearly BGN 95 million, of which 0.5 million euros to be EEA (Norwegian) Financial Mechanism, and the rest by the Bulgarian Government (taxpayers) through the budget of the Ministry of Health. The Chamber of Architects appealed it – first to the Commission for the Protection of Competition, then to the Supreme Administrative Court, but the appeal was rejected. In the meantime, civil organizations have united in an initiative under the motto "FOR A REAL PAEDIATRIC HOSPITAL" and launched a petition to end the public procurement. Despite the significant evidence of the unsuitability of the abandoned building, the series of protests and the collected over 12 thousand signatures with this request, in April, 2020 the Minister of Health (Kiril Ananiev at that time) signed a contract worth nearly BGN 100 million for the design, construction and supervision of the National Multi-specialty Paediatrics Hospital for construction in the premises of Aleksandrovska Hospital. After a series of initiatives and meetings of the protesters, including with President, the Prime Minister (Boyko Borissov at that time) single-handedly cancelled the decision to finish the old building and made a commitment to build a new building. This was expected to happen within the framework of the already signed contract with the Consortium that won the tender described above.

²⁰ 2022 Country report – Bulgaria, Commission staff working document SWD (2022) 603, https://commission.europa.eu/publications/2022-european-semester-country-reports_en

²¹ <https://offnews.bg/analizi-i-komentari/natsionalna-detska-bolnitca-za-milioni-744077.html> Overview of the developments and history of National Paediatric Hospital establishment in Bulgaria, Nadezhda Tsekulova

During the summer of 2020 by a decision of the Council of Ministers, the Health Investment Company for Paediatric Hospital EAD was established with an initial capital of BGN 30 million and a commitment by the state to contribute BGN 50 million by the end of July 2021 and another 20 million the following year. The company is managed by a board of directors and there have been several changes in the members with the changes of the governments.

This process was followed by the appointment of several caretaker governments and consecutive changes in the concept:

With the appointment of a caretaker government, the NPH theme was slightly changes – the acting Minister of Health (Stoicho Katsarov at that time) held consultations with the civil initiative "For a real Paediatric Hospital", with representatives of the pediatric guild and the investment company and he announced that the NPH would be built in the premises of the former Government building, and until the construction was completed (in his words, in the next 5 years) the children would be treated in "Lozenets" Hospital which had to be merged with the Specialized Paediatric Hospital "Prof. Dr. Ivan Mitev". None of the hospitals liked the idea of a merger, the doctors from "Lozenets" came out in protest, and the students from the Faculty of Medicine of the Sofia University joined them. At the end of his term though the Minister of Health signed the papers for the merger and transferred to the following Minister an existing problem. The new Minister of Health (Ms. Asena Serbezova) stopped the pending merger and began investigations. Since her term was quite short, no further developments happened.

This government was followed by another caretaker one, and then the MoH proceeded with a preliminary feasibility study of five possible sites for the construction of the NPH: the territory of the hospitals "Lozenets", "St. Anna" Hospital, the National Specialized Hospital for Physical Therapy and Rehabilitation in "Ovcha Kupel", the University Specialized Hospital for Active Treatment in Orthopedics "Prof. Boycho Boychev" in Gorna Banya and Specialized Rehabilitation Hospital in Bankya.

A plot has been established in the premises of Sofia (Gorna Banya Region) in 2022 selected among several locations and along with that a detailed layout plan for the NPH has been approved, as basis for the following design and construction of the hospital. The plans are for a Paediatric "Center" including a hotel for parents, a rehabilitation centre, a shopping area and underground parking lots on the ground. The selected terrain is located in the Gorna Banya quarter and envisages the construction of an area of about 4 hectares. The Sofia-city Municipality has already transferred the property. The hospital was declared a site of national importance in order to eliminate some administrative barriers.

Currently, the Health Investment Company for Paediatric Hospital JSC together with the MoH has the lead and their activities are supported by a Public Council to monitor the implementation of the project. The National Paediatric Hospital has reference in several national strategic documents for being a priority project along with a basic concept and structure developed, that includes the clinics and wards already existing as well as other structures that are not existing – about 25 units.

2.6. Administrative and Territorial Division

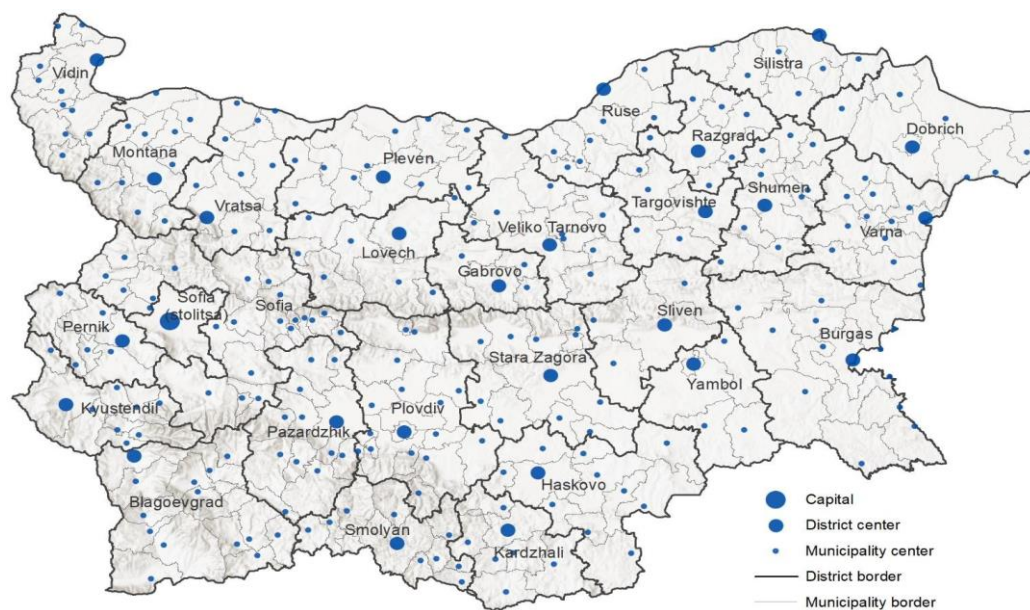
As of 31 December 2019, the territory of the Republic of Bulgaria²² is administratively divided into 28 administrative districts and 265 municipalities (for some of which there is a further territorial division).

²² NSI, <https://nsi.bg/en>

As of 31 December 2019, there are 5 257 settlements in Bulgaria, of which 257 - towns and 5 000 - villages, while the settlement formations were 163 (including 8 of national and 155 of local importance).

According to the requirements of the Classification of Territorial Units for Statistics (NUTS), applied by the European Union, the territory of the country is divided into statistical regions with 3 hierarchical levels. The upper two levels: NUTS1 – statistical zones, and NUTS2 – statistical regions, are not considered as administrative-territorial units, while the level of NUTS3 - districts, is defined as an administrative-territorial level, which corresponds to the 28 administrative districts. The NUTS3 regions and the 28 administrative districts have the same names.

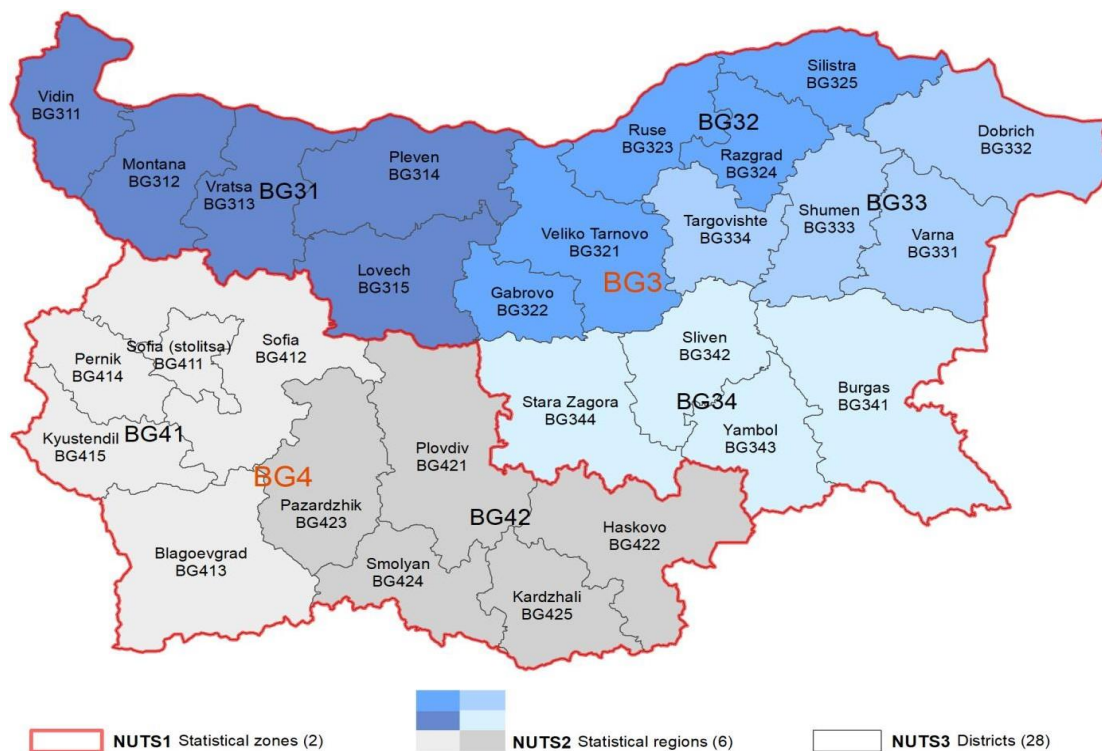
Figure 2. Administrative Districts in the Republic of Bulgaria, as of Dec 31, 2019



According to the requirements of the common Classification of Territorial Units for Statistics (NUTS), applied by the European Union, the following levels have been defined:

- NUTS0 - the country level;
- NUTS1 - 2 statistical zones;
- NUTS2 - 6 statistical regions;
- NUTS3 - 28 districts.

Figure 3. Administrative Map of Bulgaria, 2019



In the current report analysis will be done with regards to District Level and NUTS-2 Level of territorial division.

Planning of Health Services

The needs of population for hospital care are planned in the National Health Map of Bulgaria at the regional and national level, with the internationally recognized capacity indicator "1 hospital bed". "Hospital bed" indicator is clearly defined within the regulatory framework (by types and medical specialties) as a unit of capacity, including the activities carried out on it, as well as the requirements for them, according to established medical standards. The capacity indicator is inclusive of staff, medical equipment necessary for the activity, premises, organization, etc., guaranteeing the quality of the relevant activity. When defining the necessary number of beds for the implementation of a given activity, all resources for its implementation - human and material - can be planned on this basis.

By virtue of the adopted regulations on the structure and content of the regional and national health maps and the established *Methodology for the Development of the Regional Health Maps*, specific needs for beds for hospital treatment and medical activities are planned at regional level by types and levels of competence.

In the methodology used, the need for hospital services and the necessary capacity to meet them is determined first at the district level (NUTS 3), then the required capacity for activities at the regional level (NUTS 2) and national level (NUTS 1) is predicted in accordance with hospital service levels.

The national indicators are calculated based on long-term statistical data on the hospitalized morbidity of the population in the country. The number of beds for medical activities is further distributed by levels of competence (from I to III) in ratios based on statistical data and trends. The distribution of beds by type is subject to analytical correction based on the data on hospitalized

morbidity and the usability of beds for each specific area. Beds for the implementation of hospital services for each area are redistributed by levels of medical care as follows:

- for basic hospital services (1st level hospital service) – 75% of the total number of designated beds
- specialized hospital services (2nd level hospital service) – 20% of the total number of designated beds
- highly specialized hospital services (3rd level of hospital service) - 5% of the total number of designated beds.

University Hospitals

The status of university hospital is regulated in the Health Act. A prerequisite for obtaining the status of a university hospital is the receipt of a positive accreditation assessment, for conducting clinical training of students and postgraduates in medicine, dentistry and pharmacy and students in the professional field of "Health Care", as well as for postgraduate training of doctors, dentists, pharmacists, health care specialists.

The Council of Ministers, on the proposal of the Minister of Health, decides of the medical establishments or their clinics or departments which have received a "very good" or "excellent" accreditation assessment for the above activities shall acquire the rights of university hospitals/clinics or departments for the duration of the accreditation assessment.

The Council of Ministers, again on the proposal of the Minister of Health, may also withdraw the university status before the expiry of the accreditation assessment of the medical institution/clinic or department.

University hospitals can be both multi-specialty and specialized. University hospitals must carry out activities in each of the following areas: 1. clinical training of students and postgraduate students in medicine and/or dentistry and/or pharmacy 2. clinical training of students in the professional field of health care 3. postgraduate training of doctors, dentists, pharmacists, health care specialists.

The Council of Ministers, on the proposal of the Minister of Health, grants to the relevant higher education institution the rights of the sole owner of the capital in the management of the state medical institutions, which are university hospitals. This provision is temporary - for the duration of their accreditation assessment. Currently, only 1 hospital has a similar status - UMBAL "St. Marina" Varna.

The terms and conditions for the training, as well as its financing, are regulated by a contract between the medical institution and the higher education institution. The funds for the financing of the training of students and postgraduate students shall be provided from the State budget in its part for education and science. The funds for training for the acquisition of a specialty in the health care system in places financed by the State - from the State budget in its part for health care.

CHAPTER 3. ASSESSMENT OF THE HEALTH DEMAND PROFILE

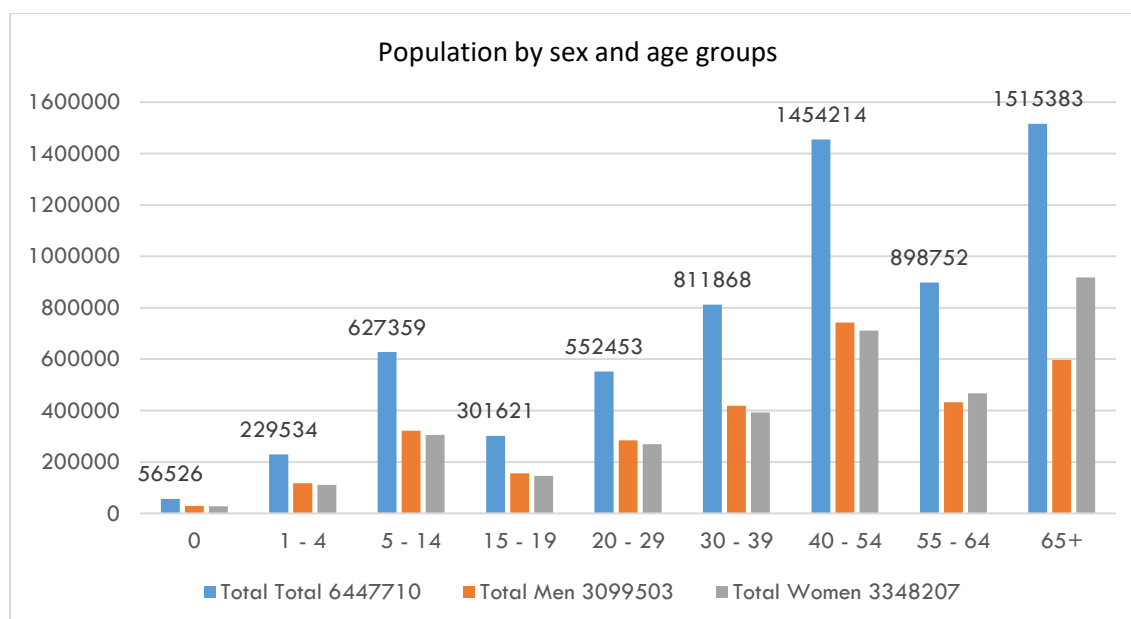
3.1. Demographic and Socio-economic Data

The last population census in Bulgaria in 2021²³ raised major demographic challenges which Bulgaria is facing: negative natural growth, deepening of territorial disparities in the number of the population, deepening of the trends for deterioration of age structure, decrease in the birth rate and aging population. The main points²⁴ are that the number of population decreases and population aging continues; the number of live births decreases; the number of deaths decreases; infant mortality decreases, and the number of marriages and divorces decreases.

As of December 31, 2022, the population of Bulgaria is 6 447 710 persons, representing 1.5% of the EU population. Compared to 2021, the country's population decreases by 34 774 people, or by 0.5%. Male population is 3 099 503 (48.1%) and female - 3 348 207 (51.9%), or 1 000 males correspond to 1 080 females. Males prevail among the population, aged up to 53 years. The number and share of females into the total population have increased among the elderly.

By the end of 2022, the number of persons aged 65 and over is 1 515 383, or 23.5% of the country's population. The share of females aged 65+ is 27.4%, compared to 19.3% of males. The difference is due to the higher mortality among the male population and consequently - lower life expectancy. The share of persons aged 65+ is highest in the districts of Vidin (31.1%), Gabrovo (30.0%) and Kystendil (28.0%). In 22 districts, the share of people aged 65+ is higher than the country's average. The lowest share of elderly population is in the districts of Sofia (capital) - 19.2%, Varna - 21.4% and Blagoevgrad - 21.6%.

Figure 4. Population by sex and age groups

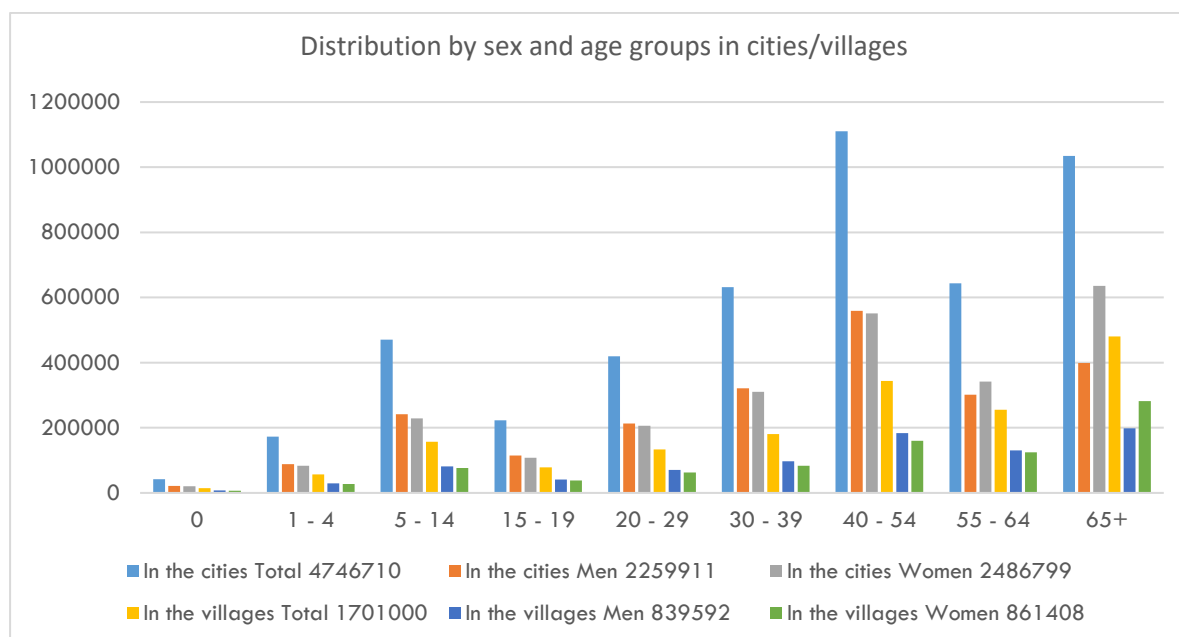


²³ <https://census2021.bg>

²⁴ NSI, Population and Demographic Processes, 2022

74% of the population lives in the cities and a bit more than 25% lives in villages. The distribution between men and women is almost equal in the rural areas – 50.6% women to 49.4% men and in the cities, women are a bit more – 52.4% women to 47.6% men.

Figure 5. Distribution by sex and age groups in cities and villages



As of 31.12.2022, the age dependency ratio in the country was 60.4%, or to each person in 'dependent' ages (under 15 and over 65 years) corresponds less than two persons in 'independent' age. The ratio in urban areas is 56.8%, and in rural areas - 71.6%. As a total, in all districts the age dependency ratio is over 50.0%. This ratio is lowest in the districts Sofia (capital) - 51.4%, and the highest - in Vidin (74.5%), Gabrovo (71.8%) and Yambol (71.4%).

The population ageing over the years leads to an increase of the population mean age. It has increased from 40.4 years in 2001 to 45.2 years at the end of 2022. The mean age of the population is 44.3 years in urban areas, compared to 47.5 years in rural areas.

The number of population and relative share of population under, at and over working age changes. The last is influenced not only by the population aging, but also by legislative changes concerning the retirement age. In 2022, working age are women up to completion of 61 years and 10 months and men - up to completion of 64 years and 5 months.

The number of people at working age as of 31.12.2022 is 3 775 thousand people, or 58.5% of the total population, of which male are 1 975 thousand and female - 1 800 thousand people. By the end of 2022, the number of people over working age is 1 695 thousand persons, or 26.3%, and under working age are 978 thousand persons, or 15.2% of the country's population.

The reproduction of population at working age is characterized by the coefficient of demographic replacement, showing the ratio between the number of people entering working age (15 - 19 years) and the number of people exiting it (60 - 64 years). As of 31.12.2022, the coefficient of demographic replacement was 66. For comparison, in 2001, every 100 people exiting working age have been replaced by 124 young people. The most favorable value of the indicator is in the districts of Sliven - 87, Sofia (capital) - 80 and Varna - 77. The lowest is the ratio in districts Smolyan - 42, Kardzhali - 47 and Silistra and Pernik where 100 people exiting working age are replaced by 54 entering it.

As of 31.12.2022, 4 746 710, or 73.6% of the total country's population, reside in urban areas and 1 701 000, or 26.4% - in rural ones. There are 5 256 settlements in Bulgaria by the end of 2022, of which 257 - towns and 4 999 - villages.

Half of the country's population (51.5%) lives in Southwestern and Southcentral regions. The smallest, according to the population number, is the Northwestern region - 672 thousand people, or 10.4% of the country's population. The population number decreased compared to 2021 in all statistical regions; highest is the decrease in Northeastern region - by 1.5% and lowest - in Southwestern region - 0.1%.

Districts. The lowest is the number of populations in the district of Vidin - 72 754 people, or 1.1% of the country's population and the highest is in the district of Sofia (capital) - 1 280 334 people (19.9%). Four districts have population over 300 thousand people and in three of them, Sofia (capital), Plovdiv and Varna, lives more than one third of the total country's population (36.3%).

Basic factors influencing the changes of population number and structures are the demographic processes - fertility, mortality and migration.

Fertility. There are 56 917 children born in 2022, of which 56 596 (99.4%) - live born. The number of live births decreased by 2 082 children, or 3.5% compared to the previous year. The birth rate in 2022 is 8.8‰. The number of live born males (28 923) is by 1 250 higher compared to the live born females (27 673), or 957 females correspond to 1 000 born males.

The number of live born children in urban areas is 41 986 and in rural - 14 610. Crude birth rate in urban areas is 8.8‰ and in rural - 8.5‰. The highest is the crude birth rate in the districts of Sliven - 12.2‰, Sofia (capital) - 10.0‰ and Plovdiv - 9.7‰. The crude birth rate is lower than the country's average in 20 districts and the lowest is in districts of Smolyan - 5.1‰, Vidin - 6.8‰ and Pernik - 6.9‰.

The number of women in fertile age as of 31.12.2022 is 1278 thousand. It has decreased by 8 thousand compared to the previous year and with 372 thousand compared to 2011. The number of children born by mothers aged below 18 years decreases from 3 015 in 2021 to 2 871 in 2022. The number of children born by mothers of age 40 and more years increases from 2 278 in 2021 to 2 410 in 2022. Half of births (49.4%) in 2022 are first ones, 36.9% second and 13.3% - third or higher of rank.

Mortality. The number of deaths in 2022 is 118 814 and the crude mortality rate - 18.4‰. Compared to the previous year, the number of deaths has decreased by 30 181, or by 20.3%. The crude mortality rate remains high. Mortality among males (19.8‰) continues to be higher than among females (17.0‰). In 2022, there are 1 079 deaths of males per 1 000 deaths of females. The considerable differences in mortality in urban and rural areas also remain unchanged. Mortality rate in rural areas (24.9‰) is higher than in urban ones (16.0‰).

Internal migration. 102 920 people changed their residence within the country in 2022. Among the migrants within the country, 44.5% are male and 55.5% - female. The share of internal migrants in the age group 0 - 14 years is 18.6%, people aged 15 - 64 years - 62.9% and people aged 65 years and over - 18.5% of all internally migrated people. The share of flow 'town-town' is highest one (41.1%), followed by the flow 'village - town' - 25.1% and 'town - village' (23.6%). Considerably lower is the number and share of the flow 'village - village' (10.1%).

Out of the internal migrants, the highest is the number of people who chose their new place of residence being Sofia (capital) (17 196). The districts with the largest relative shares of migrants to

Sofia (capital) are Sofia - 13.0% and Blagoevgrad - 7.2%. The lowest are the shares of migrants to Sofia (capital) from the districts Razgrad and Silistra - 0.7% each, and Targovishte - 0.8%.

International migration. 13 175 people changed their current address in Bulgaria with an address abroad in 2022 - 64.3% male. The emigrants aged 0 - 14 years are 5.4%, those aged 15 - 64 years are 69.4% and the emigrants 65 and over years of age - 25.2%. Most preferred destination countries are Germany (24.1%), Türkiye (20.0%) and the United Kingdom (9.3%). People who changed their address abroad with an address in Bulgaria, or the immigration flow, include Bulgarian citizens who have returned to Bulgaria and citizens of other countries granted residence permit or status in Bulgaria. There are 40 619 people who changed their address abroad with an address in Bulgaria in 2022. Males represent 55.5% of the total number of immigrants and female - 44.5%. Among the immigrants to Bulgaria, 14% are in the age group 0 - 14 years, persons aged 15 - 64 years are 75.5% and the oldest, persons aged 65 years and over - 10.5%. Highest is the share of immigrants from Türkiye (23.1%), Germany (12.1%) and Syria (9.0%).

The natural increase in all districts in 2022 is negative. Lowest is the negative growth in the districts Sofia (capital) (-3.4‰), Sliven (-5.9‰) and Varna (-6.9‰). Highest is the population decrease due to the high negative growth in the district Vidin - minus 21.1‰, followed by Gabrovo - minus 17.8‰ and Montana and Kyustendil - minus 17.0‰ each. Higher than - 10.0‰ is the natural growth in twenty-two country districts.

Net migration (growth due to international migration) influences considerably the population number and structures. The net migration growth in 2022 is positive - plus 27 444 people. The last is the difference between the number of immigrants and number of emigrants.

The decrease of population due to the international migration measured through the coefficient of net migration is +4.2‰. There are twenty-two districts with positive migration growth in 2022. The highest migration growth is registered in Kardzhali (21.5‰), Sofia (capital) (7.9‰), Burgas (7.1‰) and Plovdiv (7.0‰). Highest population decrease due to the negative migration growth is registered in the districts of Smolyan (-4.5‰), Haskovo (1.5‰) and Lovech (-1.1‰).

Educational structure of the population. The observation of the highest level of education completed starts from the census, held in 1934. For the entire period until 2021, the educational structure of the population at 7 and above significantly improves, following a clear trend of an increase in the number and share of the population with university degree and secondary education and a decrease in the number of people with primary and lower education level.

As of September 7, 2021, the number of persons with university education is 1,560.0 thousand or 25.5% have a university degree. Compared to the previous census, the relative share of people with higher education increased by 5.9 percentage points. The relative share of women with higher education reaches 29.3%, and for men - 21.5%, and compared to 2011, it has increased by 7.0% and 4.8%. There are also significant differences in the educational structure of individuals by place of residence. While the relative share of people with higher education in the cities is 31.2%, compared to 10.2% in rural areas (three times less). In a regional aspect, the relative share of graduates is the highest in the district of Sofia (capital) - 43.6%, followed by the districts of Varna (30.7%) and Plovdiv (25.2%), and the lowest is in the districts of Kardzhali (14.0%), Targovishte (15.5%) and Razgrad (15.7%).

As of September 7, 2021, 2,695.8 thousand people have completed the highest degree of secondary education. Of them, 33.6% have completed general education (high school) programs, and 66.4% - professional programs, including the acquisition of a second or third degree of professional qualification, or the equivalent in the past technical colleges and secondary polytechnic

schools.. The positive trend of decrease in the number of people with low or no education continues. 353.5 thousand people graduated from primary education; those who started but did not finish primary education are 271.7 thousand and those who have never attended school are 41.6 thousand. In a regional aspect, the share of people with primary and lower education is the lowest in the districts of Gabrovo (7.4%), Pernik (8.0%) and Sofia (capital) (8.1%), and the highest is in the districts of Sliven (20.4%), Kardzhali (14.6%) and Silistra (14.3%).

Economic characteristics of the population. During the observed period, there were 2,953,937 economically active people aged 15 and above, or 45.3% of the country's population. Of these, 2,661,292 are employed, and 292,645 are unemployed.

The number of economically active people increased until 1985, when it reached the highest level of its value - 4,686,140 people. In the following years, it decreased to reach 2,953,937 people as of September 7, 2021. Compared to 2011, the number of economically active people decreased by 376 thousand people, or 11.3%.

Economically active people aged 15 - 64 years of age. During the observed period, there were 2,835 thousand economically active people of age in the country between 15 and 64 years of age. In general, the coefficient of economic activity for the country is 69.7% (70.8% for men and 68.5% for women). Sofia (capital) is the district with the highest coefficient of economic activity - 78.6%, followed by Gabrovo - 73.5%, and Pernik - 72.1%. This indicator is the lowest in the districts of Kardzhali - 54.1%, Silistra - 60.6%, and Sliven - 61.1%.

Employed people aged 15 - 64 years are 2,549,000, as women are 1,248,000 (49%), and men are 1,301,000 (51%). The employment rate, calculated as the ratio of the number of employed persons to the population in the age group 15 - 64 years old, is 62.6%. The employment rate for men is higher than that of women, 63.3% and 62.0%, respectively. Older age employment rates show that participation in the labor market is the lowest in the age group 15 - 24 years (26.4%). With increasing the age, this indicator increases, with the highest value among the group 35 - 44 years (74.0%). The employment rate is lower in the rural areas in all age groups.

In a regional aspect, the employment rate is highest in the districts of Sofia (capital) - 75.0%, Gabrovo - 68.0%, and Varna - 65.3%, and the lowest in the districts of Vidin - 50.9%, Silistra - 49.6%, and Kardzhali - 46.8%. In total, in 21 districts, this indicator is lower than the average for the country.

Respectively, the unemployment rate is the lowest in the districts of Sofia (the capital) - 4.6%, Gabrovo - 7.4%, and Plovdiv - 8.1%, and the highest in Vidin - 20.1%, Silistra - 18.1%, and Targovishte - 17.7%.

In a regional aspect, Kardzhali is the district with the highest relative share of economically inactive population - 45.9%, followed by Silistra - 39.4%, and Sliven - 38.9%. The share of the economically inactive population in Sofia (the capital) is 21.4%. During the observed period, the unemployed and non-participating in education and training from the population aged 15 - 29 years is 185 000d people, or 21.7% of the population at that age. . Of the total number of unemployed and non-students, 44.1% are aged 25-29, 37.5% aged 20-24 and 18.4% aged 15-19. Persons with completed secondary (48.2%) and primary education (25.4%) predominate. Graduates of higher education among the unemployed and not participating in education and training are 14.3%.

On 31.05.2023, the NSI published, for the first time ever, a specialized report dedicated to children's statistics. According to data from this publication, as of 31.12.2022, there are 1,099,696 children aged 0 to 17 in Bulgaria, or 17.1% of the total population. Children under the age of 15 are 913,419, or 14.2% of the total population and those aged 15 to 17 are 186,277 or 2.9% of

all living in Bulgaria. As can be seen from the data presented, the number of children follows the negative trends of decreasing in recent years but approaches the pan-European levels for the share of children and young people in the total population of the Member States.

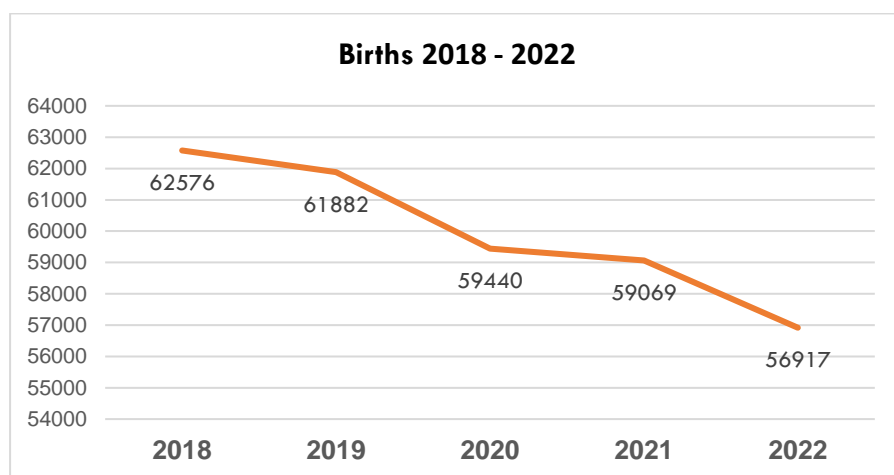
The share of population under 15 years of age is highest in the districts of Sliven - 18.9%, Yambol - 15.2% and Burgas - 15.1% of the district population. As a total, in 18 districts the share of children up to 15 years is lower than the country's average. The lowest is the share registered in districts of Smolyan - 10.8%, Vidin - 11.5% and Gabrovo - 11.8%.

For comparison, in 2022, the share of the youngest children (under 15) on average in the EU is 15%, the lowest being in Italy (12.7%), and the highest in Ireland (19.7%), followed by Sweden and France (17.6%).

Birth rate²⁵

In 2022, 56,917 births were registered in the country, of which **56,596 (99.4%) were live births**. Compared to the previous year, the number of live births decreased by 2,082, i.e., by 3.5%, thus maintaining the trend of decreasing the number of births in Bulgaria.

Figure 6. Births (number) , 2018 – 2022 (NSI)



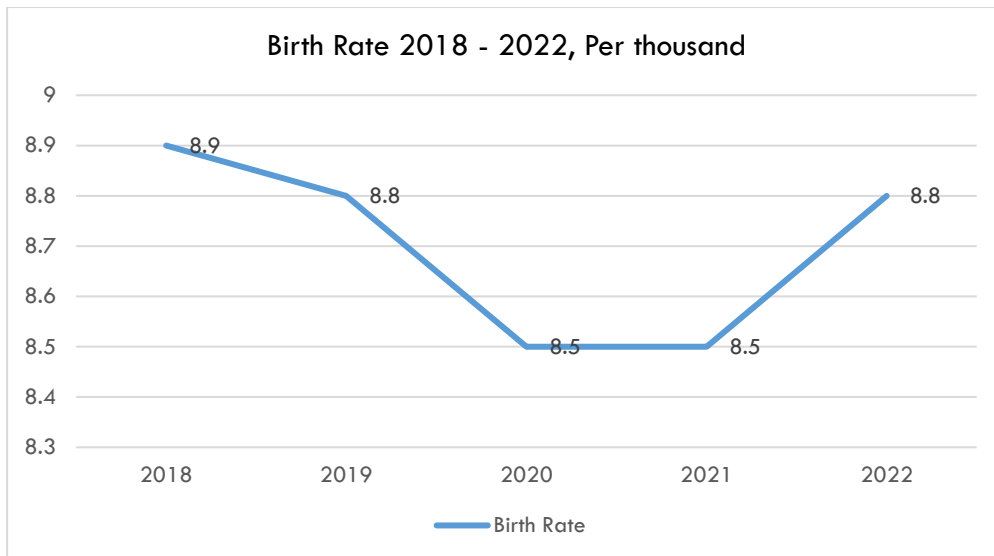
Data source: NSI

The total birth rate in 2022 is 8.8‰²⁶; for comparison, according to Eurostat data the total birth rate for EU-27 is 9.1‰.

Figure 7. Birth Rates (per thousand), 2018 – 2022 (NSI)

²⁵ <https://www.nsi.bg/sites/default/files/files/publications/DMGR2022.pdf>

²⁶ Number of live births per 1,000 people of the mean annual number of the population during the year.

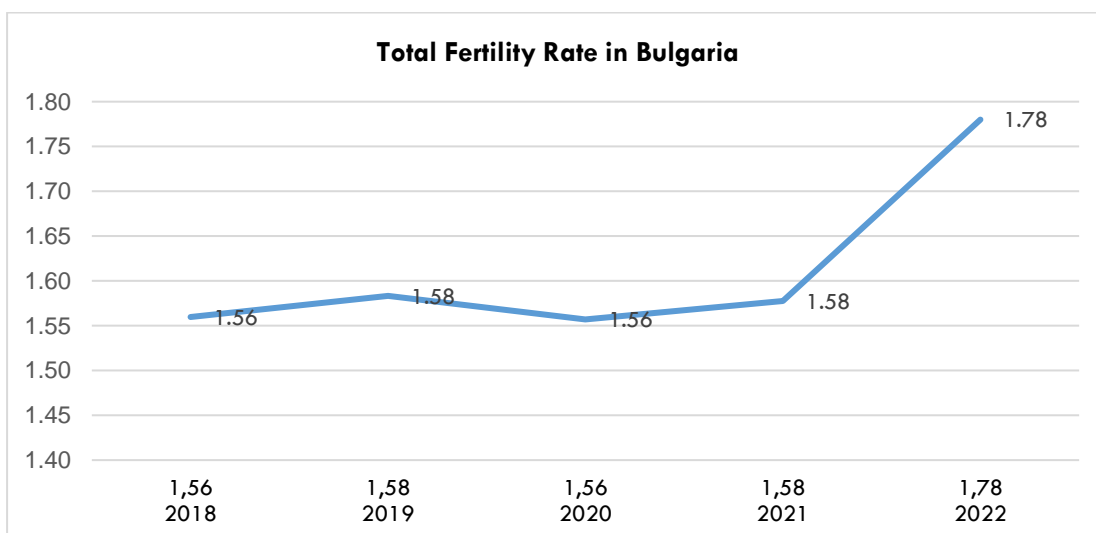


Data source: NSI

One more trend persisted in 2022: the birth rate in cities is higher than that in villages, with the birth rate being 8.8‰ in cities and 8.5‰ in villages, respectively.

The total fertility rate²⁷ describes the average number of live births per woman of childbearing age and is defined as one of the main indicators of a nation's reproductive potential²⁸. **In Bulgaria in 2022, the average number of live births per woman was 1.78**, marking an increase of 0.20 compared to 2021.

Figure 8. Total Fertility Rate in Bulgaria



Data source: NSI

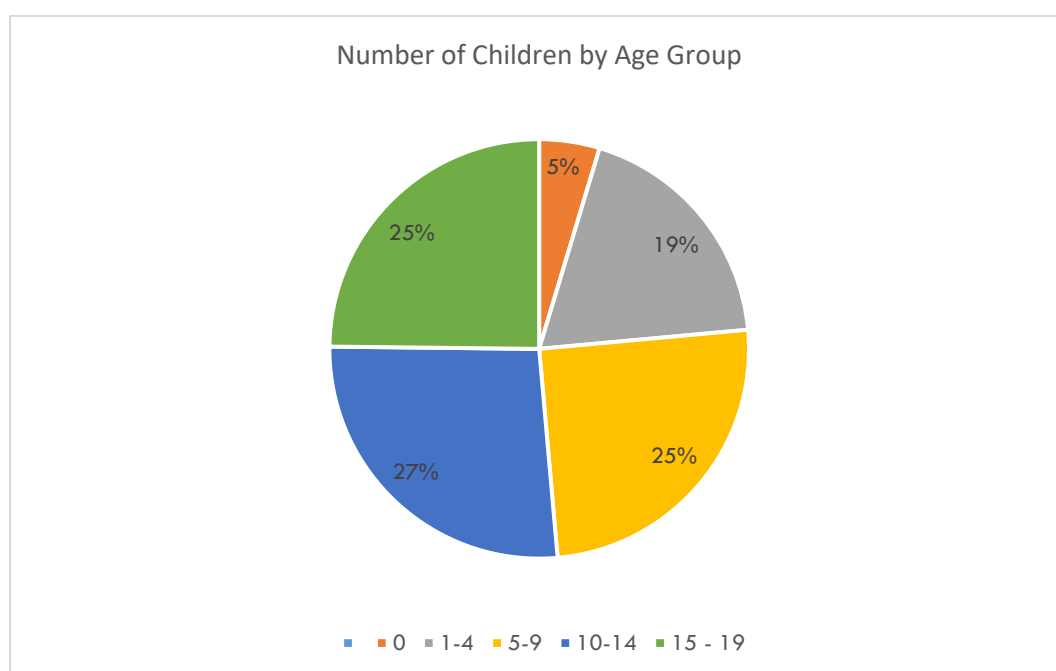
²⁷ The birth rate (n) is a ratio between the number of live born children (N) and the average annual population (S_i) during the same year. It is calculated in ‰ and shows the number of live born per 1 000 population: The total fertility rate is a sum of the age specific fertility rates during the respective year (TFR = ∑). It shows the average number of children (boys and girls) that a woman would bear during her entire fertile period (from 15 to 49 years) if the age-specific fertility stays the same as during the reporting year. Age-specific fertility rates (f_x) are calculated as a ratio between the number of children born alive (N_x) by women at age x and the average annual number of women at the same age (S_x).

²⁸ https://www.nsi.bg/sites/default/files/files/metadata/SDI%204.1.MD_bg.pdf

The number of women in fertile age²⁹ as of 31.12.2022 is 1 278 000. It has decreased with 8 000 compared to the previous year and with 372 000 compared to 2011.

The distribution of children by age groups as of Dec 31, 2022, are represented in the table below:

Figure 9. Number of children by age group, 2022



The largest group is children aged 10 to 14 years as this demonstrates the peak of the birth rate between 2008 – 2010. The age group 5 to 9 is smaller than 10 -14 but still larger than 15 – 19 and much larger than 1 to 4. This is further expressed in the demographic trend up to 2050.

Migration of the child population. Territorial distribution of children by province

Internal migration to several major urban centres has been a persistent trend in recent years in Bulgaria. The COVID-19 pandemic has reduced and slowed down this movement to some extent. Nevertheless, better working and living conditions in big cities are still a driving force also for inter-city migrations in 2022.

This affects the migration of children (immigrated/emigrated) in both the lower and the older age groups. In 2022, a total of 65,718 children and youth were part of internal migration processes, together with their parents. A total of 35,199 or 54% of them were aged 0-9, and 30,519 or 46% were aged 9-19.

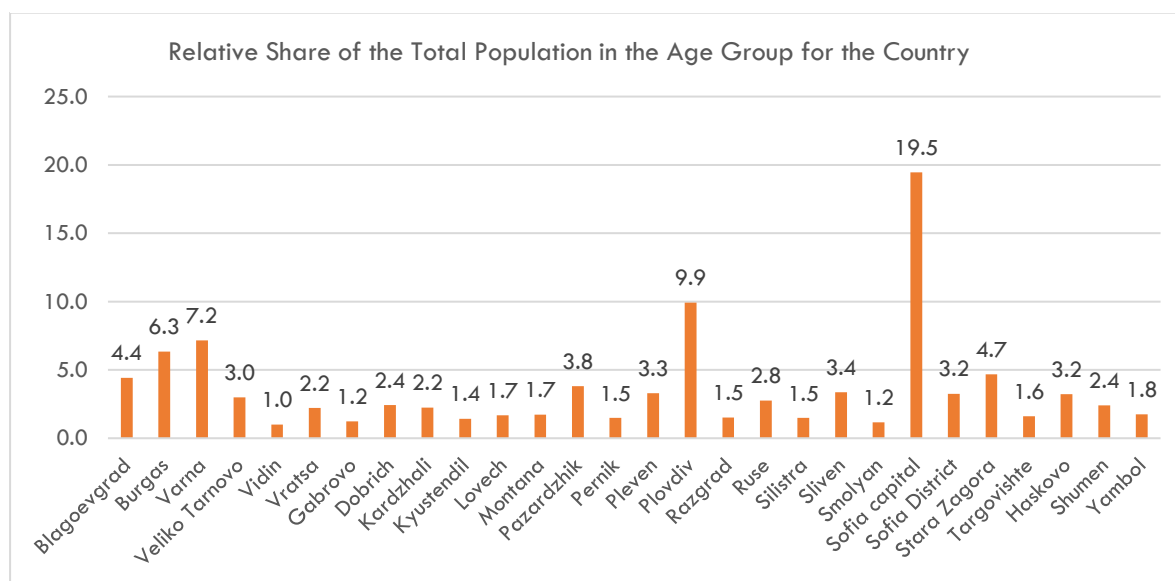
In 2022, 13,175 persons changed their address of current residence from one in Bulgaria to one in another country, with emigrants aged 0 - 14 numbering 706 persons (5.4%), and those aged 15 - 17 totalling 0.8%.

²⁹ The population census in 2021 provides more precise data for women in fertile age. Together with the decrease in the cohort of women in fertile age it causes the increase in the fertility rate.

In 2022, 40,619 persons changed their address of current residence from another country to one in Bulgaria; of those who came to reside in Bulgaria, 14% were in the age group 0 - 14 years, and 1.5% were aged 15 to 17.

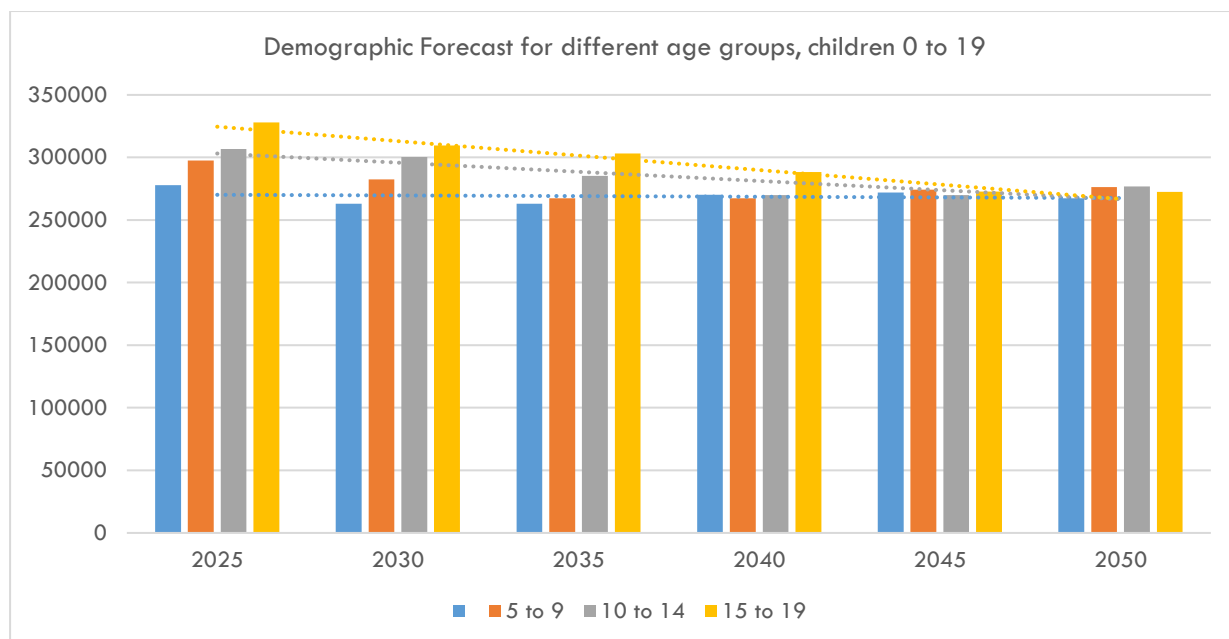
The child population is mainly concentrated in urban centres, albeit with significant regional differences. According to NSI data for 2022, the largest numbers of children (aged 0 to 18 years) are mainly concentrated in five areas: Sofia city, Plovdiv, Varna, Burgas and Stara Zagora. The children living there represent 47.5% of the total number for the country. Of them, almost 20% (1 in 5) live and grow up in Sofia.

Figure 10: Relative Share of Population



As can be seen from the figure, there is clear trend of decrease in the age group 15 to 19. The group of 10 to 14 decreases at the beginning of the period, then there is a plateau and a slow increase in 2050. The group of 5 to 9 decreases slowly to 2040, there is a plateau and a small increase in 2050. For the group of 0 to 4 – there is a sharp decrease to 2030 and then an increase and a plateau.

Figure 11. Demographic Forecast to 2050 by age groups, NSI



This option is defined as realistic and in line with the European Union’s regulatory requirements for the demographic and socio-economic development of Member States.

3.2. Epidemiological Data – Health Status

Child Mortality

In 2022, 274 children under the age of 1 year died in the country, with the infant mortality rate being 4.8‰.³⁰

Table 1. Child Deaths for 5 Age Groups

Child deaths for 5 age groups of children					
Age group (years)	2018	2019	2020	2021	2022
0	358	342	301	326	274
1 – 4	93	76	64	72	71
5 – 9	61	50	36	61	40
10 - 14	70	66	66	63	64
15 - 19	145	156	124	145	126

Data source: NSI

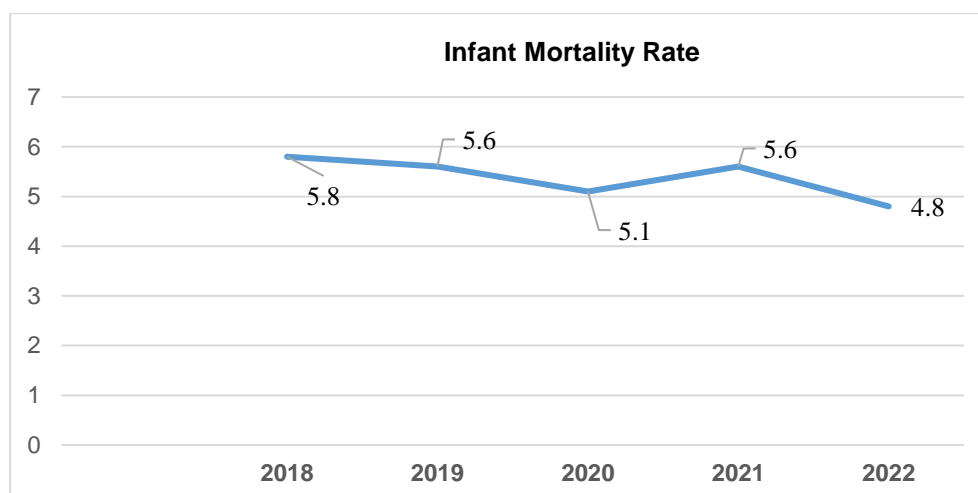
As can be seen from the above-cited data on a few demographic indicators related to children – such as the percentage of children (up to 15 years) in the total population, the total fertility rate for Bulgaria, as well as the total birth rate – Bulgaria follows the pan-European trends.

As for the child mortality rate, according to NSI data, it has been on the decline in recent years, from 5.8 ‰ in 2018 to 5.6 ‰ in 2021 to 4.8 ‰ in 2022. Regardless of this positive trend, however, it continues to be the highest at the EU level, where the mean child mortality rate for 2021 was 3.2 ‰ (5.6 ‰ in Bulgaria in 2021 – highest among all member states)³¹.

³⁰ Shows the number of deaths of children under 1 year of age per 1,000 live births.

³¹ Based on data by Eurostat https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Mortality_and_life_expectancy_statistics#Infant_mortality

Figure 12: Infant Mortality Rate



Data source: NSI

As the infant mortality rate is a key indicator of the quality of paediatric and maternal health care, the National Health Strategy reports that one of „the most alarming findings and a major challenge for Bulgaria's health policy is the infant mortality rate, which is among the highest in the European Union“³² Accordingly, the National Health Strategy sets maternal and child health policy at the centre of the strategic and operational actions of the health care system and of all national institutions responsible for the implementation thereof.

As for the causes of death of children at the earliest age (from 0 to 1 year of age), the analysis shows that the largest number of deaths is due to certain conditions occurring during the perinatal period (41.1%), followed by congenital anomalies and deformities (18.1%), as well as diseases of the circulatory system (10.7%) and diseases of the respiratory system (10.4%).

According to the National Centre of Public Health and Analyses (NCPHA), the summarized data on the health status of children and students according to indicators of physical development and physical capacity and diseases detected during prophylactic (preventive) examination, or regular monitoring and follow-up examinations at public dispensaries, indicate that of the total of 837,419 children and students aged 0 – 19 who comprise the target group for prophylactic examinations, 700,093 (83.6%) are covered by a basic prophylactic examination. The aforementioned data are submitted to NCPHA by the 28 Regional Health Inspectorates (RHIs) in Bulgaria according to information provided by the medical specialists from the health offices of childcare facilities and schools, based on submitted standard forms for basic prophylactic examinations carried out during the academic year 2021/2022 by general practitioner doctors.

The main age groups for which the data from prophylactic examinations are evaluated are 0 to 6 years and 7 to 19 years, while for some of the indicators, the second group is divided into two subgroups: 7 to 14 years and 14 to 18 years.

Within the framework of preventive examinations, several main indicators are examined:

- Anthropometric data
- Physical capacity
- Morbidity detected during prophylactic examinations

³² <https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1604>

- Number of children registered for regular follow-up or prophylactic examinations at dispensaries
- Data on prophylactic vaccination.

Anthropometric Indicators

Children aged 0 to 6 represent 25.2% of the total number of children who underwent a basic prophylactic examination. The anthropometric data from the examination of this group for a period of 5 years are as follows:

Table 2. Physical Development Status. 0 – 6 Age Groups

Years	Normal physical development (%)		Above-normal development (%)		Delayed development (%)	
	Height	Weight	Height	Weight	Height	Weight
2018/19	97.5%	96.8%	1.3%	2.0%	1.2%	1.2%
2019/20	97.5%	96.9%	1.1%	1.9%	1.4%	1.2%
2020/21	97.2%	96.5%	1.5%	2.3%	1.3%	1.2%
2021/22	97.2%	96.3%	1.5%	2.5%	1.3%	1.2%

Data Source: MoH

The main trend as shown above is an increase in the share of overweight children, by 0.5% over the five-year period. The group of children with normal physical development remained relatively stable.

During the academic year 2021/2022, 523,368 out of a total of 626,204 schoolchildren aged 7 to 19 (74.7%) underwent a basic preventive examination. The data on the main indicators of physical development for this age category (height and weight) for the period 2018 – 2022 demonstrates the following:

Table 3 Physical Development Status, 7 – 19 Age Groups

Years	Normal physical development (%)		Above-normal development (%)		Delayed development (%)	
	Height	Weight	Height	Weight	Height	Weight
2018/19	94.85%	93.2%	3.2%	4.8%	1.9%	1.96%
2019/20	94.2%	93.2%	3.1%	4.9%	1.9%	1.89%
2020/21	95%	93%	3.3%	5.13%	1.7%	1.88%
2021/22	94.4%	92.3%	3.7%	5.65%	1.9%	2.07%

Data Source: MoH

Overweight is the main indicator that has been steadily increasing over the years, with the intensity of growth being different in different age groups – it is the smallest in children up to 7 years old (only 0.2% for the period 2018 – 2022). In the next group, 7 - 19 years, the increase is almost 1 percent (0.85%), but it is most significant in the age of 14 - 18 years, when the percentage of overweight children increases by 1.5% in a five-year period.

Table 4. Overweight Children by Age Groups

Years	Overweight up to 7 years (%)	Overweight from 7 to 19 years (%)	Overweight 14 – 18 years (%)
2018/19	1.3%	4.8%	12.85%
2019/20	1.1%	4.9%	13.29%
2020/21	1.5%	5.13%	14.05%
2021/22	1.5%	5.65%	14.35%

Data Source: MoH

In all age categories, the share of overweight children is greater among boys (6.3%) compared to girls (less than 5.23%).

Physical Capacity

90.3% out of all children aged 3 - 7 for whom data was received from the assessment of physical capacity from nurseries at kindergartens, met the norms; this trend was maintained from the previous years (2020: 92.8%, 2019: 87.6%, 2018: 89%).

As for the state of the physical capacity of school-age children, it can be judged mainly by the data submitted by medical specialists working at the health offices in schools.

For the academic year 2021/2022, data has been received for 612,198 schoolchildren aged 7 to 18, of whom 603,835 (98.64%) met the norms, with girls in both age groups (7 to 14 years and 14 to 18 years) performing worse than boys.

A total of 7,490 (1.22%) schoolchildren were exempted from physical education and sports classes, with the majority of those being boys in the 7–14-year group, but girls predominating in the 14–18-year group.

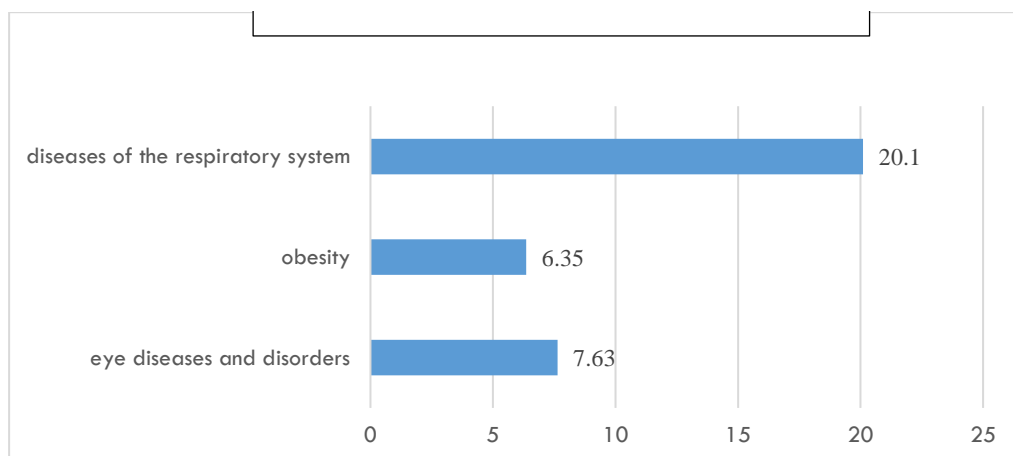
A total of 873 schoolchildren (0.14%), with a significant preponderance of boys (525, versus 348 girls), were enrolled in physical therapy groups.

Diseases detected during basic prophylactic examinations

The data on the diseases registered in 2022 during the basic preventive examination of children in the age group 0 - 6 years show that the most common ones are:

- diseases of the respiratory system: allergic rhinitis (7.54‰), pneumonia (6.43‰) and asthma (6.13‰), making up a total of 20.1‰,
- obesity (6.35‰),
- eye diseases and disorders (vision problems, refraction and accommodation disorders, blindness, and reduced vision), making up a total of 7.63‰.

Figure 13: Diseases among 0-6 years olds in 2022



Data source: NCPHA

Chronic diseases of the tonsils and adenoid vegetations also occur at a high frequency, followed by cases of chronic bronchitis and specific developmental delay.

Among the diseases detected during preventive examination in schoolchildren (7 to 18 years), the most common are:

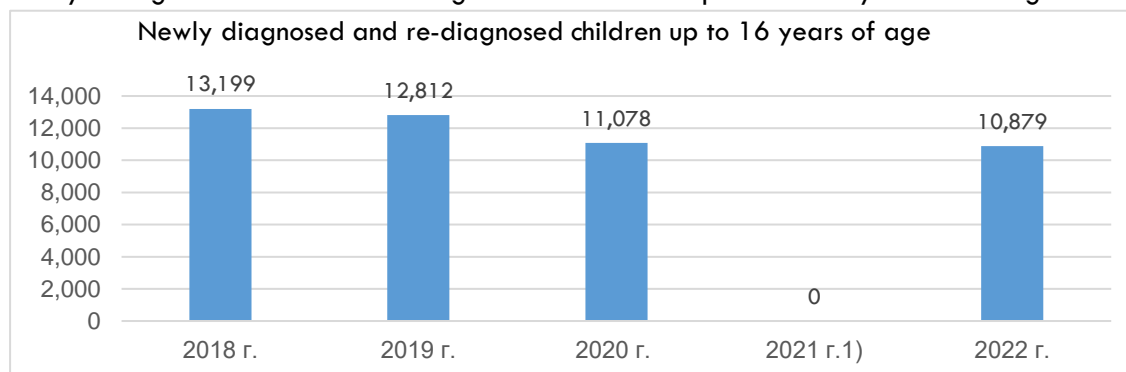
- Obesity (21.67‰), which marked a serious increase compared to previous years by 2.37‰ over a five-year period. The most cases of obesity were found among students in the 7th grade (33.04‰), and it is worth noting the drastic increase of such cases by nearly 3‰.
- Vision problems, found in 18.4‰ of those who underwent a preventive examination. These diseases also show a marked increase of 2.9‰ over a 5-year period.
- Bronchial asthma: 7.48‰,
- Diseases of the musculoskeletal system (spinal distortions): 2.8‰.

Outpatient monitoring and treatment at public dispensaries

According to the NCPHA, based on the data presented in the 28 Regional Health Inspectorates

Figure 14: Newly Diagnosed Children

(RHIs), for children enrolled in outpatient health monitoring or treatment at dispensary centres, the decreasing trend in the number of such children observed since 2018 persisted in 2022, with a reduction by 17.50% over five years: from 13,199 in 2018 to a total of 10,879 enrolled (either as newly diagnosed or as re-diagnosed children up to 16 years of age in 2022).



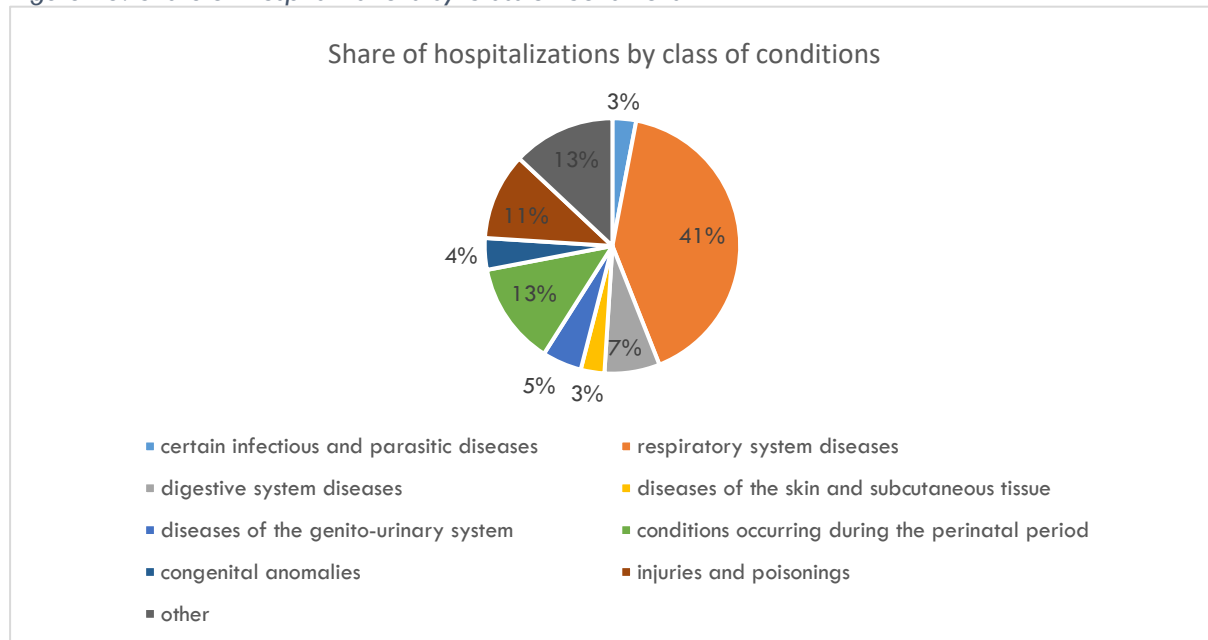
Data source: NCPHA. Note: Data for 2021 is not available.

The composition of the main groups of diseases has not changed significantly over the years. What does change is primarily the ratio between them. For 2022, mental and behavioural disorders accounted for 29% of the total number of newly diagnosed cases enrolling in outpatient monitoring, marking an increase compared to previous years when this percentage was on average 23%. Diagnosed cases of reduced vision (with a predominance of cases of reduced vision in both eyes) are taking the second place, followed by asthma, diagnosed cases of epilepsy, allergic rhinitis, insulin-dependent (type I) diabetes mellitus, cerebral palsy, and congenital heart anomalies.

Additionally, based on the information from the National Long-term Health Care Map. The data on hospitalization shows that for 2021, for children up to 18 years of age 168 675 children from the whole country were hospitalized and treated in a hospital or average of 142 hospitalizations for 1000 children. Organized by type of disease, the situation is represented in the chart below:

The largest share is for Respiratory system diseases (41%), followed by Digestive System Diseases (13%) and condition occurring during the perinatal period (13%), Injuries and poisoning (11%).

Figure 15: Share of Hospitalizations by Class of Conditions



Prophylactic Vaccination

In accordance with Ordinance No. 15 of 2005 on immunizations in the Republic of Bulgaria, mandatory immunizations and reimmunizations for children are carried out as preventive measure against 11 infectious diseases:

- viral hepatitis type B
- tuberculosis
- diphtheria
- tetanus
- whooping cough (pertussis)
- poliomyelitis
- pneumococcal infections
- Haemophilus influenzae type B
- measles

- epidemic mumps
- rubella.

Within the framework of national programs, it is possible to administer vaccines against rotavirus infections (in newborns up to the second month and again at 3 months' age), as well as against cervical cancer (in girls between the ages of 9 and 14) if requested by a parent /guardian.

As an indirect result of the COVID-19 pandemic and the doubts that have been raised over the introduction of vaccines against that virus, in Bulgaria there is a decline in the scope of immunizations and re-immunizations against diseases that had traditionally been fully covered by vaccination, such as diphtheria, poliomyelitis or measles. As shown by NCPHA's data on the scope of immunizations and revaccinations for 2022 (see table below), 100% coverage was not achieved in any of the vaccination campaigns³³.

The fact that a large proportion of gaps in vaccine coverage concern re-immunizations is of particular concern, which in practice compromises the entire immunization process for individual children. Restoring public trust in vaccination is a serious challenge for the health policy in Bulgaria, especially in some of the regional and municipal centres such as Sliven and Yambol, in North-West Bulgaria, etc.

³³ https://ncpha.government.bg/uploads/statistics/current/2022/immunizations_2022.pdf

IMMUNIZATIONS AND REIMMUNIZATIONS CARRIED OUT IN BULGARIA IN 2022	
Mandatory immunizations	
Against TUBERCULOSIS, immunized newborns	
% covered:	96.5%
Against DIPHTHERIA, TETANUS AND WHOOPING COUGH, persons given a third dose	
% covered:	91.4%
Against POLIO, persons given a third dose	
% covered:	91.4%
Against HAEMOPHILUS INFLUENZAE TYPE B, persons given a third dose	
% covered:	91.5%
Against HEPATITIS B, immunized newborns given a third dose	
% covered:	91.5%
Against MEASLES, MUMPS AND RUBELLA, immunized at 13 months' age	
% covered:	91.2%
Against PNEUMOCOCCAL INFECTIONS (with a conjugate vaccine), persons given a third dose for those born before end 2019, and persons given a third dose for those born in 2020.	
% covered:	84.7%
Target immunizations (number)	
Against RABIES, after animal bites	1,758
Recommended immunizations (number)	
Against HEPATITIS A	361
Against HEPATITIS B	136
Against FLU	170,148
Against TETANUS, after injury	21,343

Children's Mental Health

According to the global health assessments for Europe in 2019, the number of people with mental health conditions (including common mental disorders such as depression, anxiety disorders and psychoses in adults, as well as developmental and behavioural disorders in children and adolescents) equals 13% of the population. Data for Bulgaria shows that 14.5% of people in Bulgaria have suffered from mental disorders at some stage of their lives. According to UNICEF's analysis, the data on the mental state of Bulgarian children are no less alarming - one in five children experience a mental disorder each year. Every second child in Bulgaria has been a victim of mental abuse³⁴.

According to UNICEF data, many children and young people, including in Bulgaria, struggle with anxiety, depression, sadness, and other negative emotions, – and the COVID-19 pandemic, through induced social isolation, disrupted educational process, heightened anxiety about family income and health, has exacerbated many young people's feelings of fear, anger or concern about their future.

³⁴ <https://www.unicef.org/eu/media/2021/file/State%20of%20the%20World's%20Children%202021.pdf>

16% of adolescents³⁵ reported feeling lonely most of the time or always in the past year. The percentages almost doubled between age 11 (8% for boys and 14% for girls) and 15 (13% of boys and 28% of girls). In Bulgaria, these percentages are significantly higher: at age 11, 15% of girls and 8% of boys reported feeling lonely; at age 13, 24% of girls and 10% of boys felt lonely, and at age 15, 26% of girls and 16% of boys have experienced loneliness in the last year.

Indeed, the risk is that the aftershocks of this pandemic will chip away at the happiness and well-being of children, adolescents, and caregivers for years to come and that they will pose a risk to the foundations of mental health. These aftershocks come on top of the already existing problems of bullying at school, domestic violence, the importance of career guidance, the appearance of the first intimate relationships or the intergenerational gap between parents and children. The prevalence of mental disorders for boys and girls in Europe aged 10–19 is 16.3%, while the global figure for the same age group is 13.2%. This means that 9 million adolescents aged 10–19 in Europe live with a mental disorder.

Table 5. Estimated percentage of mental disorders among adolescents aged 10 – 19 in Bulgaria in 2019

Girls and boys aged 10–19		Girls aged 10–19		Boys aged 10–19	
Prevalence %	Number	Prevalence %	Number	Prevalence %	Number
11.2	73,808	10.6%	33,742	11.8	40,067

Data for Bulgaria from UNICEF's new global report "The State of the World's Children 2021" shows that 11% of girls and 12% of boys aged 10-19 have a diagnosed mental disorder.

Unfortunately, no valid and in-depth data is available on the percentage of children and youth in Bulgaria with mental health problems, which dearth of information precludes a full analysis of the issue and results in a regrettable situation whereby such children and adolescents often cannot get the help they need. This, in turn, leads to two negative consequences:

- Poor adolescent mental health is the cause of a range of risky behaviour – including self-harming, tobacco and alcohol use, drug abuse, risky sexual behaviour, and violence – which have lifelong effects.
- Half of all mental disorders in adults begin before the age of 14, so if these problems are not addressed and managed in time, they have consequences beyond childhood and adolescence. For this reason, the availability of community services that offer age-appropriate early interventions and ongoing support is fundamental to protecting and enhancing the personal well-being and productivity of children and adolescents.

With an estimated prevalence of 5% for ages 6 – 17 years, attention-deficit hyperactivity disorder (ADHD) is among the most common childhood psychiatric disorders in the European region³⁶. In summary, children's mental health disorders are one of the most important public health challenges in Europe, with a lot of children being affected every year. Despite the lack in Bulgaria of solid,

³⁵ World Health Organization's (WHO) Regional Office for Europe, *A focus on adolescent mental health and well-being in Europe, central Asia and Canada. Health Behaviour in School-aged Children international report from the 2021/2022 survey*, <https://iris.who.int/bitstream/handle/10665/373201/9789289060356-eng.pdf?sequence=2&isAllowed=y>

³⁶ Child and adolescent health in Europe: monitoring implementation of policies and provision of services, WHO Regional Office for Europe [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(18\)30286-4/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(18)30286-4/fulltext)

reliable data on the prevalence of mental illness in childhood, it is more than clear that a systematic and integrated national-level approach is needed to solve this problem – both in the short and in the long terms.

3.3. Risk Factors Influencing Child Health

Healthy Nutrition and Physical Activity

The factors that influence the good health status of children are different and their importance varies in different periods of their development.

Children's eating habits and nutritional status during childhood are important for every stage of child development and influence all other phases of human life because they provide a foundation for healthy living, promote well-being, and protect against future health problems.

In turn, dietary risks, including low consumption of fruit and vegetables and high consumption of sugar and salt, play a role in 33% of all deaths in Bulgaria, the highest proportion in the EU and almost double the average for the EU (18%) according to the data presented in the health profile of Bulgaria in the *State of Health in the EU* report for 2021³⁷.

The analysis of childhood eating habits are based on the results of the National Survey of Health Risk Factors in the Republic of Bulgaria 2020, implemented by the National Program for the Prevention of Chronic Non-Communicable Diseases to collect information on the prevalence of the main risk factors (tobacco smoking, use and abuse of alcohol, low physical activity, unhealthy diet) associated with developing of chronic non-communicable diseases.

The conclusions of the studies show that in recent years the consumption of fresh fruit has increased among children of all ages, as well as the daily consumption of milk. Another positive trend is increased fish consumption by children of all ages. As part of the improving healthy habits in childhood, it is necessary to note the reduced frequency of consumption of pasta products by children, as well as of canned foods – fruit preserves, canned fruit (compotes) and pickled vegetables – at the expense of fresh fruits and vegetables.

The frequency of use of chocolate products among children aged 14 to 18 years is also on the decline, unlike the intake of sweets and chocolate products among children up to 6 years of age. The use of soft drinks by children under 9 years is decreasing, but increasing, along with that of sugary soft drinks, in the age group of children 10 to 18 years old. The use of energy drinks among 14- to 19-year-old schoolchildren, in combination with fried and other unhealthy foods, has increased dramatically.

In practice, positive habits develop in parallel with the development of new harmful habits, which in the end does not lead to a general improvement of a healthy lifestyle but, rather, puts Bulgaria in a lower place in pan-European surveys of children's health habits and problems with overweight and obesity.

This is also indicated by data presented in a study by the World Health Organization, European region: Childhood Obesity Surveillance Initiative (COSI), the largest such survey in Europe with participation of 45 countries the latest round of data collection (2018 – 2020) having been published in 2022³⁸. In total, almost 411,000 children aged 6 – 9 years have taken part in the surveillance. Bulgaria has taken part in all the rounds of the data collection so far.

³⁷ https://health.ec.europa.eu/system/files/2022-01/2021_chp_bulgaria_bulgarian.pdf

³⁸ <https://iris.who.int/bitstream/handle/10665/363950/WHO-EURO-2022-6594-46360-67071-eng.pdf?sequence=2>

Overall, 43% of children aged 6 – 9 years consumed fresh fruit daily in the 27 study locations providing data. The proportion of children consuming fruit daily was highest in Portugal, Ireland, and Denmark (around 60%), and lowest in Georgia and Latvia (around 25%). Bulgaria ranked in 19th place, with 37% of children consuming fresh fruit daily.

Only 34% of children ate vegetables daily. The percentage of children eating vegetables every day varied widely between countries, ranging from 57% to only 13%. In Bulgaria, 34% of children consume vegetables daily, which ranks the country 12th among the remaining 27 countries in the study.

22% of children aged 6–9 years consumed soft drinks on more than 3 days per week. There was a wide variation between countries, from 2% in Greece to 41% in Czechia. With 19%, Bulgaria is in 12th place also according to this indicator.

Overall, 75% of all children surveyed ate breakfast every day. The exact same percentage of children in Bulgaria eat breakfast every day (75%), which ranks it 13th according to this indicator.

Low physical activity is among the main causes of chronic non-communicable diseases: respectively 21 and 25% of breast and colon cancer cases, 27% of diabetes cases and approximately 30% of ischemic heart disease cases. It is the fourth risk factor for global mortality (6% of deaths worldwide). According to the WHO, hypodynamic (sedentarily) causes 10 - 15% of the total mortality in the European region and 3.5% of the burden of disease (9.7% in combination with unhealthy nutrition).

The analysis of the *children's physical activity* factor is based on the data presented in the National Survey on Health Risk Factors 2020 implemented by the National Centre of Public Health and Analyses (NCPHA), as well as on two European surveys - COSI of the European Office of the World Health Organization, as well as the results of the European School Survey Project on Alcohol and Other Drugs (ESPAD)³⁹.

According to the 2020 data of NCPHA, every fifth schoolchild aged 10 - 19 plays sport or exercises once a week or less often, with girls and older schoolchildren predominating. A greater proportion of children are playing sports or exercise in sports/fitness halls, one in five at a stadium/sports field, and one in four at home.

Over the past three years, there has been a decline in physical activity among children of all ages, as a logical result of the restrictions associated with the COVID-19 pandemic. The impossibility of attending school lead to a slight drop in the everyday physical activity of schoolchildren, both by gender and by age – for boys by 5.3 percentile points and for girls by 5 percentile points; for 10–14-year-olds by 3.9 percentile points (32.7% vs. 28.8%) and for 15–19-year-olds by 6.3 percentile points (39.3% vs. 33.0%).

Other findings from the study indicate that:

- Almost 40% of the children play sports or exercise 2-3 times a week, with girls and boys having an equal share.
- 10% of children (to a greater extent girls) have never played sports or exercised.
- All children, regardless of age, prefer to play sports or exercise in the sports/fitness halls, on the stadiums and playgrounds, with the older ones also showing a preference for activities at home.

³⁹ ESPAD Group (2020), ESPAD Report 2019: Additional Tables, Publications Office of the European Union, Luxembourg. <https://www.emcdda.europa.eu/publications/joint-publications/espada-report-2019en>

- Most of the children (50.8%) have increased their physical activity during their free time.

The level of physical activity of children in Bulgaria, especially in the 14–19-year age group, is estimated to be the highest against the background of physical activity data at the EU level according to the health profile of Bulgaria in the *State of Health in the EU* report for 2021. This data is also confirmed by the results of a European research project on the use of alcohol, drugs, and other harmful habits at school age⁸, where the daily physical activity of children aged 6 to 9 years was studied. Only 41% of children aged 6–9 years travelled to and from school actively (on foot, by bike, by nonmotorized scooter or on skates) in the 28 study locations that provided data. 45% of children in Bulgaria travel actively or walk to and from school. Overall, 53% of children spent at least 2 hours per week doing sports or dancing. Country specific values ranged from 27% to 86%. Here, Bulgaria is in 20th place with 41% of children spending at least 2 hours a week on sports activities.

The indicator providing data for spent at least 1 hour a day in active or vigorous play - 95% of children aged 6–9 years in Bulgaria are spending at least 1 hour a day to play. For comparison, the average percentage for this indicator is 87%. There was considerable variation between countries, from 65% to 96%. In all but three countries, the percentage was 75% or more.

A major cause of hypodynamic in children in recent years is the use of computers and/or mobile devices, including for accessing social media – both during school days and on weekends.

According to data from NCPHA, 63% of children aged 7-9 use a computer for up to 2 hours at school, while 59% also use a computer at home.

According to data from ESPAD, 11% of students spend at least half an hour on social media every school day, 16% spend at least an hour on this activity, 24% are on social media between 2 and 3 hours, and over 20% spend 6 or more hours on social media, which is close to the average EU indicators of time spent on social media:

1 hour: 17%

1,5 hours: 9.6%

2–3 hours: 31%

6 hours and more: 16%

The survey indicates that 43% of children spent at least 2 hours a day using electronic devices. There was a wide variation between countries, ranging from 18% to 74%. According to this indicator, Bulgaria is in 10th place with 43% of children of this age spending at least 2 hours in front of a computer.

Nutritional Status of Children

The data on the nutritional status of children is based on information received by the NCPHA from results of preventive examinations for the period 2018-2020.

The results of assessment of anthropometric indicators show a steady trend of increasing overweight over the years, with the intensity of growth being different in different age groups: it is the smallest in children up to 7 years old (only 0.5% for the period 2018 – 2022). In the next group, 7 - 19 years, the increase is by almost 1 percent (0.85%), but it is most significant in the age of 14 - 18 years, when the percentage of overweight children increases by 1.5% in a five-year period (table 4. Overweight Children, %).

Similar data is obtained in a large-scale study of eating habits and obesity among children aged 6–9 for the period 2018-2020, conducted by the European Office of the World Health Organization – the COSI Childhood Obesity Surveillance Initiative 2018-2020.

The data shows that 32% of children in Bulgaria were overweight (including obesity), which places it in 14th place out of all 45 countries participating in the study. As in other countries, the share of boys with weight problems in the total number of children was greater. Overall, 29% of children in the participating countries were living with overweight (including obesity) according to WHO definitions. Prevalence was higher among boys (31%) than girls (28%).

There is a significant difference between the data quoted above and the data on the number of children with overweight problems from the latest report of the European Office of the World Health Organization on obesity in 2022⁴⁰, which found that 6% of children under 5 in Bulgaria are overweight (including obesity). There are also discrepancies in the data collected and analysed by the individual institutions in Bulgaria.

As stated in a Joint UNICEF/WHO/World Bank report, estimates reveal that in 2020 overweight (including obesity) was a common problem in the WHO European Region, affecting 4.4 million children under 5 years of age (representing 7.9% of children in this age group), with large variations between countries. However, data is scarce and only 26 countries, mostly in the eastern part of the Region, had sufficient data to allow estimates to be produced.“ For this reason, the report emphasizes that “this supports calls for Member States to develop routine data collection programmes for obesity, such as the WHO European Childhood Obesity Surveillance Initiative (COSI) (Box 1.1), across the life course that would allow accurate tracking of trends and could be used to inform population-level approaches to prevention”.

Major Behavioural Risk Factors among Children and Adolescents

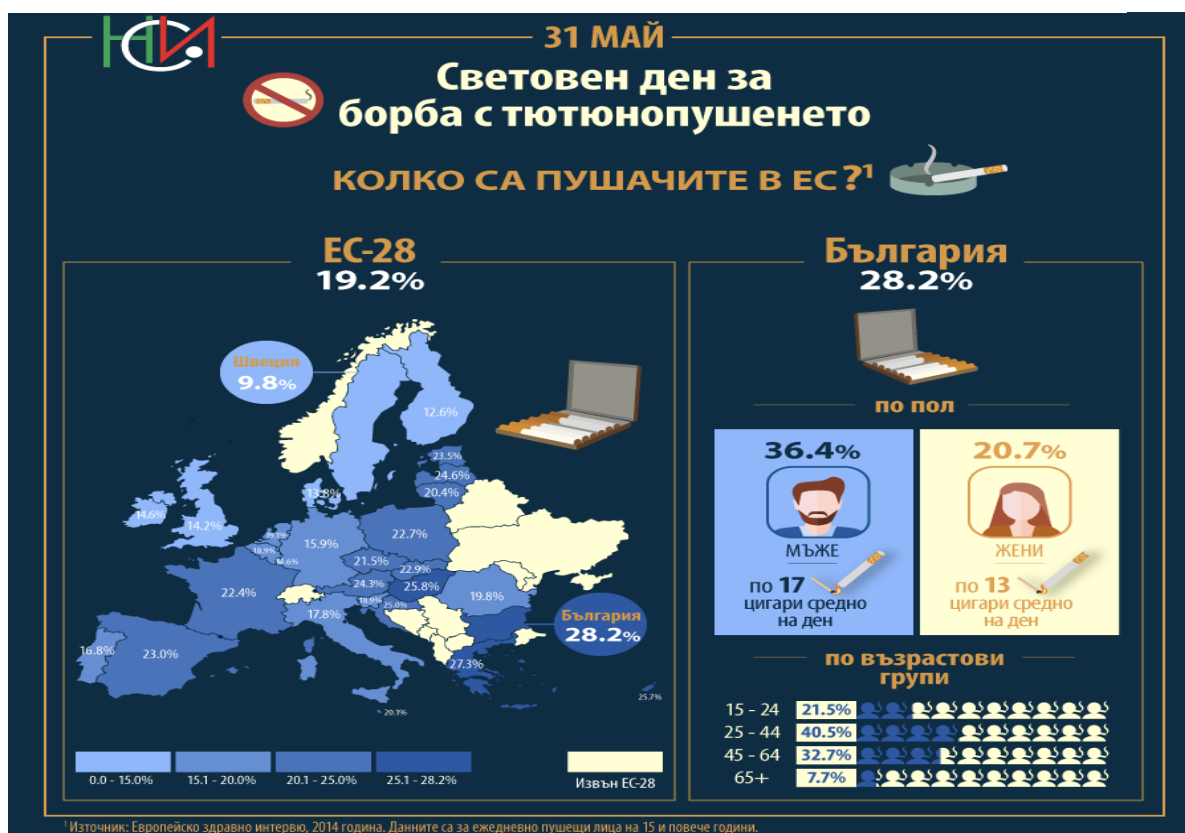
Data from the Health profile of Bulgaria in the *State of Health in the EU* report for 2021 indicates that smoking, unhealthy diet, alcohol use and low physical activity are the cause of almost half of all deaths in Bulgaria. At the same time, the data shows that smoking among adults and adolescents has the highest prevalence in the EU. Adolescent alcohol use compared to the EU average is also a cause for concern, with the proportion of 15-year-olds who reported having abused alcohol more than once in their lifetime among the highest in the EU in 2018. (30% in Bulgaria compared to the EU average of 22%).

The numbers on adolescent smoking (32%) are also worrying, particularly smoking among girls: around 38% of 15-year-old girls reported having smoked in the past month, which is the highest rate in the EU for girls. The share for the same indicator is 26% for same-age boys.

According to NSI data from 2019 (the most recent survey), 16.2% of children between the ages of 15 and 19 smoke at least once a day.

⁴⁰ <https://iris.who.int/bitstream/handle/10665/353747/9789289057738-eng.pdf?sequence=1>

Figure 16: Share of Smokers in Bulgaria and EU



Data from the 2020 National Survey on Risk Factors for Population’s Health in Bulgaria⁴¹ shows that 26.3% of adolescents have tried smoking cigarettes, with a slight preponderance of girls. In practice, almost every fifth child is a current smoker, with the relative share of girls being slightly higher than that of boys (17.3% vs. 16.4%).

11.2% had their first cigarette at the age of 14 - 15, and the difference between the two sexes is significant – 13.3% of girls vs. 8.6% of boys. 8.8% of all schoolchildren, have taken up smoking at age 12-13, while 5.7% have done so at age 16 or older. Just under 2% of children have tried a cigarette before the age of 10.

At the same time, the data on passive smoking are also extremely unfavourable: 22.0% of schoolchildren are exposed to tobacco smoke at home; moreover, with age this percentage increases with the change of daily habits and the share of those exposed to such influence among 15 - 19-year-olds is already 29.8% vs. 15.1% among 7 to 14-year-olds.

Apart from the tobacco smoke environment, the easy access to cigarettes in Bulgaria is also the reason for the high percentage of children who try smoking or actively smoke. According to data from the European School Survey Project on Alcohol and Other Drugs (ESPAD 2019), 60% of boys and 61% of girls rated access as "fairly easy" or "very easy".

One of the essential characteristics of smoking as a health risk behaviour is its intensity, especially considering the underdeveloped or completely absent competence and ability to assess risks at this

⁴¹ National Survey on Risk Factors for Population’s Health in Bulgaria – 2020. Bulgarian Journal of Public Health, 2022, Special Edition, 14 (2), 179 pp. <https://ncpha.government.bg/uploads/pages/3166/2-2022-SUPPLEMENT+.pdf>

age. Heavy smokers (more than 6 cigarettes per day) comprise 57.5% of the children who smoke, with the share of boys being higher than that of girls (respectively 60.0% vs. 55.6%). Heavy smoking in both sexes is more common in the age group 15 - 19 years. A total of 19% of boys and 25% of girls in this category smoked at least one cigarette per day according to data from the *European School Survey Project on Alcohol and Other Drugs (ESPAD 2019)*⁴², which is significantly higher than the European average of 10% for boys and girls.

A new trend noted in recent years is the use of electronic cigarettes. According to data from the ESPAD project, 40% of respondents have been using them for a long time and 14% for at least a month. For Bulgaria, this data is respectively 13% for the last month and 36% long-term.

Despite the positive trends in teenage smoking identified by the ESPAD project⁴³ for the period 1999 - 2019, Bulgaria is second only to Slovakia in early initiation of daily cigarette use and first among 16-year-olds by lifetime use (54% of girls and 45% of boys, respectively). For this reason, smoking among children and schoolchildren is still a serious challenge to healthcare and education in Bulgaria, despite numerous campaigns and promotions of a smoke-free life.

Alcohol consumption is an acute societal problem and a major risk factor for chronic non-communicable diseases, injuries and premature mortality, and its consumption in early childhood and subsequent adolescence is a cause of physical, mental, and behavioural problems.

According to NSI data, Bulgaria has seen a significant increase in the consumption of alcoholic beverages in recent years, with an increase of 8.5 Liters for the period 2011 - 2021.⁴⁴

The WHO report "In Focus: Adolescent Health and Wellbeing"⁴⁵ pays special attention to the indicator 'drunkenness' among young people in the European region. The report identifies drinking among children as a behaviour that is associated with a range of adverse outcomes such as injuries, violence, suicide attempts, unwanted pregnancies, sexually transmitted diseases, poor school performance, and more.

The 2020 *National Survey on Risk Factors for Population's Health in Bulgaria* shows that half of the students aged 10 - 19 (49.2%) have tried alcohol (beer, wine, hard liquor, etc.), and that the average age at which they first tried alcoholic beverages was 14 years old. More than 10 times during the year, 8.3% of children in this age group got drunk, without differences between the two sexes.

Data from the ESPAD project⁴⁶ indicate that in 2019, 82% of 16-year-old Bulgarian schoolchildren, regardless of gender, had tried some type of alcohol at least once in their lives, compared to 79% of their peers at the European level.

Over three quarters of respondents (79%) at the European level reported relatively easy access to alcohol. This is also the opinion of 86% of Bulgarian schoolchildren. 73% of the surveyed Bulgarian children defined access to beer as extremely easy, with respectively 63% and 53% defining access to wine and spirits in the same way. These figures are higher than the European averages, which are respectively 71% for access to beer, 62% for wine and 52% for spirits.

⁴² ESPAD Group (2020), ESPAD Report 2019: Additional Tables, Publications Office of the European Union, Luxembourg. <https://www.emcdda.europa.eu/publications/joint-publications/espada-report-2019en>

⁴³ ESPAD Group (2020), ESPAD Report 2019: Additional Tables, Publications Office of the European Union, Luxembourg. <https://www.emcdda.europa.eu/publications/joint-publications/espada-report-2019en>

⁴⁴ <https://www.nsi.bg/bg/content/3368/начин-на-живот>

⁴⁵ <https://iris.who.int/bitstream/handle/10665/373201/9789289060356-eng.pdf?sequence=2&isAllowed=y>

⁴⁶ ESPAD Group (2020), ESPAD Report 2019: Additional Tables, Publications Office of the European Union, Luxembourg. <https://www.emcdda.europa.eu/publications/joint-publications/espada-report-2019en>

Use of Drugs and Intoxicants

The latest ESPAD survey shows that, on average, 1 in 6 schoolchildren (17%) reported having used an illicit drug at least once in their life, with levels varying considerably across the ESPAD countries (range: 4.2%–29%). Lifetime prevalence of illicit drug use in this group has been declining slightly since 2011, although has been generally stable over the past two decades.

For Bulgaria, the data show that in recent years there has been a certain decrease in the indicator of *drug use at least once in a lifetime* by schoolchildren studying in a high school⁴⁷. This is mainly due to the decrease in the use of marijuana (by almost 9% compared to the previous similar national survey conducted in 2017).

Nevertheless, data from the ESPAD survey indicate that cannabis remains the most used narcotic substance by minors, mainly because of its easy access: an average 16% of respondents reported using cannabis at least once in their lifetime, while 7.1% reported last-month use. For Bulgaria, these percentages are similar, moreover, attention must be drawn to the fact that 34% of boys and 39% of girls here define access to cannabis as easy or very easy.

The second-most-used group of drugs is that of tranquilizers and ecstasy, which are also defined as easily accessible by 15% of boys and 16% of girls.

The earliest mean age of first use was observed for use of opioids and inhalants (14 years) and cannabis, synthetic cannabinoids and hallucinogens (15 years). The first use of stimulants (cocaine, amphetamines, methamphetamines, and ecstasy) begins at an average age of 16.

Addiction to Social Networks

According to the ESPAD survey report, around 94% of respondents reported use of social media in the past week. On average, users spend 2 – 3 hours on social media on a typical school day, rising to 6 or more hours on non-school days. In most countries, girls reported using social media on non-school days more frequently than boys.

According to ESPAD, 11% of students in Bulgaria spend at least half an hour on social media every school day, 16% spend at least an hour on this activity, 24% are on social media between 2 and 3 hours, and over 20% spend 6 or more hours for this activity, which is close to the European average for time spent on social media:

- 1 hour: 17%
- 1,5 hours: 9.6%
- 2-3 hours: 31%
- 6 hours and more: 16%

The research indicates that 43% of children spent at least 2 hours a day using electronic devices. There was a wide variation between countries, ranging from 18% to 74%. According to this indicator, Bulgaria is in 10th place with 43% of children of this age spending time in front of electronic devices and in social networks.

⁴⁷ National survey of health behaviour, assessments and attitudes regarding the use of psychoactive substances among students (8th - 12th grade) in Bulgaria, conducted among 4109 students from December 2021, commissioned and with the methodological support of the National Focal Centre for drugs and drug addictions from "Sova 5" JSC.

3.4. Conclusions

- The number of children follows the global negative trends of decreasing in recent years but approaches the pan-European levels for the share of children and young people in the total population of the member states. The total birth rate is close to the EU average. The demographic prognosis presents a decreasing number of children in all age groups as towards the end of the period (2050) all age groups level out.
- The infant mortality rate has decreased over the last 5 years, from 5.8 ‰ in 2018 to 4.8 ‰ in 2022. Despite this positive trend, however, infant mortality rate continues to be the highest in Europe.
- The child population is mainly concentrated in urban centres, with significant regional differences in the number of children between them. According to NSI data for 2022, the largest number of children are concentrated in five districts: Sofia city, Plovdiv, Varna, Burgas, and Stara Zagora, with the children living there comprising as much as 47.5% of the total number for the country. Of them, almost 20% (1/5) live and grow up in Sofia.
- The analysis of deaths among children up to 1 year of age shows that the largest number of deaths is due to certain conditions occurring during the perinatal period – 134 (41.1%). This is followed by congenital anomalies, deformities, and chromosomal aberrations – 59 (18.1%), diseases of the circulatory system (10.7%) and diseases of the respiratory system (10.4%). These 4 groups account for 80.3% of all deaths of children under 1 year of age. Perinatal infant mortality increased this year and is 8.8 per 1,000 births, compared to the EU average (6.2‰). Neonatal infant mortality after 2000 shows an annual decreasing trend, but in 2021 it increases and reaches 3.1‰, approaching the EU average of this indicator (2.4‰). Post-neonatal infant mortality also shows a decreasing trend and in 2021 reached 2.4 per 1,000 live births excluding those who died before the 28th day. The average value for the EU is 1.1‰ - more than 2 times lower than that for Bulgaria. The integral indicator, characterizing the probability of children dying before reaching the age of 5, is twice as high as the EU average. These are the main indicators of the level of health care, although they are also greatly influenced by the level of social well-being and lifestyle. Despite the implementation of partial interventions in the field of maternal and child health, Bulgaria still lacks a comprehensive and integrated national policy to guarantee the necessary structure, resources and organization of pediatric care adapted to the needs of Bulgarian children. Data on hospitalized morbidity among children under 18 show that in 2021, 168,675 children were treated in hospitals, or 142 hospitalizations per 1,000 children. In the structure of hospitalized morbidity by classes of diseases, the most common are: diseases of the respiratory system (28.9%), in second place are certain conditions occurring in the perinatal period (11%), followed by injuries and poisonings (9.8%).

Some other trends that could be observed are:

- For the period 2018 - 2022, 'overweight' is the main indicator that has been steadily increasing over the years, with the rate of increase being different in different age groups: it is the smallest in the youngest children - up to 7 years old with 0.2%, followed by 0.85% for children between the ages of 7 – 19, and being greatest in children between the ages of 14 – 18 where the percentage of overweight children increased by 1.5% over a five-year period. This increase also reflects on the indicator 'morbidity' in this group, taking first place among the causes of illness found within the framework of preventive examinations with 21.6%, and contributing to a spike of 2.37‰ within five years.
- A lasting positive trend after the COVID-19 pandemic is the increased physical activity: a

greater part of children (50.8%) has increased their physical activity during their free time, which brings Bulgaria to first place in this indicator (in the 14-19 years-old age group) at EU level for 2021.

- As can be seen from the information presented by the NCPHA on the scope of immunizations and revaccinations for 2022, a 100% coverage was not achieved in any of the vaccination campaigns⁴⁸. Particularly alarming is the fact that a large part of the gap in the coverage of vaccines concern re-immunizations, which practically compromises the entire immunization process of whole groups of children.
- For 2022, the main cause for starting outpatient (dispensary) monitoring of newly diagnosed cases is mental and behavioural disorders, with 29% of the total number, which marked a serious increase compared to previous years and is in direct correlation with data from a UNICEF analysis of the mental state of children, according to which one in five children in our country is affected by a mental disorder every year. Analyses show that children's mental health disorders are one of the most important public health challenges in Europe, with a lot of children being affected every year. Against this background, the fact that Bulgarian and foreign reports state that there are not enough available, reliable, and in-depth data on the percentage of children and young people in Bulgaria who have mental health problems to allow a full-fledged analysis of the issue is even more worrying. And this reflects the fact that very often the affected children cannot get the help they need.
- The other worrying trend is related to the use of alcohol: half of the students aged 10 - 19 years (49.2%) have tried alcohol (beer, wine, hard liquor, etc.), and the average age at which they first tried alcoholic beverages is 14 years old. Data from European studies indicate that in 2019, 82% of 16-year-old Bulgarian students, regardless of gender, had tried some type of alcohol at least once in their lives, compared to 79% of their peers at the European level. The low effectiveness of measures for the prevention of drinking is demonstrated by the fact that 86% of Bulgarian students define access to alcoholic beverages as easy and extremely easy, incl. that of wine and spirits.
- 34% of boys and 39% of girls define access to cannabis as easy or very easy, which also reflects on its use: on average 16% of respondents reported using cannabis at least once in their lifetime, while 7.1% reported last-month use.
- 11% of schoolchildren in Bulgaria spend at least half an hour on social media every school day, 16% spend at least an hour on this activity, 24% are on social media between 2 and 3 hours, and over 20% spend 6 or more hours on it. Being a sedentary occupation, this also affects the schoolchildren's health status.

⁴⁸ https://ncpha.government.bg./uploads/statistics/current/2022/immunizations_2022.pdf

CHAPTER 4. ASSESSMENT OF THE HEALTH SERVICE SUPPLY

A child's health is determined by many factors over the life course, including the influence of the family, peers, culture, beliefs, education, physical environment and of course health services (World Health Organization, 2006).

Bulgarian health system provides medical care for children in medical facilities for primary and specialized outpatient care and medical facilities for inpatient medical care throughout the country.

The Council of Europe's Committee of Ministers adopted in 2011 *Guidelines on child-friendly healthcare*⁴⁹, an integrated conceptual and operational framework assisting the creation of national models for improving the quality of paediatric health care in EU member states.

The basis of the Guidelines is the application of the principle of the 5 P's - Prevention, Promotion, Protection and Provision of services, with the active Participation of children. The document is based on the World Health Organization's definition of promotion as "the process of enabling people to increase control over the *determinants of health* and thereby improve their *health*"⁵⁰.

Unlike health promotion or protection, prevention is a proactive process aimed at taking effective measures to prevent potential problems that affect the entire population – vaccination programmes, campaigns for the prevention of dental caries through fluoridation of drinking water, etc. – to avoid events incompatible with living in good health.

Awareness of the role of prevention reflects on the number of investments for health prevention at the EU level, which total 39.6 billion euros per year and cover all groups of the population. Bulgaria lags significantly in terms of such investments, and in recent years has consistently ranked among the EU countries with the lowest level of funds invested in prevention. According to Eurostat data for 2019, investments in Bulgaria totalled EUR 129 million, compared e.g., to Germany's EUR 13,486 million or Slovakia's EUR 131 million. In terms of investments per capita, the difference is even greater: Bulgaria is in fourth place in terms of the smallest invested resource for prevention per capita (EUR 18.5), compared to the other member countries. For comparison, the EU average per-capita investment in prevention amounts to 88 euros, with Sweden leading the way with EUR 165.5 per capita⁵¹.

The lack of sufficient investments in prevention, in combination with the following problems also indicated in the National Health Strategy 2030:

- territorial disproportion in the distribution of health care for outpatient and hospital care;
- lack of specialized medical assistance for children and students;
- difficult access to quality health services in remote and hard-to-reach settlements which further exacerbates the challenges facing children's health, and
- existence of population groups not covered by prevention and health care, lead to an urgent need to focus on preventive activities for both children and adults.

⁴⁹ <https://www.coe.int/en/web/children/child-friendly-healthcare>

⁵⁰ Health Promotion Glossary, WHO, 1998. <https://www.who.int/publications/i/item/WHO-HPR-HEP-98.1>

⁵¹ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Preventive_health_care_expenditure_statistics#Preventive_healthcare_in_the_EU_accounted_for_around_0.3_25_of_GDP_2019

Prevention at an early age is particularly important because a large part of the identified health problems can be effectively influenced and overcome.

In Bulgaria, preventive care in childhood is regulated in several normative documents:

- Health Law: regulates the opening and organization of health offices in kindergartens and schools.
- Health Insurance Law: defines the scope of the different types of insurance, as well as the corresponding health assistance received.
- Law on Medical Institutions: defines the different facilities that may provide outpatient and/or inpatient care.
- Ordinance No. 8 of 3.11.2016 on preventive examinations and outpatient health monitoring states that children are subject to preventive examinations and check-ups, which are carried out by the child's general practitioner or a paediatrician, as well as in kindergartens and schools.
- Ordinance No. 3 of 5.04.2019 on medical activities outside the scope of mandatory health insurance, for which the Ministry of Health subsidizes medical facilities, including paediatric activities.
- Ordinance No. 3 of 27.04.2000 on health offices in childcare facilities and schools.

4.1. Primary Outpatient Care

4.1.1. Primary Care

Preventive activities under the “Children's Health” Programme that are performed by GPs and doctors specialized in Paediatrics and are financed by the NHIF.

Children aged 0 to 18 years are subject to preventive examinations and examinations under the “Children's Health” programme of the Ministry of Health which is funded by the National Health Insurance Fund and covers all children in Bulgaria. The frequency of preventive examinations is different and depends on the age group of the children:

- up to 1 year: once a month,
- 1- to 2-year-olds: four times a year,
- 2- to 7-year-olds: twice a year,
- 7- to 18-year-olds: once a year.

Within the framework of the programme, children are entitled to the following:

1. Newborns

By the age of 28 days, a home visit by a doctor is provided. Two examinations are performed until one month of age, with a recommended interval of 7 to 14 days.

Since 2019, in addition to the scope of medical activities, a new package "Health care provided at home by nurses, midwives or medical assistants" has been added. The activities are carried out by nurses, midwives, or physician assistants from an outpatient clinic of a provider of primary outpatient medical care and are performed at the home of newborn health-insured persons (HIPs), up to 14 days after their discharge from the medical facility. From the month of May to December 2022, 81 visits of newborn HIPs were recorded.

2. Children up to 1 year of age

- Preventive examinations every month, including measurement of anthropometric indicators, assessment of mental development, as well as taking anamnesis and detailed status. Blood tests are performed twice: at 6 months and at 1 year of age.
- General eye examination: twice, at 6 months and at 1 year of age.
- General examination of hearing: once.
- Urine examination (with a test strip): twice, at 6 months and at 1 year of age.
- Clinical examination for dysplasia of the hip joints with an assessment of dysplasia risk: twice, at the age of 1 month and 4 months.
- Ultrasound examination of excretory system - once at 6 months of age.

3. **Children from 1 to 2 years of age:** taking measurements of height, weight, chest circumference, assessment of mental development, as well as taking anamnesis and detailed status – four times a year.

4. Children from 2 to 7 years of age:

- Measurement of anthropometric indicators, history and detailed status: twice a year.
- Assessment of physical and mental development: once a year.
- Examination for intestinal parasites: once a year.
- Examination of visual acuity: once at age 5.
- Laboratory blood tests: once at age 3.

5. **From 7 to 18 years of age,** once every year measurements are carried out of anthropometric indicators, arterial pressure, assessment of physical development, examination of visual acuity and colour perception, deviations in the development of the musculoskeletal system, as well as taking an anamnesis and detailed health status.

These activities, incl. immunizations and reimmunizations of children, are carried out by a general practitioner.

For children up to 18 years of age with chronic diseases, outpatient monitoring and supervision by a general practitioner (GP) or a specialist doctor is provided, incl. multifaceted ambulatory monitoring of children with venereal skin diseases or mental illnesses, which are carried out in specialized medical facilities.

Preventive examinations can be carried out in facilities for outpatient care - primary care outpatient clinics, as well as specialized outpatient facilities: specialized medical practices, medical centres, and healthcare advisory centres. This is done after the child's general practitioner has referred the child to the relevant specialist, depending on the specific occasion and the child's health problem.

The data from the Register of Medical Facilities for Outpatient Care show that in Bulgaria there are 3,540 registered individual GP practices and 220 group practices, in which a total of 4,110 doctors work. The analyses show that there are significant inequalities in the GP coverage of the population in the various regions of the country.

According to data from the NCPHA, by the end of 2022, there were 1,996 paediatricians or other paediatric-oriented specialists in Bulgaria⁵². Of those, 1,438 (72%) were paediatricians, and 558 specialists in other child health specialties; 691 were general practitioners with a specialty in paediatrics, and their patient lists encompassed a total of 438,574 children.

Based on contracts concluded with the NHIF during 2020, in Bulgaria at that time there were 1,106 practicing doctors specializing in paediatrics, paediatric endocrinology and metabolic diseases,

⁵² Status and situation with healthcare professionals is reviewed in Chapter 6. Human Resources

paediatric cardiology, paediatric pneumology and phthisiology⁵³, paediatric psychiatry, paediatric rheumatology, paediatric surgery, paediatric clinical haematology and oncology, paediatric gastroenterology, paediatric nephrology and haemodialysis, and paediatric neurology. **The detailed review of medical profession specialists, supply and shortages are reviewed in Chapter 5. Human Resources.**

Even though data for 2022 are lacking, there are differences between the data on the availability of doctors (total and by region) by province from NCPHA and the data on doctors working with NHIF. This discrepancy shows that there is a significant number of paediatricians or specialists with a paediatric focus who have chosen to work without a contract with NHIF, which limits access to specialized paediatric care. Such is the situation in the provinces of Lovech, Kardzhali, Kyustendil and Yambol where there are no specialists working in specialized outpatient medical care in any of the specialties listed above except for paediatrics. This necessitates either a visit to a specialist in another province, or personally paying a specialist in the required specialty who does not have a contract with NHIF.

It is worth noting the fact that only in two provinces, Sofia-city and Varna, there are specialists in all listed medical specialties who have signed a contract with NHIF for specialized outpatient medical care.

To add to that, we would also review the number of outpatient facilities by districts that provide paediatric services, as well as the health consultative centres for mother and child health:

Table 6. Outpatient Facilities and Consultative Centres

District	Outpatient facilities that provide paediatric services, 2022	Health consultative centres for mother and child health
Bulgaria, Total	652	31
Southwest Bulgaria		
Blagoevgrad	40	1
Kyustendil	6	1
Pernik	8	1
Sofia, capital	88	2
Sofia district	28	1
Northwest Bulgaria		
Vidin	7	1
Vratsa	25	1
Lovech	12	1
Montana	17	1
Pleven	23	1
North Central		
Veliko Tarnovo	40	1
Gabrovo	13	1
Razgrad	10	1
Ruse	27	1
Silistra	7	1

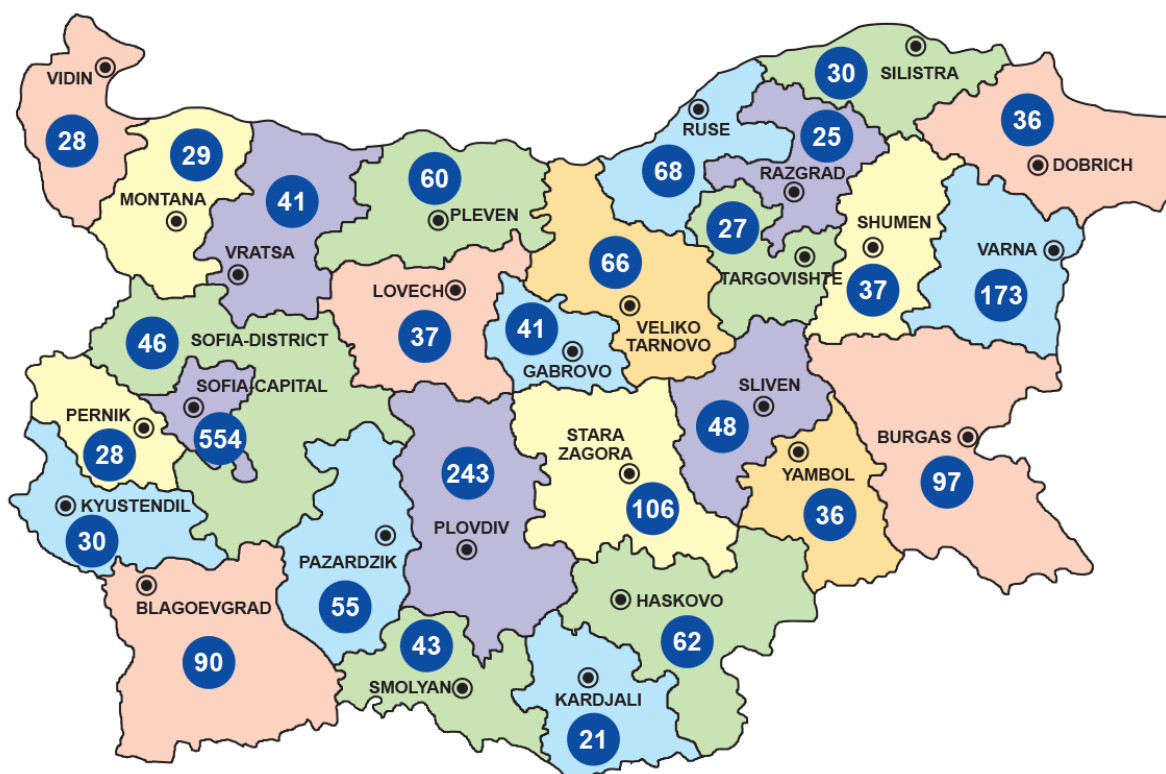
⁵³ Phthisiology is the care, treatment, and study of tuberculosis of the lung. It is therefore considered a specialization within the area of pulmonology

Northeast		
Varna	27	2
Dobrich	20	1
Targovishre	13	1
Shumen	13	1
Southeast		
Burgas	33	1
Sliven	16	1
Stara Zagora	47	1
Yambol	5	1
South Central		
Kardzhali	12	1
Pazardzhik	11	1
Plovdiv	79	2
Smolyan	7	1
Haskovo	18	1

Source: MoH

All this data presents that there is very unregular distribution of hospitals, hospitals that have paediatric clinics and departments throughout the country. The largest concentration is in Sofia then followed by other cities where there are medical universities. This fact emphasizes the capacity of Sofia to offer paediatric care now as well.

Figure 17: Primary and Specialized Outpatient Care Units by District

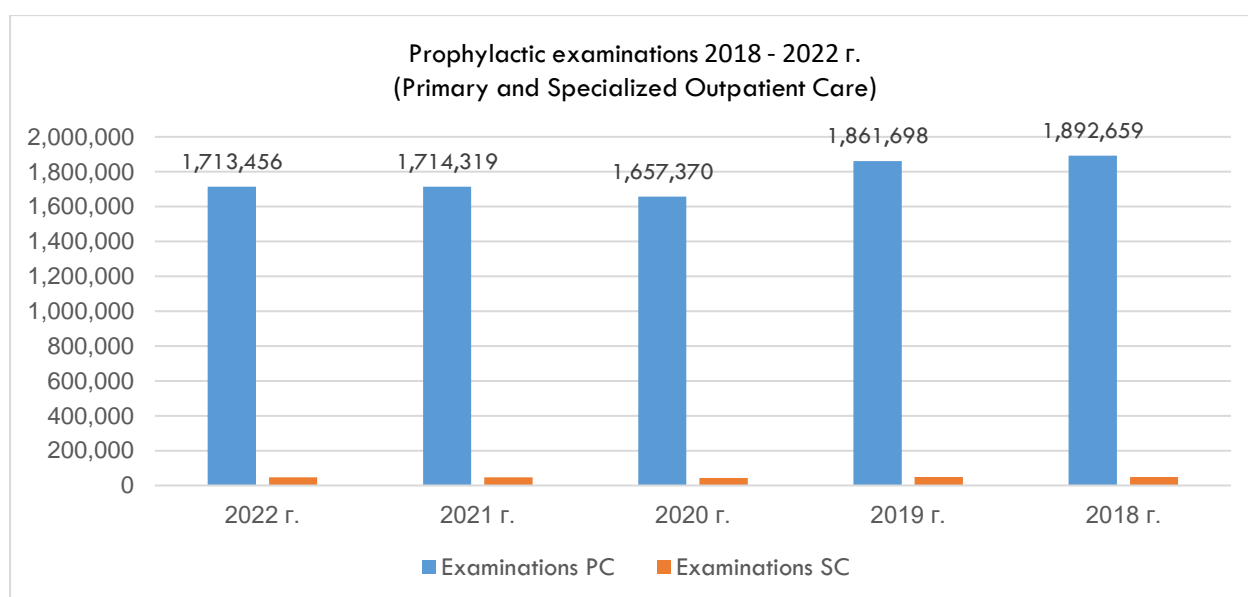


The data on conducting prophylactic examinations presented by NCPHA are based on information received from the 28 Regional Health Inspectorates (RHIs) in the country which have in turn been

gathered from medical specialists working at health offices of childcare institutions and schools, as well as based on filled-out forms from basic prophylactic examinations presented to them by personal doctors for the academic year 2021/2022. This data indicate that out of a total of 837,419 children and students aged 0 to 19, 700,093 are covered by a basic preventive examination. This number represents 83.6% of the total number of children who should undergo preventive examinations and continues the downward trend from recent years of the coverage level dropping further down below 100%: 90.1% in 2019/18, 88.8% in 2020/19, and 86.9% in 2020/21.

In response to the shrinking scope of preventive children’s examinations, their cost also decreases, as can be seen from the data provided by NHIF.

Figure 18: Prophylactic Examinations, 2019 – 2022



Data source: NCPHA

The national average number of reported preventive examinations for 2022 (under the Child Health Programme) of children aged 0 to 1 is 9.37 per child, which is less than in 2021 when the value of the indicator was 9.52 views per child. The most significant decrease in reported preventive examinations was observed in 2020: 8.65 examinations, which is 11.72% less compared to 2019 and is explained by the COVID-19 pandemic, which practically stopped almost all preventive examinations not only for children, but also for adults.

The trend is approximately the same in the next age category, children aged 1 to 2 years, when four preventive examinations per year per child are planned. However, in 2022 an average of only 2.83 are reported, which represents a decrease of 1.27% compared to 2021. Also in this age group, the greatest drop in the average number of reported preventive examinations per child occurred in 2020, down 10.78%.

An opposite trend – a slight increase in the number of preventive examinations – is recorded for children aged 2 to 7 and 7 to 18:

- For children aged 2 to 7, an average of 1.39 preventive examinations for 2022 compared to 1.37 for 2021, and again this figure remains the lowest for 2020: 1.30. In

2019, the indicator remains at the level of 2018: 1.5 preventive examinations per one child aged 2 to 7.

- The average number of reported preventive examinations for children aged 7 to 18 in 2022 is 0.78, vs. 0.76 in 2020 and 2021.

4.1.2. School Health Care

School health care in Bulgaria is regulated by the Health Law which mandates the provision of health offices in all schools and kindergartens, by *Ordinance No. 3 on health offices* delineating the scope of their activities. The main activities that must be carried out in these health offices are prevention, monitoring of physical development and determining the physical capacity of children and students, as well as health promotion activities.

The personnel working in these offices (i.e., doctors or health care professionals) must be informed about the health status of the children under their care, to respond adequately and in a timely manner should a medical emergency arise during the time children spend in the kindergarten or at school. Health professionals in these offices are responsible for improving the health culture of children and schoolchildren by organizing and conducting various activities for the promotion of a healthy lifestyle.

According to municipality-level data provided by the Ministry of Health – excluding Sofia-city municipality for which there is no data – a total of 3,090 medical specialists worked in health offices in kindergartens and schools as of 31.12.2022 in Bulgaria (excluding Sofia city). The largest number was in the municipality of Burgas, with 373 medical specialists providing a 100% coverage of all kindergartens and schools. The same coverage was provided, albeit by fewer specialists, in other municipalities, such as Plovdiv, Pazardzhik, Stara Zagora, Targovishte, Varna, Kyustendil, etc.

Based on the information provided, and assuming that in some municipalities one specialist may have to serve more than one school, it can be judged that, at the municipal level is ensured more than 75% coverage of the health offices with medical specialists - mainly nurses. However, in smaller municipalities, or in individual settlements, there is a complete lack of medical care in schools and kindergartens, regardless of the legal obligation for their provision.

According to NSI data⁵⁴ for academic year 2022/23, in Bulgaria there are 1,817 kindergartens and 2,369 schools (general, special, or vocational), making up a total of 4,186 schools and kindergartens in which there must be health offices with health specialists working there.

The issue with the provision of doctors to work in these offices is even more complicated. At the end of 2022, a total of 22 doctors work in schools and kindergartens in Bulgaria, with such doctors being available only in 11 municipalities (4% of all municipalities). The largest number of doctors (four) work in the municipality of Burgas, followed by Pleven and Stara Zagora with three doctors each, while the other municipalities have at most one or two doctors each.

4.1.3. Other Forms of Preventive Activity

Healthcare advisory centres for maternal and child health

Implementing the National Programme for the Improvement of Maternal and Child's Health, 31 Advisory Centres for Maternal and Child Health (ACMCH) have been opened in all district city centres, as in Sofia, Plovdiv and Varna there are two offices per city.

⁵⁴ <https://www.nsi.bg/bg/content/3430/детски-градини-деца-педагогически-персонал-места-и-групи-в-детските-градини-по-статистически-зони-статистически-райони-области-и-общини>

The ACMCH carry out their activities on a functional basis in all medical facilities for hospital care with mixed state and municipal ownership (i.e., district hospitals), as well as in 6 university and specialized hospitals.

These advisory centres provide diagnostic and consultative assistance which, however, is implemented within the framework of hospitals, with the aim of providing quality medical assistance for everyone, incl. those lacking a national health insurance, through the expert resources (doctors and nurses) of hospital paediatric units.

The Programme ensures the implementation of healthcare activities for pregnant women with pathologies, women in labour or who have just given birth, and children with chronic diseases or disabilities, for whom no funding is available from other sources. The activities are related to the early diagnosis of diseases and disabilities and the provision of complex medical care for children with certain chronic diseases (diabetes, congenital heart malformations, congenital facial malformations, congenital neurological diseases, congenital haematological diseases) and premature infants.

For the period October 2015 – June 2020, 39,116 medical consultations in total were carried out in the ACMCH, as well as 1,679 home visits.

The ACMCH network in university and specialized hospitals also provides funding to 12 commissions for complex interdisciplinary medical care and long-term healthcare for children with chronic diseases such as diabetes, congenital heart malformations, congenital facial malformations, congenital neurological diseases, congenital haematological diseases, childhood cerebral palsy and premature infants. The commissions provide **medical consultations and prepare individual medico-social plans for each child**. In the period September 2015 - January 2020, the commissions prepared a total of 8,689 medico-social plans.

To improve health services for children and to direct them to the necessary type of diagnosis and treatment in a timely manner, in July 2019 the MoH started the implementation of a new activity. The Specialized Hospital for Active Treatment of Paediatric Diseases "Prof. Dr. Ivan Mitev" (Sofia) was commissioned to **prepare an assessment of the need for early intervention in the case of risks and problems in children's health and development**. Such an assessment must be prepared for each patient hospitalized in the medical facility and includes data on the general health status upon discharge, recommendations for monitoring the child's development, including the implementation of a nutritional regime, as well as information on the need for follow-up monitoring and additional consultations with medical and non-medical (speech therapist, psychologist, etc.) specialists. For the period July 2019 – June 2020, a total of 5,448 prepared assessments were recorded.

Within the framework of the National Programme for the Improvement of Maternal and Child's Health, mass universal neonatal screening of hearing has been introduced with the aim of early detection and timely intervention of hearing impairment in newborns. Contracts have been concluded with almost all medical facilities in which there are obstetric-gynaecological and/or neonatological departments. The examination is mandatory for all newborns, and in case of detected deviations, the children are referred to a specialist. For the period September 2015 - June 2020, 246,913 tests were performed, with the screening coverage reaching 87% of all live births.

4.2. Capacity

The existing hospital facilities and paediatric care are reviewed in this part in order to assess the capacity and distribution/concentration through the territory of the country. It is the ground to also

define the catchment area of the NPH (Chapter 7). Where possible data are provided in several layers to see and compare the capacity within the whole country (tertiary level of catchment area).

Health services in Bulgaria are offered under regulation of the Medical Establishments Act. There are several categories of providers stipulated by this act based on what activities they offer and may be carried out depending on three major principles: available medical professionals, their qualifications and organization.

The first level of differentiation is based on outpatient and inpatient facilities. Outpatient facilities are sub-divided depending on if they provide primary or specialized care and these are further broken down depending on how many physicians provide services in that facility, and available equipment.

Inpatient facilities (further referred to as hospitals) are divided in hospitals for active treatment (acute care), hospitals for long-term treatment, hospital for rehabilitation and hospitals for long-term treatment and rehabilitation. All these may be multi-specialty if they have more than one specialty available or specialized if they only have one specialty in their service portfolio. Additionally, hospitals may be university hospitals if they have received accreditation to provide educational services.

The private healthcare sector covers all medical services – medical and dental services, pharmaceutical sector, specialized outpatient care and multidisciplinary and specialized hospitals.

Public health services are organized and financed by the state budget through the NNIF. Emergency care is covered by the MoH. There are 28 regional centres for emergency care, one in each district, with branches in the smaller towns.

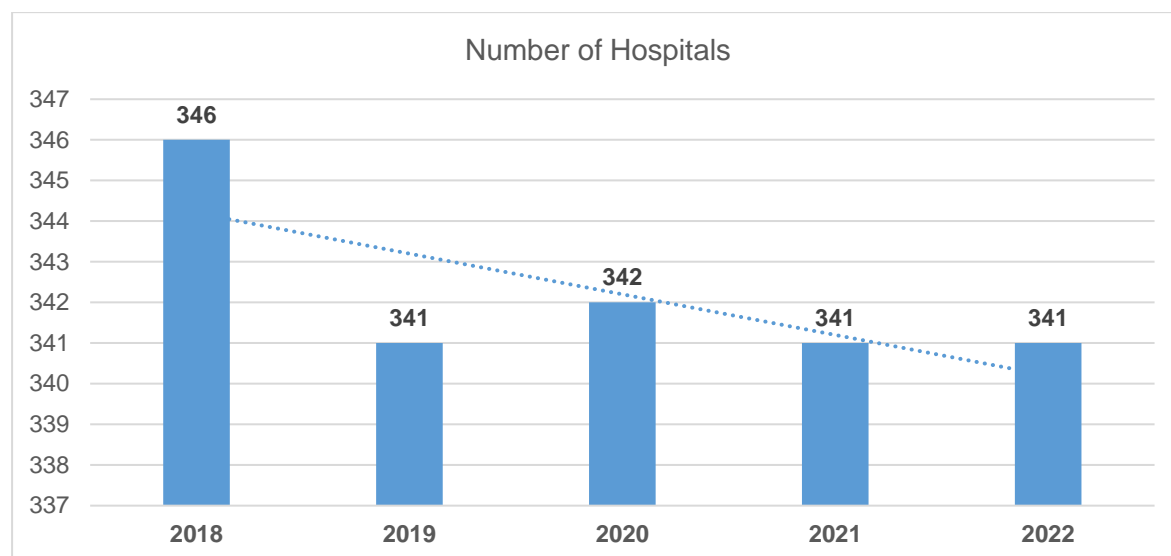
Table 7. Medical Facilities (Inpatient)

Total Medical Facilities (inpatient)	2018	2019	2020	2021	2022
Hospitals	346	341	342	341	341
Hospitals	322	319	320	319	319
Inclusive					
Multidisciplinary hospitals	185	184	183	182	179
Specialized Hospitals	137	135	137	137	140
Centres for skin and venereal diseases	5	3	3	3	3
Complex Oncology centres	7	7	7	7	7
Mental Health Centres	12	12	12	12	12

Source: NSI

During the last five years the number of hospitals has been relatively steady as there is a minimum decrease in the number of Multi-specialty hospitals.

Figure 19: Number of Hospitals, 2018 - 2022



The number of hospitals has been decreasing for the period surveyed except for Southwest Bulgaria, where it is 101. The number of beds is increasing but for the districts in the primary and secondary catchment level (see Chapter 6) number of hospitals stays constant and there is very little fluctuation in the number of beds. The distribution is presented by catchments area – Southwest Bulgaria with Sofia capital, and two districts in Northwest Bulgaria - (Vratsa and Montana) as the second level. As it could be seen, nearly 30% of the hospitals and 28% of the hospitals beds for 2022 are situated in Southwest Bulgaria, and nearly 20% of hospitals and hospital beds are situated in Sofia that is emphasizing the importance of Sofia city as a medical centre.

Table 8. Medical Facilities and beds (Inpatient)*

Regional Distribution	2018		2019		2020		2021		2022	
	H	Beds	H	Beds	H	Beds	H	Beds	H	Beds
Bulgaria, Total	346	53173	341	53997	342	54216	341	54491	341	54707
Southwest, Total	101	15036	99	15513	100	15866	101	15666	101	15562
Blagoevgrad	11	1650	11	1694	11	1838	11	1720	11	1692
Kyustendil	5	961	5	1004	5	1004	5	1004	5	988
Pernik	4	448	4	447	4	447	4	447	4	447
Sofia - district	14	1703	14	1707	14	1709	14	1721	14	1723
Sofia - city	67	10274	65	10661	66	10868	67	10774	67	10712
Northwest, Total	40	5779	40	5828	40	5899	40	6108	40	6147
Vratsa	12	1181	12	1197	12	1197	12	1199	12	1197

Montana	5	964	5	994	5	994	5	994	5	994
Lovech	8	1066	8	1066	8	1003	8	1011	8	1011
Vidin	2	335	2	335	2	335	2	335	2	335
North Central	34	5213	34	5250	35	5367	35	5476	35	5451
Northeast	32	4932	32	4972	32	4936	32	4843	32	5033
Southeast	46	6805	44	6890	44	6838	42	7002	42	7094
South Central	72	11653	71	11616	71	11730	71	11792	71	11758

Source: NSI

*The Primary and Secondary Catchment Area are highlighted in blue and also the districts in the NUTS2 Regions are listed. The Tertiary Catchment Area is listed in NUTS2 Regions.

As it could be seen in the table above, the number of hospitals (inpatient) has decreased in 2019 from 346 to 341 and has kept unchanged. At the same time the number of beds has been increasing slowly but steadily.

The number of private hospitals is 115 and they concentrate 27,5% of the hospital beds. 21% of paediatric patients stay in private paediatric hospitals and there are such in 8 districts.

The biggest increase of hospital beds is in Southwest Region, where is also the biggest share of hospital beds as well - 28% for the region and concentration of 19% in Sofia – capital, as it is explained further below.

The concentration of medical facilities is mostly in the capital of Sofia, as well as other cities where there are medical universities: Pleven, Varna, Burgas, Stara Zagora and Plovdiv. 23,4% of the hospitals and respectively 22,5% of the hospital beds are situated in Sofia (both city and district). Additional reference on medical universities is included in Chapter 5. Human Resources.

If we follow the 2nd level of catchment, then it will be 34,1% and 32,3% respectively hospitals and hospital beds.

The other level that is explored is the availability of paediatric hospitals, departments in the hospitals, etc. in the catchment area and what is their distribution.

As described in 2.6. Administrative and Territorial Division and Planning health services, the Healthcare Act defines divisions and classification of inpatient facilities - hospitals by *levels of competence*. This division sets several standards – minimal requirements, accumulated requirements, equipment requirements, facilities, medical services, personnel, and procedures that can be carried out, depending on the level each centre falls within:

- First (1st) level of competence: the most basic facilities focused to diseases and conditions without a complicated course, and that are not expected to need invasive or intensive procedures.
- Second (2nd) level of competence are facilities that may treat patients derived from the first level, diseases with a complicated course and that possibly need intensive procedures and hospitalisation of children for diagnostic clarification.
- The third (3rd) level of competence can take in patients from all previous levels, as well as those cases needing interventional procedures, or with a complicated course, and any other case not covered by the previous levels.

This classification differs from the standard terminology of three levels of care: primary care, specialised care, and emergency care, although these are still present in the Bulgarian system in the form of General Practitioners (GPs), specialised centres and emergency centres. Like many other countries, GPs act as gatekeepers of specialised care, and their referral is necessary to access a specialist. Emergency services may also refer patients to specialised care and it is a common practice to use these services as a *fast track* to access it.

4.2.1. Number of Hospitals Providing Paediatric Care

In terms of supply and distribution of paediatric care and available hospital infrastructure the situation is described in the following table by the different level of analysis. Like the distribution of hospitals, paediatric care is concentrated mostly in Sofia – city (capital) as well as in the other cities, where there are medical universities.

In Sofia City, there are 17 hospitals that have 3rd level of competence, 9 hospitals with 2nd level of competence (as 2 of them are situated outside of Sofi-city in a radius of 30 to 60 km), and 7 from 1st competence level – as 5 of them are situated outside of Sofia – city in a radius of 70 km. This again demonstrates how well equipped with hospitals is Sofia and the disproportionate distribution in the country.

Table 9. Concentration of Hospitals with Paediatric Care and by Level of Competence*

City	Level 3	Level 2	Level 1
Southwest Bulgaria, including	17	16	12
Sofia City	17	6	2
Sofia District	-	3	6
Blagoevgrad	-	3	3
Kyustendil		3	1
Pernik	-	1	-
Northwest Bulgaria, including:	4	6	15
Vratsa		1	3
Montana	1	1	2
North Central Bulgaria	2	7	9
Northeast	5	6	6
Southeast	5	9	12
South Central	5	21	8

Source: MoH

*The Primary and Secondary Level of the Catchment Area are listed by districts and highlighted in blue. The Tertiary catchment area is included in NUTS2 Regions and is not highlighted.

These hospitals are represented with categorized clinics and wards, summarized in the following table:

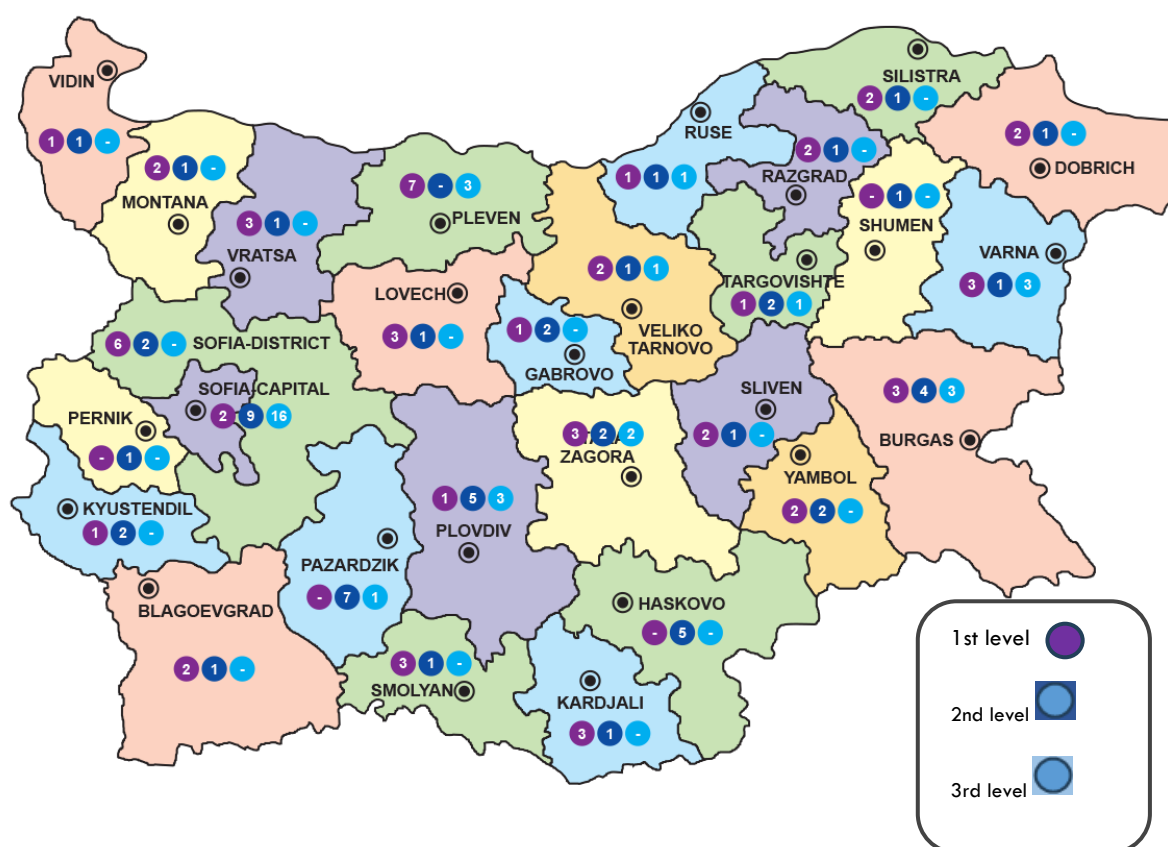
Table 10. Distribution of clinics and wards

Level	No of Hospitals	In them – Number of clinics	No Wards	In them neonatology wards/clinics
3	17	20	26	2 clinics and 6 wards
2	7	0	8	6
1	2	0	2	2

Source: MoH

The territorial distribution of the different level of hospitals is displayed on the following map as it could be seen that there are parts of the country where there is very scarce coverage of level 3 hospitals like in Northeast of Bulgaria it is Varna that has such hospitals, in Southeast – it is Burgas that has such a hospital, Southcentral – Stara Zagora and Plovdiv, Northcentral and Northwest – Pleven and of course Sofia with the highest concentration.

Figure 20: Distribution of the Hospitals by Levels through the Country



The hospitals from level 3 have the following clinics:

Table 11. Distribution of clinics and wards in Level 3 Hospitals

Level 3 Hospitals	Clinics	Wards
2nd MHAT	Clinic in paediatrics	-
MHAT National Cardiology Hospital	Clinic in paediatrics	3
SHAT in in obstetrics and gynaecology	Clinic in neonatology	2

University MHAT Aleksandrovska	2 clinics	4
SHAT in paediatric diseases Professor Ivan Mitev	8 clinics	1
SHAT in infectious and parasitic diseases Professor Ivan Mitev	1 clinic	2
MHAT "St Naum"	1 clinic	Neurology
Second specialized obstetrics and gynaecology hospital for active treatment, Sheinovo	-	Neonatology ward
University SHAT in orthopaedics Professor Boycho Boychev	-	1
University MHAT Sofiamed	-	Neonatology Ward, Paediatric Ward
MHAT for women's health Nadezhda	-	Neonatology Ward
MHAT Health 2012	-	Ward
Acibadem City Clinic University General Hospital for Active Treatment Tokuda	1 clinic	1
University MHAT St Ivan Rilski	1 clinic	-
University MHAT Queen Joanna	1 clinic	3 wards
MHAT Lozenets	1 clinic	-
University MHAT in Emergency Pirogov	2 clinics	5 wards

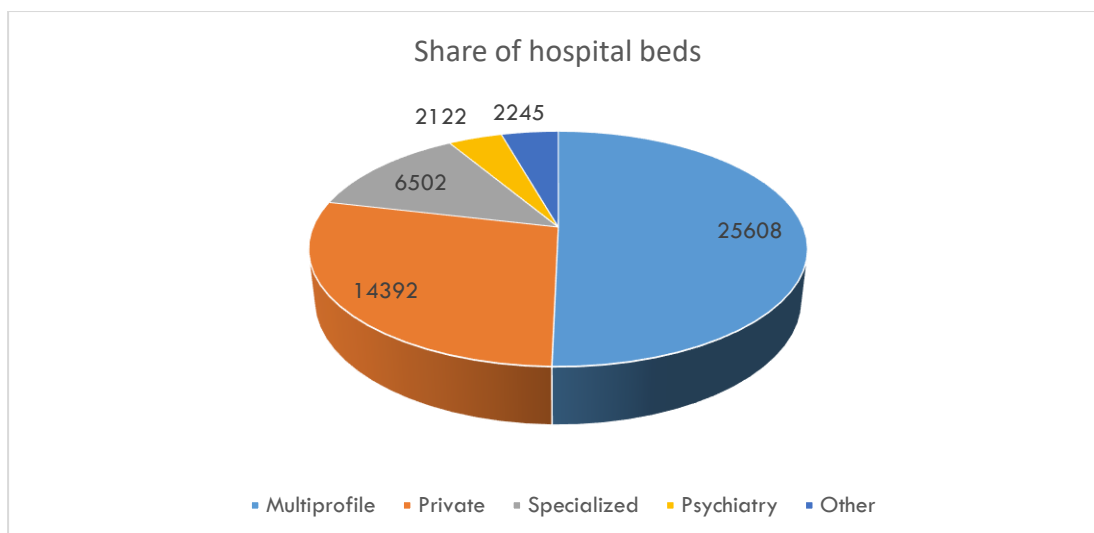
Source: MoH

As it could be seen, in Sofia City there is a concentration of a number of large hospitals with clinics and wards in paediatric care – paediatrics, neonatology and other specialties. Outside of Sofia in the 2nd level of catchment there is only one more hospital which is categorized as 3rd level.

4.2.2. Number of Hospital Beds, incl. Paediatric

Further look at the number of beds demonstrates that for the period 2018-2022, the number of hospital beds in Bulgaria increased by 1,534 or a little under 3%, and here too, the growth is rather concentrated in a limited circle of municipalities - a decline is observed in 21 municipalities in which there are hospital beds, and growth – in 33, most of which are large regional centres, in which there are correspondingly more and larger medical facilities. By the end of 2021 there are total of 51991 hospital beds. They are distributed as follow: 25 608 are in the multi-specialty hospitals, 14 392 in the private hospitals, 6502 in the specialized hospitals and 2122 in psychiatry hospitals, other – 2245.

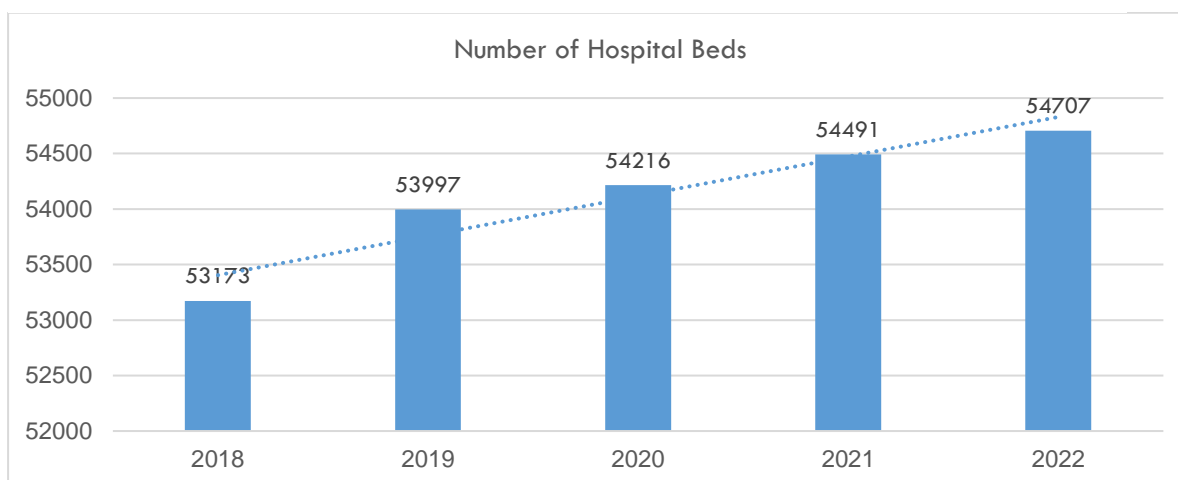
Figure 21: Share of Hospital Beds, 2021



There are considerable differences in hospital bed provision – with the highest provision are the districts of Pleven – 11,2, Smolyan – 10,6, Plovdiv – 10,1, Russe – 9,4. On the opposite side are the districts of Pernik – 3,8, Yambol – 3,9, Vidin – 4,2 and Dobrich – 4,5.

Over 50% of the hospital beds (59,6%) are concentrated in 7 districts of the country – Sofia – capital (21,2%), Plovdiv (13,3%), Burgas (6,3%), Varna (5,1%), Pleven (5,0%), Stara Zagora (4,6%) and Pazardzhik (4,1%).

Figure 22: Number of Hospital Beds, 2018 - 2022



If we review the concentration of beds per 100000 people, then the picture is slightly different:

Table 12. Concentration of beds per 100 000 people

District	2018	2019	2020	2021	2022
	Hospital beds per 100 000 people				
Total ¹	759,6	776,8	783,9	796,8	848,5
Blagoevgrad	540,8	559,6	610,4	576,7	587,2
Kyustendil	807,3	858,7	860,9	885,0	908,9
Pernik	370,6	375,0	371,2	378,7	400,0

Sofia District	743,5	753,1	716,6	736,7	757,0
Sofia Capital	773,6	802,3	830,6	824,1	836,7
Vratsa	726,6	750,6	759,3	780,1	804,0
Montana	743,6	782,7	792,7	813,6	855,6
Vidin	394,7	404,4	412,5	425,1	460,5
Lovech	853,7	869,9	818,8	844,0	891,9
Pleven	928,9	946,2	1015,3	1125,3	1184,5
Veliko Tarnovo	661,0	672,5	686,1	698,4	769,0
Gabrovo	793,3	804,9	855,5	875,2	943,1
Ruse	802,1	828,9	869,7	940,3	1036,8
Silistra	442,0	447,1	452,0	453,9	505,2
Razgrad	498,1	504,6	503,6	513,2	522,2
Dobrich	438,4	439,4	443,3	451,8	561,1
Varna	566,6	567,4	566,9	548,9	634,1
Shumen	508,3	541,6	518,7	525,3	568,1
Targovishte	559,2	557,2	568,0	578,1	649,7
Burgas	709,2	711,0	714,6	785,9	852,1
Sliven	570,5	577,9	587,2	558,2	583,3
Stara Zagora	765,3	786,2	766,2	759,6	829,5
Yambol	344,8	385,2	388,0	395,2	420,9
Karzhali	540,3	522,1	513,7	513,0	551,5
Pazardzhik	834,1	816,9	800,2	834,8	912,9
Haskovo	490,9	488,6	490,1	496,2	526,9
Smolyan	974,2	1018,0	1040,4	1067,3	1135,5
Plovdiv	979,9	985,3	1011,0	1017,9	1069,5

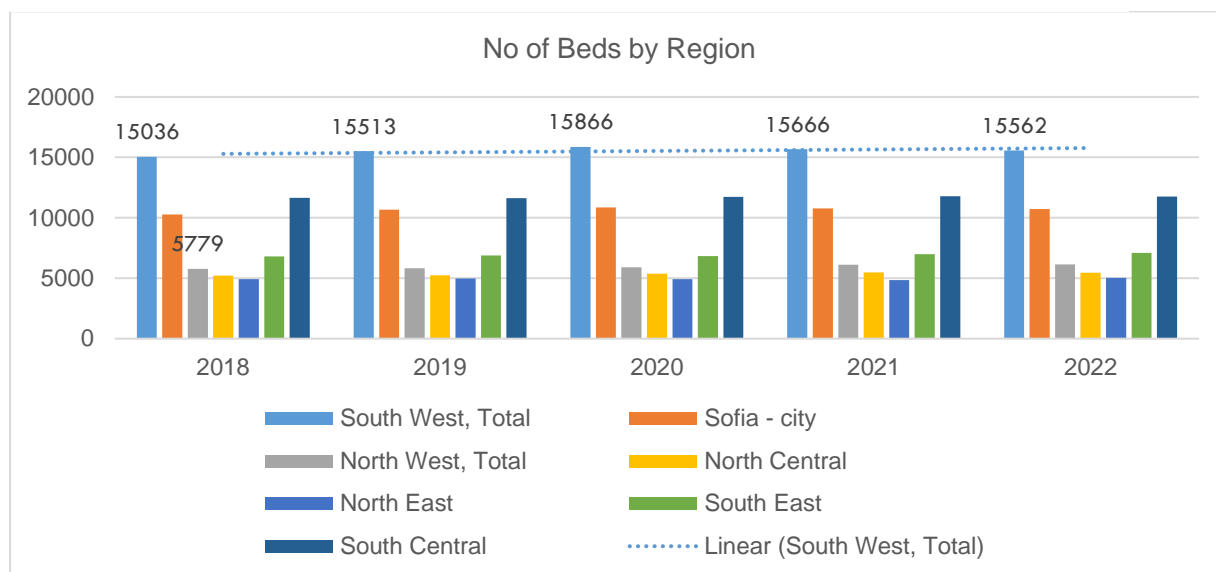
Source: NCPHA

**The Primary and Secondary Level of the Catchment Area are listed by districts and highlighted in blue. The Tertiary catchment area is included in NUTS3 Regions and is not highlighted.*

Bulgaria has 54707 hospital beds distributed as: 16.5% for the first level, 41.5% for the second and 42.0% for the third, whereas the catchment area has 9,229 beds (17.5% of the national number) and a distribution of 17.6%, 60.9% and 21.5% for first, second and third levels respectively. Regarding bed distribution, there seems to be a tendency to shift from specialised hospitals to multi-specialty ones, most likely because concentration of common services may be more cost-efficient.

The composition of these beds in terms of medical specialty and level of competence show how healthcare providers tend to aim for the higher levels of care and these levels can provide a wider selection of services. The catchment area, however, even though it has a similar composition in the first and second levels in terms of percentage, the third level is significantly lower. This means there is a severe gap in the medical services offered, as the establishments will not be allowed to perform complex procedures as the level is not sufficiently high.

Figure 23: Number of Hospital Beds by NUTS3 Region, 2018 - 2022



Source: NCPHA

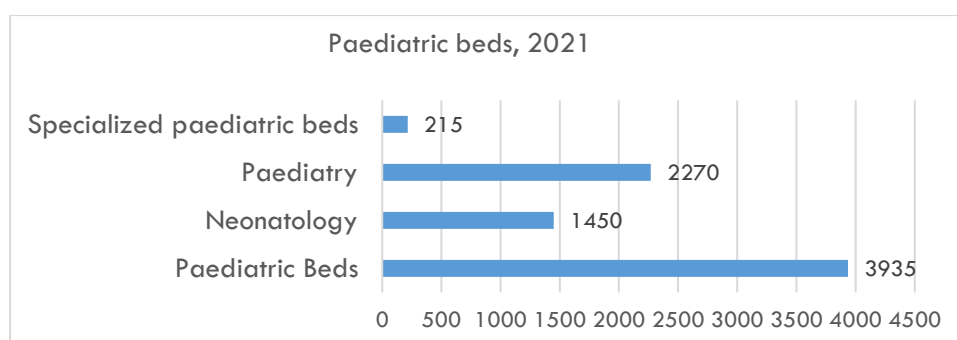
These trends come to prove on one hand the growing capacity of Sofia in terms of offering service measured by hospital beds. Further below on the basis of the National Health Map the data is reviewed on needs and availability of specialized paediatric beds by types of specialty in the country for 2021 in order to identify existing gaps.

In terms of paediatric hospital beds, paediatric inpatient care is carried out in hospitals for active treatment with functioning paediatric units, as well as in facilities of other medical specialties in which treatment of children up to 18 years of age is carried out according to the profile of the disease.

There are 3,935 paediatric beds available in the country, as 1450 beds are neonatology and 2485 – paediatric beds. Only 215 of these are paediatric specialty beds which are located mainly in hospitals in Sofia, Plovdiv, Varna and Pleven. According to the regulatory framework, treatment of paediatric diseases outside the scope of the general profile specialty can also be carried out in paediatric facilities of 3rd level of competence, which means that also in the other paediatric facilities (at the regional level in the country) hospitalization is possible under certain specialties.

The available paediatric beds by type are presented in the figure below:

Figure 24: Number of Paediatric Beds, 2021



The provision of pediatric beds through the different regions varies a lot - from 0,77 for 1000 children in Pernik to 4,55 to 1000 in Pazardzhik. This could hardly be explained with variations in the health status of children.

Figure 25: Provision of Paediatric Beds, 2021 for 1000 people adults/children

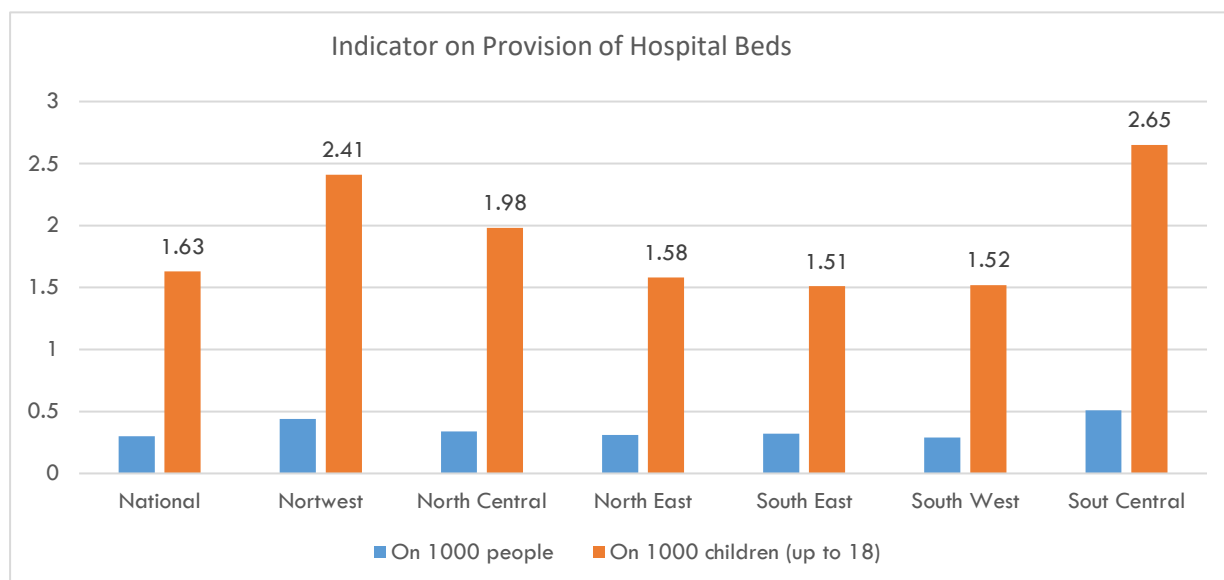


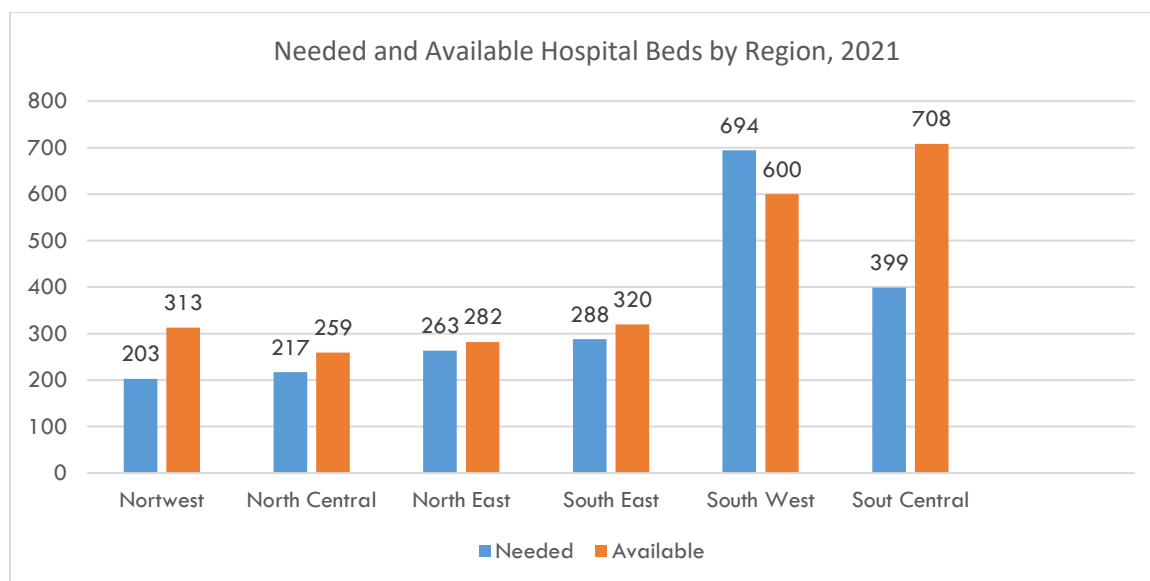
Table 13. Demand and Availability of Paediatric beds, 2021

Specialization	Demand	Availability	Gap
Paediatrics	2803	2639	-164
Neonatology	1353	1482	129
Paediatric Cardiology	87	46	-41
Paediatric Neurology	29	50	21
Paediatric endocrinology and metabolic diseases	75	47	-28
Paediatric gastroenterology	36	32	-4
Paediatric Rheumatology	28	20	-8
Paediatric pneumology and phthisiology	70	64	-6
Paediatric Nephrology and Haemodialysis	36	39	3
Paediatric Clinical Haematology and Oncology	86	63	-23
Paediatric surgery	129	164	35
	4732	4646	-86

National Health Map 2021

In most specialties of paediatric care there is a need for beds, except for neonatology where there have been investments in the past 10-15 years in modern maternity hospitals.

Figure 26: Needs and Availability of Hospital Beds by Region, 2021



If we look at the needs and availability of paediatric beds by districts and competence level, there is a shortage of paediatric beds in most districts of the country – wherever there is surplus, these are in districts where demography is not that good, there are not sufficient paediatricians and there are not enough patients for paediatric beds.

The following table presents the need and availability of paediatric beds by district and competence level, that is matched with usability.

Table 14 Demand and Availability of paediatric beds, 2021*

	Need by competence level				Availability				Usability, %	Gap
	1st	2 nd	3rd	Total	1st	2nd	3rd	Total		
Sofia Capital	110	132	121	363		20	203	223	48	-140
Sofia District	78	39	-	117	63	64	-	127	69	10
Blagoevgrad	71	35	-	106	65	50	-	115	69	9
Kyustendil	28	14	-	42		63	-	63	27	21
Pernik	10	5	-	15		15	-	15	55	-100
Southwest Region	297	225	121	643	128	212	203	543	55	-200
Vidin	25	18	-	43	10	35		45	55	2
Vratsa	32	20	-	52	40	20		60	64	8
Lovech	42	24	-	66	51	19		70	66	4
Montana	30	22	-	52	31		28	59	59	7
Pleven	86	21	63	170	64	6		70	99	-100
Northwest Region	215	105	63	383	196	80	28	304	70	-79
North Central Region	181	105	48	334	115	112	76	303	73	-31

Northeast Region	138	79	86	303	65	117	87	269	75	-34
Southeast Region	236	124	98	458	123	237	53	413	64	-45
South Central Region	404	242	36	682	84	544	179	807	65	125
Total	1471	880	452	2803	711	1302	626	2639	67	-164

Source: NHM

*The Primary Catchment Area is highlighted in yellow, the Secondary in light blue as the districts are listed. For the Tertiary level are listed NUTS3 Regions and are not highlighted.

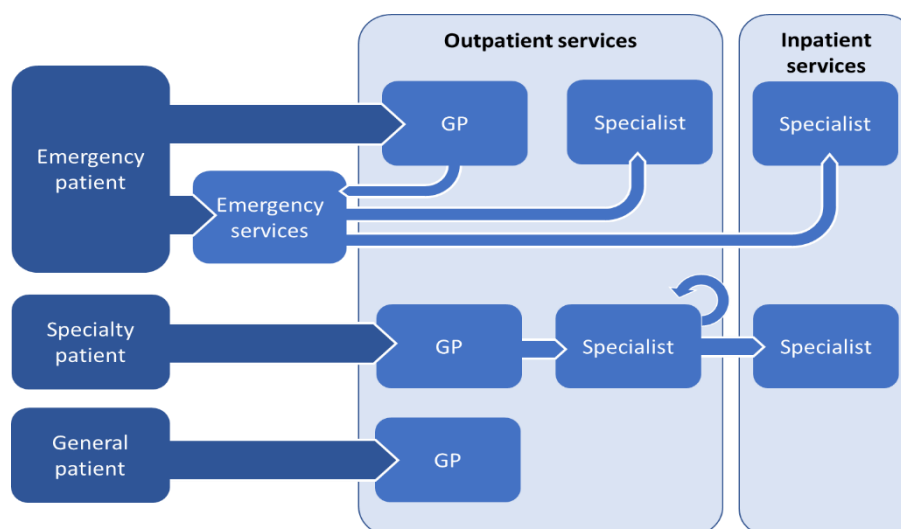
As it could be seen the biggest share of hospital beds is in Sofia and Southwestern Bulgaria as is the biggest gap but also a comparatively low rate of usability. The low usability could be potentially explained with also shortages of paediatric specialists as is the case in most districts. In the medical universities' cities, there are paediatricians and paediatric specialists but still not enough to cover the needs.

4.3. Utilization and Occupancy

To assess utilization, we need to look at how patients get access to treatment and hospitalization. Hospitalization depends on the type of the condition and the degree of emergency/severity. This is conditional depending on the purchasing power also of patients. Even if all children are insured by the state, their hospitalization may take different paths based on the financial capacity of the family or availability of GP as the "gate keepers" to the system.

On the other hand, emergency care is free of charge and bypasses the GP, so a high number of people choose to access the system through the emergency route seeking treatment for conditions that could be easily treated in other institutions for a lower cost for the system.

Figure 27: Patient pathways through the system



As explained in previous chapters, general practitioners are the main point of entry into the health care system: access to specialized care covered by the social health insurance, or to prescription-

only medicines requires a referral / prescription from a GP. Depending on the patient's financial capacity and private insurance they may decide to go through private healthcare. It must be noted, however, that children, non-working family members, pregnant women, detained people, vulnerable communities, and other protected groups are exempt from paying these fees.

The GPs decide if the patient needs specialized care and what type, so if such care is needed, the GP issues a referral. The patients could use this referral in 30 days to go to any specialist in the country within 30 days of the issuance of a referral. Up to 30 days after the first examination, the specialist may ask for tests, treat the patient, and re-examine him/her without needing a new referral. Patients that wish to access specialized healthcare directly without going through a GP may do so, though an extra cost for the services will be incurred and must be paid. This extra cost may also be covered by the patient's complementary voluntary health insurance (granted (s)he has one).

To make use of specialized hospital care, patients must be admitted in the so-called "clinical pathways". These are pre-established conditions and procedures that are at least partially included in the services covered by the NHIF (patients are liable for any additional costs due, should they choose non-basic procedures or pre-approved treatments, for example).

There are 267 clinical pathways (CPs) grouped by type. Some examples are the CPs from 1 to 5 related to inpatient pregnancy-related procedures (births, complications of pregnancy), from 6 to 15 for new-born care (congenital anomalies, respiratory failure), 16 to 23 about cardiac disorders for both minors and adults (angina pectoris treatment, pacemaker implantation), etc.

A generalized pathway of a patient in curative, non-emergency care and that is using the services covered by the social health insurance could be as follows:

If the patient is referred to a specialist, the physician may then refer the patient for inpatient treatment or prescribe medicines and home treatment. Admission to a hospital must take place within a few days after the referral is issued. Once treatment is initiated the patient can be transferred to another hospital. After treatment is completed and the patient is discharged from the hospital, there are two possibilities: The patient can be institutionalized for continuous treatment / rehabilitation or follow up or ongoing treatment and rehabilitation are coordinated by the GP. In both cases a medical report describing the diagnostic, treatment and rehab completed is prepared.

Further on, to review hospitalizations we would review the number of patients (children) directed for treatment to Sofia:

4.3.1. Referrals

Two consequent tables visualize the numbers of patients being directed through referrals for treatment to Sofia.

Table 15. Number of patients directed for treatment in Sofia, by district*

Distribution of patients directed to Sofia	2018	2019	2020	2021	2022
Blagoevgrad	24498	25012	19681	22305	25290
Burgas	10259	10720	7229	8652	9382
Varna	4439	4680	3632	4298	4944
Veliko Tarnovo	7989	8222	6567	7105	7685
Vidin	6664	7351	5397	5997	7024
Vratsa	12428	12139	9600	10296	12084
Gabrovo	4352	4319	3353	3567	3750

Dobrich	2098	2132	1612	1528	1687
Kardzhali	2723	2801	2008	2246	2529
Kyustendil	14625	14729	10972	12839	14777
Lovech	6136	5934	4577	4679	5427
Montana	10307	10009	7914	8590	9802
Pazardzhik	9283	8599	6519	6813	7766
Pernik	17983	18410	14439	16324	18321
Pleven	7523	7538	5736	6094	6988
Plovdiv	8781	9079	6923	7146	8319
Razgrad	1576	1575	1202	1362	1547
Ruse	5344	5358	4456	4593	5426
Silistra	2226	2211	1543	1661	1955
Sliven	5334	5463	4158	4533	4722
Smolyan	3375	3123	2414	2699	3169
Sofia District	39449	40693	31082	32764	36853
Stara Zagora	7576	7856	5895	6328	7142
Targovishte	1666	1843	1333	1301	1519
Haskovo	6171	6297	4724	5009	5786
Shumen	2030	2037	1519	1640	1926
Yambol	4001	3909	2998	3264	3579
Total	228836	232039	177483	193633	219399

Source, MH, NCPHA

*Highlighted in blue are the districts that fall in the primary and secondary catchment area

If we take a closer look at the proposed **secondary catchment area** a big number of patients from these districts are directed for treatment to Sofia. The numbers are higher in 2018 and 2019 and there is a sharp decrease in 2020 followed by an increase of the patients. Still, the patients from the catchment area are between 52 and 53% of all patents. This 53% are formed from 6 districts to compare with the rest of 21 districts.

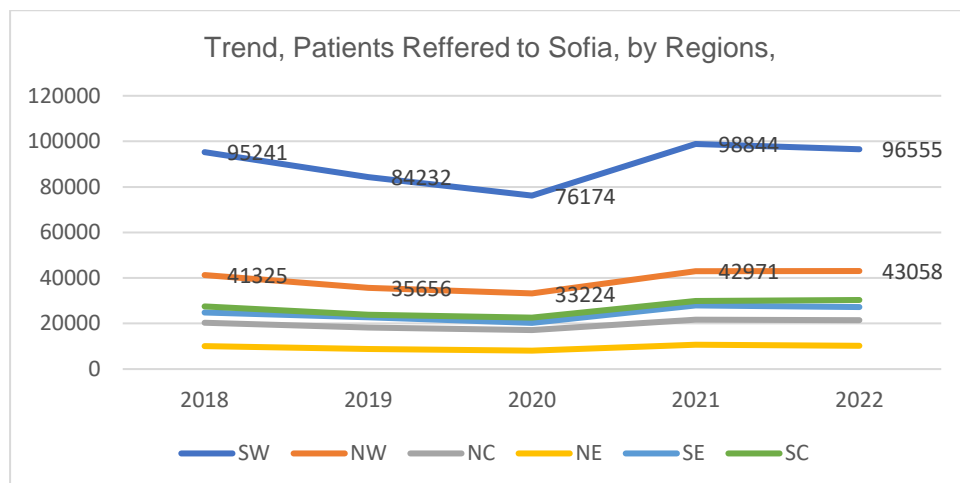
Table 16. Number of patients referred at secondary and tertiary level.

Districts	Number of Patients Referred				
	2018	2019	2020	2021	2022
Southwest, including:	96555	98844	76174	84232	95241
Blagoevgrad	24498	25012	19681	22305	25290
Kyustendil	14625	14729	10972	12839	14777
Pernik	17983	18410	14439	16324	18321
Sofia-District	39449	40693	31082	32764	36853
Northwest, Including:	22735	22148	17514	18886	21886
Vratsa	12428	12139	9600	10296	12084
Montana	10307	10009	7914	8590	9802
Total Catchment Area	119290	120992	93688	103118	117127
Total for Bulgaria	228836	232039	177483	193633	219399
Share of Catchment Area	52%	52%	53%	53%	53%

Source, MoH, NCPHA

The trends are visualized on the following graph and as it could be seen Sofia absorbs more than 50% of the referred patients from the country besides the patients from Sofia city. These trends emphasize the existing need to patients to go to Sofia city where the expertise is.

Figure 28: Trends, Patents Referred by Regions, 2018 - 2022



Source, MoH, NCPHA

This comes to confirm that Sofia has developed into a hub with the conditions, infrastructure, and medical personnel. Still with the large numbers of patients referred from the catchment area Sofia absorbs more than 50% of the referred patients from the country besides the patients from Sofia city. These trends emphasize the existing need to patients to go to Sofia city where the expertise is.

The hospitals have a regulatory requirement (Ordinance No49) to preserve 10% of their capacity if such situations emerge. Having capacity generates running costs and if the services are idle, these costs are going nowhere. Thus, a high occupancy rate is desirable to maximize efficiency, but some capacity is required to allow for system flexibility and ensure access to the services. The medical standards of Bulgaria establish 80% of occupation as the target ratio.

4.3.2. Utilization

When reviewing occupancy rate, we will also observe several other indicators in this regard, presented below in several consecutive tables for the whole country (Tertiary catchment area). These are Average annual beds, Total number of bed-days, Admissions, Average length of stay as they are reviewed for a 5-year period starting from 2018 and going through 2020, 2021 with clearly visible trends during the COVID-19 pandemics. The indicators are reviewed broken down by the different specialities of paediatric care.

Table 17. Average Annual Beds, Tertiary Catchment Area

Type of Care	Average Annual Number of Beds, Bulgaria				
	2018	2019	2020	2021	2022
Paediatric	4 186	4 219	4 011	3 686	4 956

Neonatology	1 478	1 520	1 462	1 430	1 463
Paediatrics	2 708	2 699	2 549	2 256	2 493
Paediatric cardiology	21	21	21	21	21
Paediatric Clinical Haematology and Oncology	59	57	57	56	56
Paediatric Nephrology and Haemodialysis	26	29	28	27	14
Paediatric pneumology and phthisiology	56	59	55	48	57
Paediatric rheumatology	14	15	14	11	13
Paediatric gastroenterology	14	20	20	18	17
Paediatric endocrinology and metabolic diseases	23	32	34	33	35
Paediatric surgery	136	107	116	127	133

Source, MoH, NCPHA

There are no significant fluctuations annually.

Table 18. Number of Bed days, Annually

Type of beds	Number of Bed-days Annually				
	2018	2019	2020	2021	2022
Paediatric	1 056 587	1 040 795	801 003	820 044	857 309
Neonatology	337 090	327 542	305 151	307 601	297 824
Paediatrics	619 320	616 233	416 276	428 363	814 791
Paediatric cardiology	5 369	4 071	3 579	3 320	3 510
Paediatric Clinical Haematology and Oncology	16 256	15 779	13 080	12 803	14 242
Paediatric Nephrology and Haemodialysis	5 765	5 384	4 364	4 265	3 888
Paediatric pneumology and phthisiology	17 273	17 992	9 475	8 769	11 101
Paediatric rheumatology	3 226	3 084	2 081	2 141	2 648
Paediatric gastroenterology	4 482	4 585	3 363	3 807	4 211
Paediatric endocrinology and metabolic diseases	6 350	7 464	6 115	7 154	8 514
Paediatric surgery	27 542	25 858	18 677	21 312	24 719

Source, MoH, NCPHA

The number of bed-days fluctuate through the years with a visible decrease in 2020 for almost all paediatrics specialities and small increase in 2022.

Table 19. Number of Admissions

Types of Beds	Number of Admissions				
	2018	2019	2020	2021	2022
Paediatric All	196 044	197 835	154 438	155 998	164 956
Neonatology	63 283	62 386	60 676	60 316	57 951
Paediatric	121 983	123 880	85 150	86 745	96 923
Paediatric cardiology	759	793	700	650	635
Paediatric Clinical Haematology and Oncology	2 904	2 934	2 473	2 313	2 418
Paediatric Nephrology and Haemodialysis	1 218	1 212	995	1 001	1 030
Paediatric pneumology and phthisiology	2 045	2 427	1 148	1 230	1 677
Paediatric rheumatology	955	876	575	617	778
Paediatric gastroenterology	976	1 003	787	861	865
Paediatric endocrinology and metabolic diseases	1 921	2 324	1 934	2 265	2 753
Paediatric surgery	7 246	7 404	4 924	5 679	6 988

Source, MoH, NCPHA

For the number of admissions for a five-year period there is a general trend of decrease in 2020 (about 22%) and then slowly the numbers start to increase again. The following indicator displayed is the Average stay, observed for a 5-year period.

Table 20. Average Hospital Stay

Types of Beds	Average Stay				
	2018	2019	2020	2021	2022
Paediatric	4,9	4,8	4,7	4,8	4,8
Neonatology	5,0	5,0	4,8	4,9	4,9
Paediatric	4,9	4,8	4,7	4,8	3,1
Paediatric cardiology	4,8	4,0	3,9	4,0	4,4
Paediatric Clinical Haematology and Oncology	5,1	5,1	5,1	5,4	5,7
Paediatric Nephrology and Haemodialysis	4,7	4,3	4,3	4,2	3,7
Paediatric pneumology and phthisiology	8,3	7,1	7,5	7,0	6,5
Paediatric rheumatology	3,4	3,5	3,6	3,4	3,4
Paediatric gastroenterology	4,5	4,5	4,2	4,3	4,9

Paediatric endocrinology and metabolic diseases	3,2	3,2	3,1	3,1	4,7
Paediatric Surgery	3,5	3,2	3,3	3,4	3,2

Source, MoH, NCPHA

The average number of stays is quite constant through the years with several small changes through the years for some specialities.

Table 21. Hospital Utilization Indicators, 2021

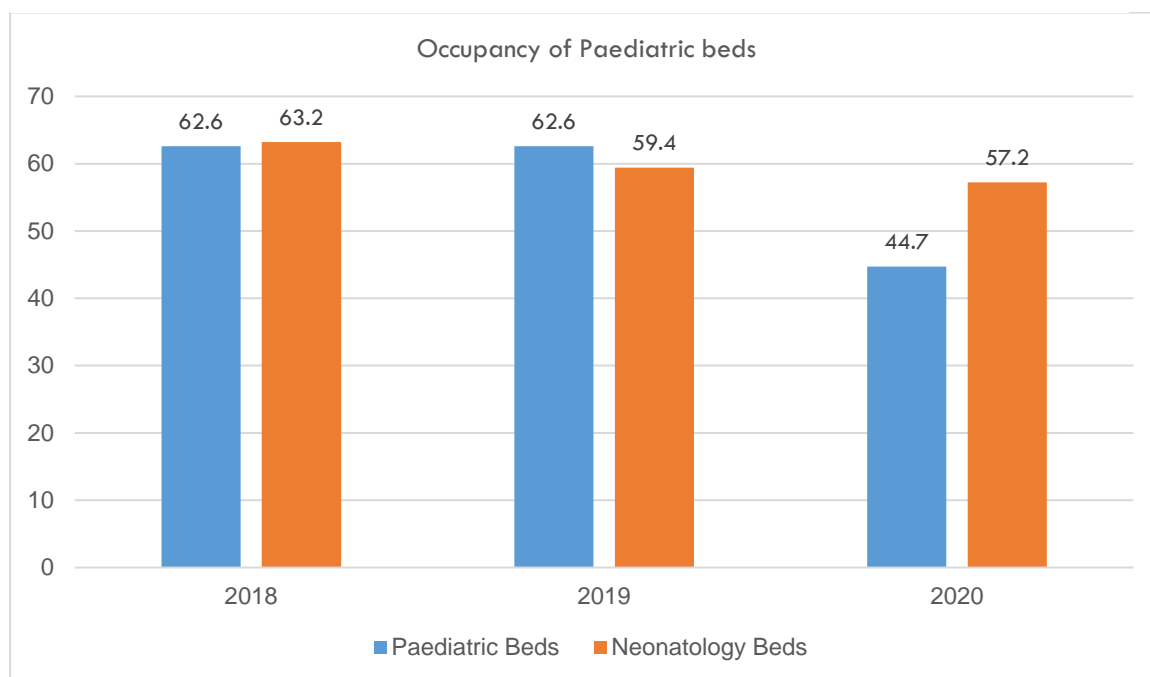
Indicators, 2021	Sofia-city	Blagoevgrad	Pernik	Kyustendil	Sofia District	Vratsa	Montana	The whole country
Average Number of beds/annually	1485	328	58	120	286	156	142	8008
Admissions	66859	13544	1596	3490	10706	5482	5094	320227
Number of bed days	333525	61034	7420	16984	53046	27190	25919	1598267
Length of Stay, average	5,2	4,5	4,6	4,8	4,8	4,6	5	4,7

The table above presents the indicators that potentially could be used to calculate utilization of the services at the three levels of caption. As could be seen Sofia-city forms the largest number in admissions, as well as bed days. The average length of stay is just a bit longer than the other districts based on the fact that in Sofia-city hospitals there are all paediatric specialities compared to the districts and for some conditions and clinical paths it takes longer to recover.

All these indicators demonstrate the state of occupation of the hospitals in paediatric care in the three levels of the Catchment Area.

The occupancy rate is the ratio of utilization compared to capacity and provides information on the average utilization of the services and how efficiently they are managed. If the occupancy rate is close to 100% it means that all available resources are being used and there are no resources available. If the rate is low, it means that resources are being wasted. Having capacity generates running costs and if the services are not used, these costs go nowhere. Thus, a high occupancy rate is desirable to maximize the efficiency, but some capacity is required to allow for system flexibility and ensure access to the services. The medical standards of Bulgaria establish 80% of occupation as the target ratio.

Figure 29: Occupancy of Paediatric beds, 2018 - 2020



Source, MoH, NCPHA

The data of the NCPHA show that the annual occupancy of paediatric beds in 2021 is only 52%, i.e. only half of the beds are used effectively. This data indirectly demonstrates the lack of medical specialists in hospitals outside Sofia, which causes many parents to seek specialized paediatric care in the capital. The disproportion in the presence of specialists in hospitals outside the capital is also proven by NHIF's data on the referrals by individual specialties from other cities to Sofia – mainly for the treatment of haematological, oncohaematological and oncological diseases, endocrine, cardiological, gastroenterological, nephrological or neurological diseases/disorders, as well as for traumatological conditions – on average between 35 - 42% of the total number of referred patients on an annual basis, according to NHIF data.

However, a more detailed analysis of the situation by district shows that some of this hospital capacity is provided in small community hospitals (level I) that provide good access to hospital services but are running out of capacity in terms of providing quality and comprehensive paediatric care locally. Often these hospitals transfer patients to larger hospitals of regional importance.

A good balance should be sought between enabling good access and provision of services in the community and ensuring the appropriate level of hospital treatment. In this regard, support for paediatric facilities at district level that can provide the necessary volume and quality of care for children is crucial.

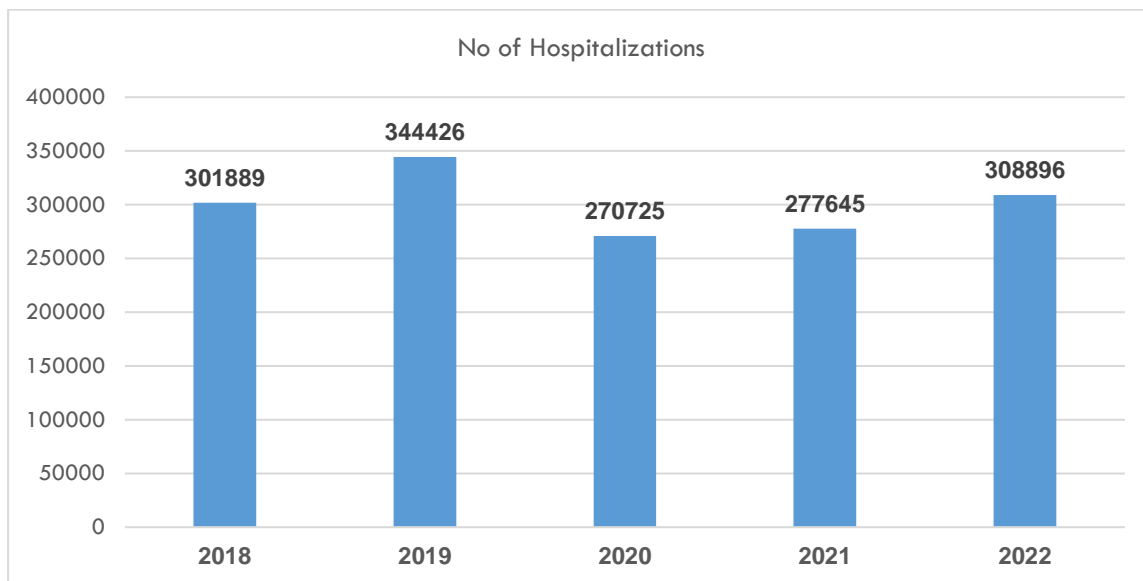
Thus, the easy access to inpatient hospital treatment theoretically ensured by the large number of available paediatric hospital beds in Bulgaria is being compromised in practice by the lack of specialists to work in those medical facilities and limits access to specialized, multi-specialty, and quality treatment of children's diseases.

4.3.3. Hospitalizations and Financial Resources

In this section we will review the current capacity of the health system in paediatric care through number of hospitalizations and compare the volume for the catchment area – Sofia capital and the second level of Southwest Bulgaria and parts of Northwest Bulgaria. The availability of data is somewhat contradictory. There are enough data on the numbers of hospitalizations that dates to 2016. The data from NCPHA are structured by classifications (groups of conditions), districts, adults, and children.

Further below we would review the hospitalizations – admitted patients by year in the catchment areas.

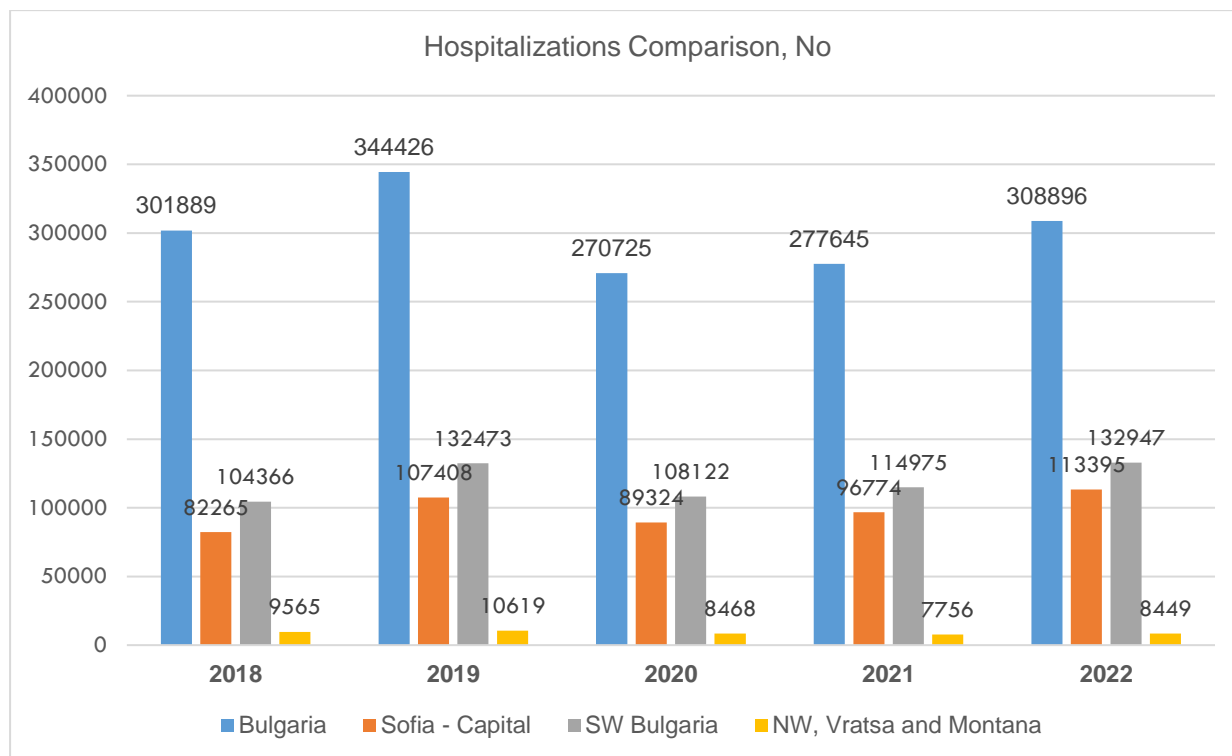
Figure 30: Number of Hospitalizations, 2018 - 2020



Source, MoH, NCPHA

To compare the volume of admittances in the country and then in the catchments area at level one and two, Sofia-capital consists between 27-37% (for the period 2018 – 2022), the SW Region – between 35-43% and at the catchment 2 level – between 38-46%. This is visualized on the following chart.

Figure 31: Hospitalizations, Numbers in the Secondary Catchment Area, 2018 - 2020

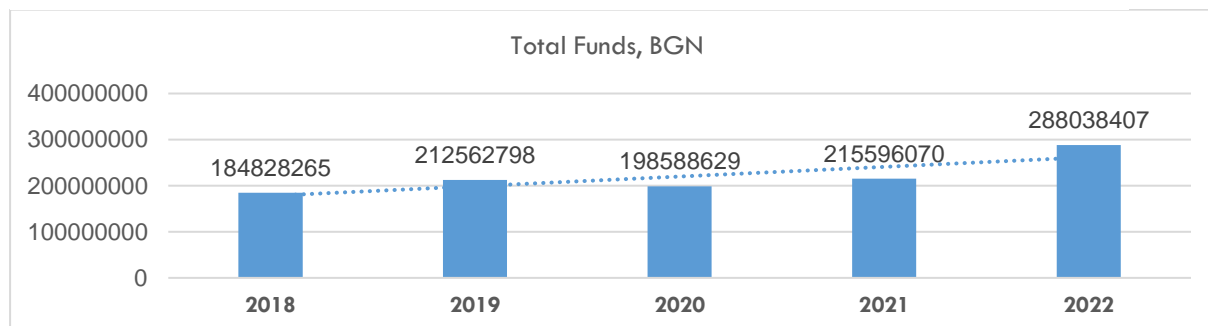


Source, MoH, NCPHA

If we look at the number of hospitalizations, there is a growing trend in 2018 and sharp decrease in 2020 due to the COVID-19 situation. After 2020 there is an increase in the number – higher than 2018 but not reaching the numbers from 2019.

Similar is the situation when we look at the funds spent - the increasing trend is quite visible no matter that the number of admittances in hospital has decreased but the funds spent is still increasing and it is 36% higher.

Figure 32: Hospitalizations, Resources Spent, 2018 - 2020



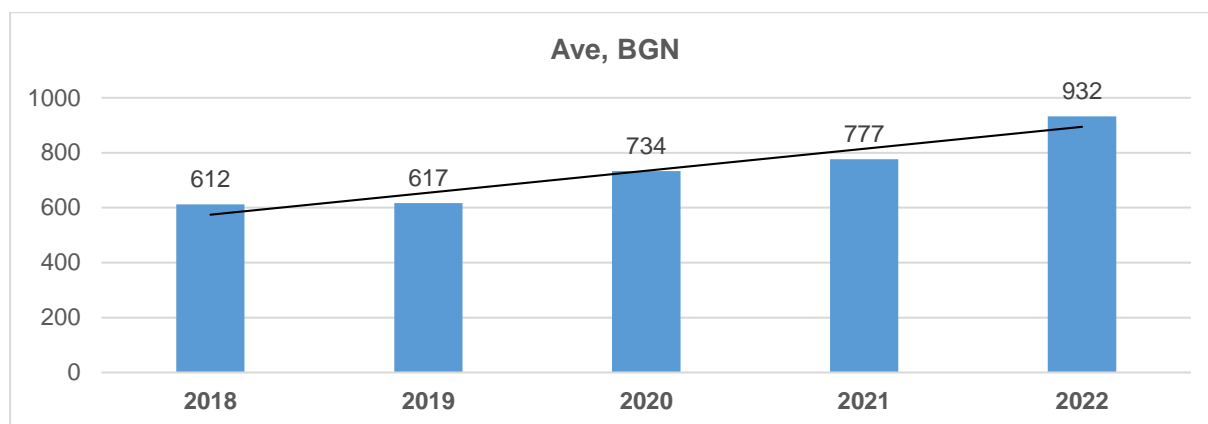
55

Source, MoH, NCPHA

⁵⁵ Costs are in BGN, 1 ERRO = 1,958 BGN

This is demonstrated in the following chart when the average cost of one hospitalization is followed:

Figure 33: Average sum for hospitalization of 1 person (child) , 2018 - 2020



Source, MoH, NCPHA

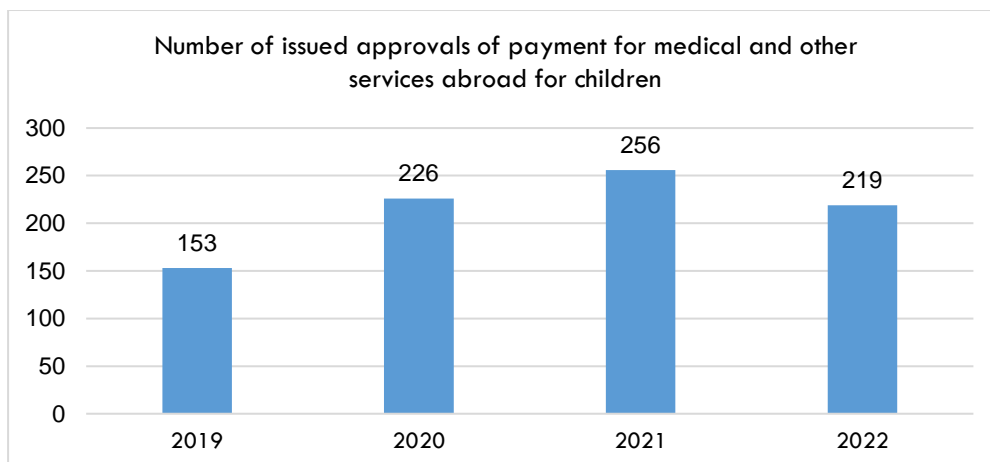
The average cost for hospitalization of 1 child for 2022 is 932 BGN (476 euro) and the number of hospitalizations is a little over 288 million. For 2021, these numbers are respectively 777 BGN (397 euro) per child and total of 255,6 Million BGN. Based on data for 2021, the funds spent for treatment of children is about 10% of the cost for treatment spent by the NHF.

4.3.4. Treatment Abroad

Treatment abroad on the territory of another Member State of the European Union, the European Economic Area and the Swiss Confederation at the expense of the NHIF could be covered if the person cannot receive the treatment within the time normally required for it in the Republic of Bulgaria, taking into account the current state of health and the probable development of the illness.

Based on data from MoH for the period 2019-2022, a total of 854 children were referred for treatment abroad, mainly for oncological and oncohaematological diseases, for organ transplantation, diseases of the eye and its appendages, orthopaedic diseases, congenital anomalies or congenital hydronephrosis. The total value of funds allocated by the NHIF for treatment abroad for this period amounts to BGN 12,827,498. Besides these cases, there are many families who take their children for treatment abroad and fund through own funding or fundraising. The data presented in the charts and tables below is the official data for children whose treatment is funded by the NHF.

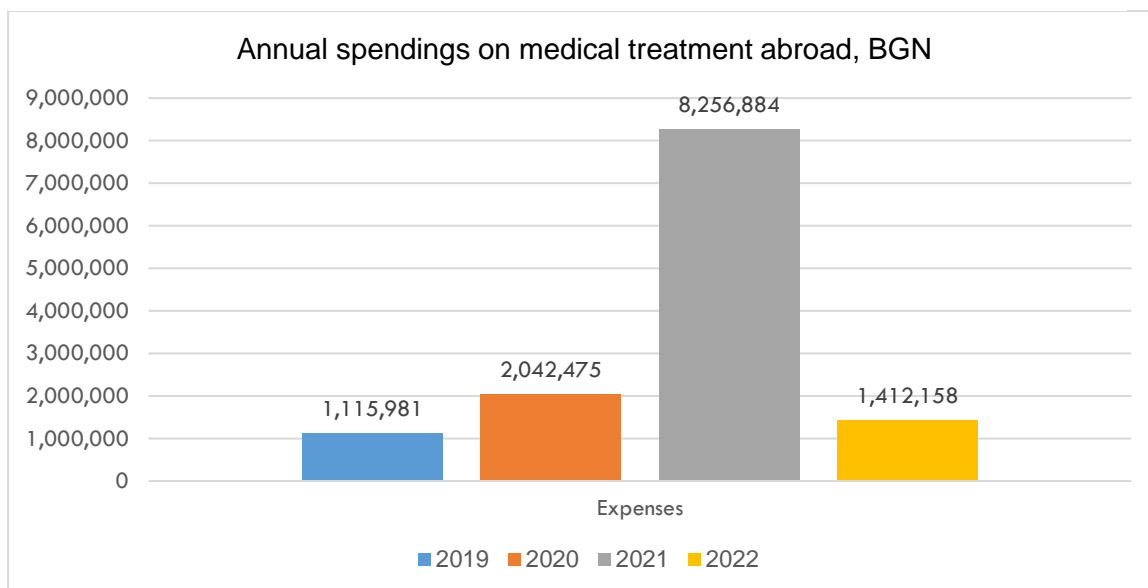
Figure 34: Number of Cases for Treatment Abroad (Data: NHF)



Below the data on medical treatment of children up to the age of 18 in foreign countries outside of Bulgaria are reviewed

The expenses for treatment of children up to 18 abroad for the period reviewed are as follow:

Figure 35: Annual Spending, treatment abroad



Here is an overview of the conditions and countries where children were treated:

Period: April – Dec 2018

Countries: Germany, Austria, Switzerland, France

Conditions: Oncological and oncohaematological diseases - Acute lymphoblastic leukaemia, Ewing's sarcoma, Osteosarcoma, Retinoblastoma, Medulloblastoma, Abdominal tumour, etc.; Transplantation of organs (liver in atresia of bile ducts) and hematopoietic stem cells in malignant haematological diseases, as well as in some severe benign diseases; Diseases of the eye and its appendages - Congenital glaucoma, Retinopathy of prematurity; Orthopaedic diseases – Cerebral palsy,

Congenital malformations, Spina bifida, Pseud arthrosis, Arthrogryposis; Congenital anomalies (ear microtia/atresia, congenital lymphangiomas/haemangiomas, bone aplasia/hypoplasia); Congenital hydronephrosis

Period: 2019

Countries: Germany, Austria, Switzerland, Belgium

Conditions: Ophthalmic diseases in children - retinoblastoma, glaucoma and retinopathy of prematurity; Oncological and oncohaematological diseases - Acute lymphoblastic leukaemia, Ewing's sarcoma, Osteosarcoma, Retinoblastoma, Medulloblastoma, Abdominal tumour, etc.; Orthopaedic diseases – Cerebral palsy, Congenital malformations, Spina bifida, Pseudarthrosis, Arthrogryposis; Transplantation of organs (liver in atresia of bile ducts) and hematopoietic stem cells in malignant haematological diseases, as well as in some severe benign diseases; Congenital anomalies (ear microtia/atresia, congenital lymphangiomas/haemangiomas, bone aplasia/hypoplasia); Congenital hydronephrosis

Period: 2020

Countries: Germany, Austria, Switzerland, Belgium, France, UK

Conditions: Oncological and oncohaematological diseases - Acute lymphoblastic leukaemia, Ewing's sarcoma, Osteosarcoma, Retinoblastoma, Medulloblastoma, Abdominal tumour, etc.; Transplantation of organs (liver in atresia of bile ducts) and hematopoietic stem cells in malignant haematological diseases, as well as in some severe benign diseases; Diseases of the eye and its appendages - Congenital glaucoma, Retinopathy of prematurity; Orthopaedic diseases – Cerebral palsy, Congenital malformations, Spina bifida, Pseudarthrosis, Arthrogryposis; Congenital anomalies (ear microtia/atresia, congenital lymphangiomas/haemangiomas, bone aplasia/hypoplasia); Congenital hydronephrosis

Period: 2021

Countries: Germany, Austria, Switzerland, Belgium, France, Italy

Conditions: Ophthalmic diseases in children - retinoblastoma, glaucoma and retinopathy of prematurity, Leber's congenital amaurosis; Oncological and oncohaematological diseases - Acute lymphoblastic leukaemia, Ewing's sarcoma, Osteosarcoma, Retinoblastoma, Medulloblastoma, Abdominal tumour, etc.; Orthopaedic diseases – Cerebral palsy, Congenital malformations, Spina bifida, Pseudarthrosis, Arthrogryposis; Transplantation of organs (liver in atresia of bile ducts) and hematopoietic stem cells in malignant haematological diseases, as well as in some severe benign diseases; Congenital anomalies (ear microtia/atresia, congenital lymphangiomas/haemangiomas, bone aplasia/hypoplasia); Congenital hydronephrosis

4.4. Conclusions:

- Bulgaria lags significantly in terms of investments in prevention, and in recent years has consistently ranked among the EU countries with the lowest level of funds invested in prevention. The lack of sufficient investments in prevention, in combination with the following problems also indicated in the National Health Strategy 2030: territorial disproportion in the distribution of health care for outpatient and hospital care, lack of specialized medical assistance for children and students, difficult access to quality health services in remote and hard-to-reach settlements which further exacerbates the challenges facing children's health, and existence of population

groups not covered by prevention and health care, lead to an urgent need to focus on preventive activities for both children and adults.

- Primary Care includes preventive activities under the “Children's Health” Programme that are performed by GPs and doctors specialized in Paediatrics and are financed by the NHIF. Children aged 0 to 18 years are subject to preventive examinations and examinations under the “Children's Health” programme of the Ministry of Health which is funded by the National Health Insurance Fund and covers all children in Bulgaria.
- Preventive examinations can be carried out in facilities for outpatient care - primary care outpatient clinics, as well as specialized outpatient facilities: specialized medical practices, medical centres, and healthcare advisory centres. This is done after the child's general practitioner has referred the child to the relevant specialist, depending on the specific occasion and the child's health problem.
- The data on conducting prophylactic examinations presented by NCPHA indicates that out of a total of 837,419 children and students aged 0 - 19, 700,093 are covered by a basic preventive examination. This number represents 83.6% of the total number of children who should undergo preventive examinations and continues the downward trend from recent years of the coverage level dropping ever further down below 100%: 90.1% in 2019/18, 88.8% in 2020/19, and 86.9% in 2020/21.
- School health care in Bulgaria is regulated by the health Law which mandates the provision of health offices in all schools and kindergartens, by *Ordinance No. 3 on health offices* delineating the scope of their activities. The main activities that must be carried out in these health offices are prevention, monitoring of physical development and determining the physical capacity of children and students, as well as health promotion activities. According to municipality-level data provided by the MoH, a total of 3,090 medical specialists worked in health offices in kindergartens and schools as of 31.12.2022 in Bulgaria (excluding Sofia city). The largest number was in the municipality of Burgas, with 373 medical specialists providing a 100% coverage of all kindergartens and schools. The same coverage was provided, albeit by fewer specialists, in other municipalities, such as Plovdiv, Pazardzhik, Stara Zagora, Targovishte, Varna, Kyustendil, etc.
- With the high number of hospitalizations for conditions that could be treated effectively in an outpatient setting, Bulgaria's healthcare system is hospital oriented. Although in 2019 Bulgaria's hospital care expenditure per capita amounted to €509 — about half the EU average of €1,010, it represented 40% of all health care spending in the country compared to an average of 29.1% hospital care spending in the EU. Medicines are another dominant component of health care spending: although in absolute terms per capita spending is over 25% lower than the corresponding spending in the EU, medicines account for the largest share of spending among EU countries at 36.1%, which is twice more than the EU average.
- The concentration of medical facilities is mostly in the capital of Sofia, where medical universities and colleges are also concentrated, as well as in the other cities where there are medical universities/faculties: Pleven, Varna, Burgas, Stara Zagora and Plovdiv. 23,4% of the hospitals and respectively 22,5% of the hospital beds are situated in Sofia (both city and district). Additional reference on Medical universities is included in Chapter 5. Human Resources.
- In terms of supply and distribution of paediatric care and available hospital infrastructure the situation is described in the following table by the different level of analysis. Like the distribution of hospitals, paediatric care is concentrated mostly in Sofia – city (capital) as well as in other cities with concentration of medical universities. In Sofia City, there are 17 hospitals that have 3rd level of competence, 9 hospitals with 2nd level of competence (as 2 of them are situated

outside of Sofi-city in a radius of 30 to 60 km), and 7 from 1st competence level – as 5 of them are situated outside of Sofia – city in a radius of 70 km. This again demonstrates how well equipped with hospitals is Sofia and the disproportionate distribution in the country.

- There are 3,935 paediatric beds available in the country, as 1 450 beds are neonatology and 2485 – paediatric beds. Only 215 of these are paediatric specialty beds which are located mainly in hospitals in Sofia, Plovdiv, Varna and Pleven. According to the regulatory framework, treatment of paediatric diseases outside the scope of the general profile specialty can also be carried out in paediatric facilities of the 3rd level of competence, which means that also in the other paediatric facilities (at the regional level in the country) hospitalization is possible under certain specialties.
- Based on availability of paediatric beds by districts and competence level of the hospitals, there is in general shortage of paediatric beds in most districts of the country – wherever there is surplus, these are in districts where demography is not that good, there are not sufficient paediatricians and there are not enough patients for paediatric beds. The biggest share of hospital beds is in Sofia and Southwestern Bulgaria as is the biggest gap but also a comparatively low rate of usability. The low usability could be potentially explained with also shortages of paediatric specialists as is the case in most districts. In the medical universities' cities, there are paediatricians and paediatric specialists but still not enough to cover the needs.
- The data of the NCPHA show that the annual occupancy of paediatric beds in 2021 is only 52%, i.e. only half of the beds are used effectively. This data indirectly demonstrates the lack of medical specialists in hospitals outside Sofia, which causes many parents to seek specialized paediatric care in the capital. The disproportion in the presence of specialists in hospitals outside the capital is also proven by NHIF's data on the referrals by individual specialties from other cities to Sofia – mainly for the treatment of haematological, oncohaematological and oncological diseases, endocrine, cardiological, gastroenterological, nephrological or neurological diseases/disorders, as well as for traumatological conditions – on average between 35 - 42% of the total number of referred patients on an annual basis, according to NHIF data.
- However, a more detailed analysis of the situation by district shows that some of this hospital capacity is provided in small community hospitals (level I) that provide good access to hospital services but are running out of capacity in terms of providing quality and comprehensive paediatric care locally. Often these hospitals transfer patients to larger hospitals of regional importance.
- Based on data from MoH for the period 2019-2022, a total of 854 children were referred for treatment abroad, mainly for oncological and oncohaematological diseases, for organ transplantation, diseases of the eye and its appendages, orthopaedic diseases, congenital anomalies or congenital hydronephrosis. The total value of funds allocated by the NHIF for treatment abroad for this period amounts to BGN 12,827,498. Besides these cases, there are many families who take their children for treatment abroad and fund through own funding or fundraising. The data presented in the charts and tables below is the official data for children whose treatment are funded by the NHF.

CHAPTER 5. HUMAN RESOURCES

5.1. Medical Personnel

One of the major limitation and issues in front of Bulgarian healthcare system is the inadequate number of medical personnel. WHO estimates that the shortage of medical professionals in the global market is expected to reach up to 15 million doctors, nurses, etc. by 2030. The shortage is becoming more and more evident in the EU and competition between countries to attract and retain medics is increasing. In a recent publication⁵⁶ of Dr Ralitsa Ganeva from the Council for Economic Analysis, presents that in Bulgaria the number of doctors per 100 thousand population in 2021 is higher than that for the European countries considered (429.6 vs. 402.5). However, two specific deficits stand out for Bulgaria: a shortage of approximately 1000 general practitioners (GPs) and a shortage of over 460 psychiatrists. The most serious deficit in the system emerges in terms of nurses, which corresponds to approximately 16.9 thousand nurses.

Below is a review of the situation with medical specialists. Based on data from the NCPHA the number of physicians by the end of 2022 is 29599.

Compared to the other EU member countries there is relatively high number of medical doctors in Bulgaria (in the first 10 EU countries) with 4,2 physicians/per 1000 people.

44,2 % of the physicians are men (13087) and 55,8% are women (16517). The biggest share is between 55 - 64 years – nearly 35% (10338). The youngest practicing medical doctors are up to 35 years old, and they are 4 935 (16,7%) and the eldest, 65+, 5521 (18,6%).

In terms of distribution of physicians by specialty, the biggest share is of general practitioners (GPs) – 3945 (13,3%), cardiologists (6,2%), obstetrics and gynaecology - 5.9%, anaesthesiology and intensive care - 5.6%, surgery - 5.2%, and mental disorders - 4.9%. The number of doctors practicing pneumology and phthisiology is 596 (2.0%), and infectious diseases - 248 (0.8%).

If we look at the distribution of medical doctors, paediatricians are a total of 4.8% (between 6.2% and 3.4% in different years) for 2021.

The general practitioners for the country are 5.8 per 10,000 people of the population on the average. The highest number is in Pleven (8.2 per 10,000 people), Vidin (7.0) and Stara Zagora (6.8) and the lowest in the districts of Kardzhali (3.2 per 10,000 people), Targovishte (4.3) and Razgrad (4.4).

Bulgaria is one of the countries in the EU with the lowest ratio between doctors and nurses. The number of nurse practitioners in relation to the population remains one of the lowest in the EU. There are a variety of reasons behind this - relatively low pay, emigration to countries with better working conditions in Europe and around the world, limited admissions to higher education institutions for this type of education.

The relatively small number of nurses is associated with lower quality of health care and affects the health indicators of the population – they are on the front line of care, especially in hospitals and are in close and constant contact with patients, and very often the feeling of care and the impressions of the patients' stay depend on their work. In the absence of nurses their activity needs to be performed by doctors, thus reducing the overall efficiency of the system.

Table 22. Number of Doctors and Medical Staff in 2022 by District and NUTS-2 Region*

Districts	Doctors (physicians)	Midwives	Nurses
Total for the country	29599	3285	28827
Southwest Bulgaria	9719	1032	8838
Blagoevgrad	904	72	1111
Kyustendil	392	39	337
Pernik	376	27	370
Sofia	884	58	805
Sofia city (capital)	7163	836	6215
Northwest Bulgaria	3281	410	3244
Vidin	272	24	225
Vratsa	572	81	676
Lovech	436	28	454
Montana	406	63	529
Pleven	1595	214	1360
North Central	2509	315	2856
Northeast	3610	529	3117
Southeast	3594	374	3876
South Central	5728	604	5630

Source: NSI

*The primary and secondary level of the catchment area are listed by districts and highlighted in blue. The tertiary catchment area is included in NUTS2 Regions and is not highlighted.

In 2022, there are a total of 25,999 doctors in the country, or 5 doctors less than the previous year. The expected number of doctors is in the large regional centres – Sofia-city (7163), Plovdiv (2948) and Varna (2209). Although it is not so large in terms of population, the municipality of Pleven ranks right after them with 1,335 doctors, and the high result is due to the large medical university located in the city. The presence of a medical university is a strong factor for retaining doctors in the municipality and the district - it provides a wider medical practice, numerous opportunities for work, specialization, and development for young doctors. At the other end of the distribution are 16 municipalities without a single doctor, followed by 28 with only one. It is also important to note that there are 354 unassigned doctors in the country who work in more than one municipality and accordingly do not belong to any specific one, as well as 375 doctors living on the territory of the Sofia municipality but serving the population of the Sofia region⁵⁷.

Within the period 2018-2022, the total number of doctors in Bulgaria is practically the same (29,667 people in 2018 or a decrease of only 68 doctors). At the same time, in as many as 186 municipalities, there is a decrease in the number of doctors for the same period, while there is an increase in 37 municipalities. Although a certain part of the outflow can be explained by the large growth of unallocated doctors (220 in five years), there is apparently a concentration of doctors in a limited set of municipalities, especially in large ones such as Sofia-city (+404 doctors in 5 years), Burgas (+157) and Pleven (+111).

⁵⁷ EU, State of Health in the EU, Bulgaria, Health Profile

Table 23 Medical Personnel by the end of 2022, incl. Share of Paediatricians

Districts	Doctors (physicians)	Healthcare specialists	Paediatricians	Paediatricians as % of Physicians
Total for the country	29599	44493	1438	4,86%
Southwest	9719	13608	414	4,26%
Blagoevgrad	904	1 520	62	6,86%
Kyustendil	392	534	21	5,36%
Pernik	376	534	13	3,46%
Sofia	884	1133	49	5,54%
Sofia city (capital)	7163	9887	269	3,76%
Northwest	3281	5083	156	4,75%
Vidin	272	388	25	9,19%
Vratsa	572	1 029	27	4,72%
Lovech	436	677	28	6,42%
Montana	406	796	25	6,16%
Pleven	1595	2193	51	3,20%
North Central	2509	4434	162	6,46%
Northeast	3610	5204	203	5,62%
Southeast	3594	5869	211	5,87%
South Central	5728	8626	285	4,98%

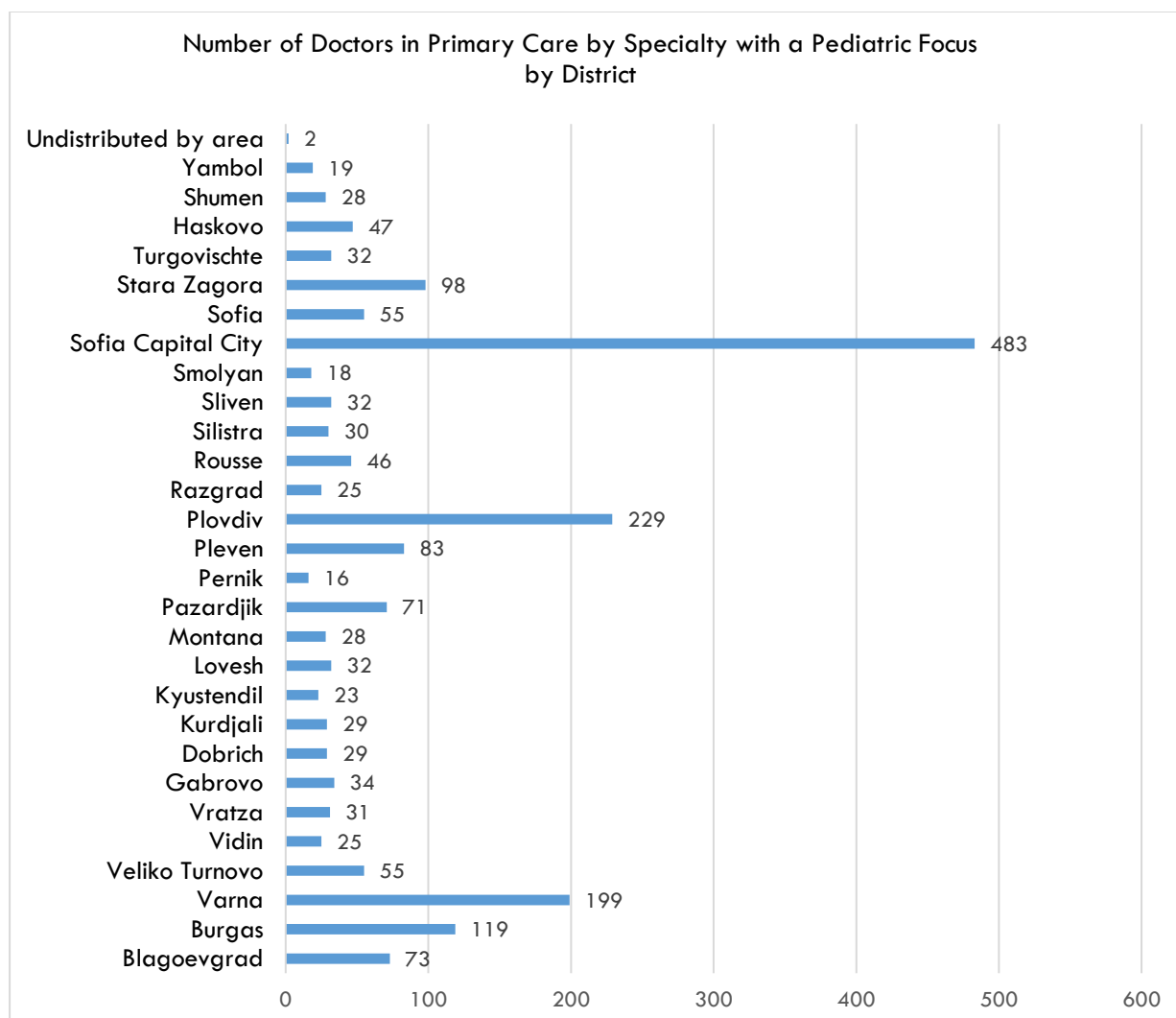
Source: NSI

The following table then presents the territorial distribution of paediatric doctors in the country. As could be observed distribution is uneven – the biggest concentration is where there is more population as well as some of the cities where there are medical universities. In Sofia- capital the number is more than twice as high than Plovdiv and Varna (following the population ratio).

There is a strong imbalance in the distribution of doctors, dentists, nurses and midwives across districts (Ralitsa Ganeva, November 2023). Depending on the type of medical professionals, between one-third and one-fifth of them are located in the Sofia (capital) district. More than half are located in six out of twenty-eight districts - Sofia (capital), Plovdiv, Varna, Pleven, Stara Zagora and Burgas. The medical universities in Bulgaria are also located in the centers of these districts. Overall, these districts have seen a dynamic increase in the number of dentists, midwives and obstetricians over the last two decades. The situation is different for general practitioners, psychiatrists, paediatricians and nurses - there has been a downward trend. In the remaining districts, the trend is downwards for all types of medical professionals.

Five out of twenty-eight districts have a higher number of doctors per 100 thousand population compared to the median for the group of European countries analyzed - Sofia (capital), Plovdiv, Pleven, Varna and Stara Zagora. In all other districts the situation is less favorable compared to the median, with the greatest shortage of doctors in Blagoevgrad, Kardzhali and Haskovo. In twelve of the districts there is a shortage of dentists, i.e. they are less than the benchmark. However, it should be borne in mind that the overall shortfall represents only 3.1% of the 2021 availability. The situation is similar for obstetricians and gynecologists.

Figure 36: Number of Doctors in Primary Care by District



Data source: NCPHA

The figure above shows the uneven distribution of paediatricians at the province level. As is to be expected, the greatest number of specialists works in Sofia city district – 438 (21%), while in Pernik there are only 16 such doctors specializing in treating children.

According to data from the NHIF, as of 31.12.2019, a total of 1,212,968 children under the age of 18 had a personal doctor (GP). Of these, 54,178 children were aged 0 to 1 year, 60,432 were aged 1 to 2, 327,647 were aged 2 to 7, and 770,711 were aged 7 to 18.

There is a significant shortage of nurses. Although the total number of doctors in Bulgaria (4.2 doctors per 1000 population in 2019) is above the EU average of 3.9, there is a shortage of doctors in certain specialties, which has affected the treatment of patients during the COVID-19 pandemic. The number of practicing nurses in Bulgaria has remained relatively stable over the past 15 years and amounts to a total of about 31,000 nurses. However, with 4.4 nurses per 1,000 population, Bulgaria is one of the EU countries with the lowest nursing provision. The shortage of nurses is due to several factors, among which are the low number of nurses graduating, the loss of trained nurses due to emigration, the aging of the workforce (the average age of nurses is over 50) and

dissatisfaction with wages and working conditions. In 2019, nurses organized protests across the country calling for fair pay, better working conditions and extra pay for night shifts and overtime. As a result, the minimum starting salaries for nurses working in public hospitals have been increased.

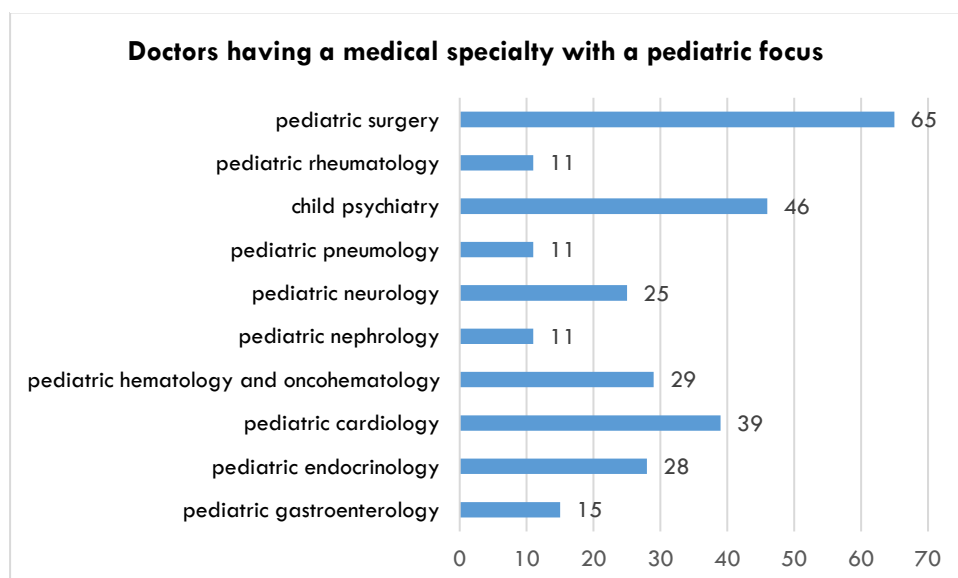
Bulgaria has ratio of doctors and midwives per 1000 people higher than the average of EU27, however its ratios are lower for GPs and nurses. The catchment area performs worse than the national average on all ratios and is only above EU27 average for midwives, although just marginally better.

The ratio of GPs to specialized doctors is also low. Given that they act as gatekeepers of specialized care, there is a low uptake of preventative examinations and bypassing primary care through emergency care referrals is frequent (Dimova, et al, 2012). Even though the number of physicians in general has an upward trend, the number of GPs has been steadily declining (-12.5%) since 2010, so this gap will continue to widen if the tendencies are maintained.

The rise in the number of physicians is motivated by the increase in the number of specialists. The specialties growing the most are cardiology (+37.8%), urology (+30.9%) and orthopaedics and traumatology (+25.9%). There are, however, some specialties that lose professionals. The ones that decrease the most are internal medicine (-31.3%), paediatrics (-15.0%) and dermatology (-9.36%).

If we take a close look at the distribution of paediatric specialists throughout the country it is an alarming trend of lack of specialized doctors with just limited availability in the university centres.

Figure 37: Paediatric Doctors by Specialty, No



Source: NCPHA

The number of paediatricians and specialists with a paediatric profile in the recent years has not shown an increasing trend, regardless of the increase in the total number of doctors in Bulgaria.

Different specialties show slightly different trends. I.e., in Paediatric gastroenterology there are a total of 13 specialists as 5 of them are in Sofia and 4 in Varna, the rest being in Plovdiv, Stara Zagora and Pleven. A little better is the situation with Paediatric Endocrinology and metabolic diseases – 26 specialists in total as 10 are in Sofia, 6 in Varna and the rest are in the universities' cities with 1 exception in Ruse. For Paediatric Cardiology there are more specialists with similar

regional distribution – out of 43 doctors, 30 are in Sofia and the rest being in the country where there are medical universities. The exception here is Montana. Paediatric Clinical Haematology and Oncology provide very limited resources – out of 33 doctors, 16 are in Sofia, 10 - in Varna and 7 - in Plovdiv. The other specialities suffer a similar situation as the most critical is probably Paediatric Rheumatology with just 10 specialists – 2 in Sofia, 3 in Plovdiv, 3 in Varna and 1 in Pleven and Vratsa.

In summary, 24% of all specialized paediatric doctors are in Sofia, 10% are in Varna, 11,5% are in Plovdiv. This uneven distribution also follows the model of the hospital care with concentration of hospitals and beds in Sofia -city as well as in the university centres. It is expected that with the development and construction of the Regional Paediatric Hospital in Burgas there will be a slight shift in regional distribution.

This distribution is presented in the following table.

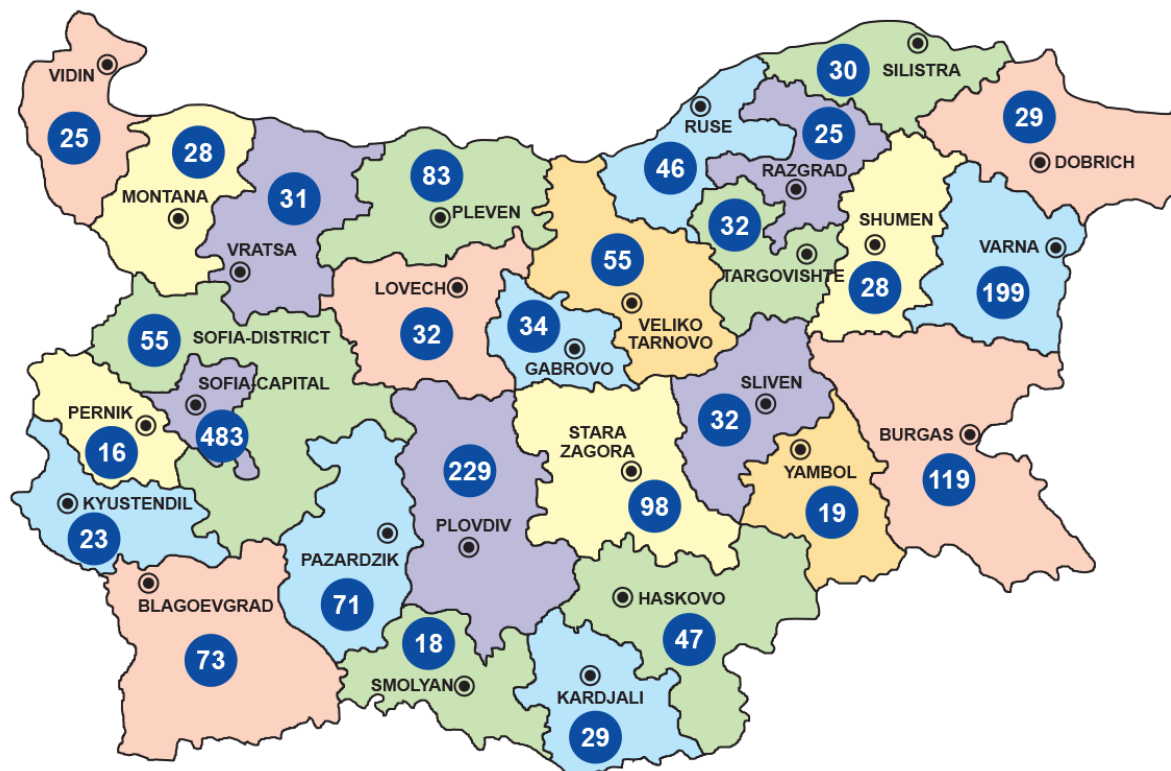
Table 24. Doctors Paediatrics, by region

District	Total	Gastroenterology	Endocrinology and metabolic diseases	Cardiology	Clinical Haematology and	Neurology	Nephrology and Haemodialysis	Pneumology and phthisiology	Psychiatry	Rheumatology	Surgery	Neonatology	Paediatricians
Total for the country	1,996	13	26	43	33	26	13	40	23	10	67	264	1,438
Blagoevgrad	73								1			10	62
Burgas	119		1	1					1		1	13	102
Varna	199	4	6	4	10	4	4	6	4	3	9	18	127
Veliko Tarnovo	55											3	52
Vidin	25												25
Vratsa	31							2		1	1		27
Gabrovo	34										1	3	30
Dobrich	29											5	24
Kardzhali	29											2	27
Kyustendil	23								1			1	21
Lovech	32											4	28
Montana	28			1								2	25
Pazardzhik	71					1		2			1	8	59
Pernik	16											3	13
Pleven	83	1	2	1		2	1	6		1	3	15	51
Plovdiv	229	1	5	5	7	6	2	3	3	3	12	42	140
Razgrad	25											1	24
Ruse	46		1					1	2		1	9	32
Silistra	30											6	24
Sliven	32										1	4	27
Smolyan	18											3	15
Sofia, capital	483	5	10	30	16	12	4	15	11	2	31	78	269
Sofia district	55						1	1				4	49
Stara Zagora	98	2	1	1		1	1	4			5	18	65
Targovishre	32											3	29
Haskovo	47											3	44
Shumen	28										1	4	23
Yambol	19											2	17
Not categorized	2												2

Source: NCPHA

The table displays the number of paediatric speciality doctors throughout the country as these from the Primary and Secondary Catchment Area are highlighted in yellow.

Figure 38: Displaying Paediatric Doctors by district, No



5.2. Medical Education

In situation of shortage of medical professional, the educational system could provide them. Medical Education in Bulgaria is provided in 7 different universities – two are in Sofia, one in Plovdiv, one in Stara Zagora, one in Burgas (recently opened), one in Varna and one in Plevn. The table below displays the number of students and PhD students in the Bulgarian medical universities for 2022/2023.

Bulgarian Medical Universities offer English and Bulgarian taught programs in Medicine, Dentistry, Pharmacy, Nursery and Midwifery. Additional programs offered only in Bulgarian include Physiotherapy, Dietetics, Public Health, HealthCare, Medical Rehabilitation & Ergotherapy, as well as studies that lead to the professional credentials of Dental Technician, Medical Laboratory Assistant, Assistant-pharmacist, Public Health Inspector, Technical Dental Assistant, Physiotherapy Assistant, Radiology Assistant, Social Worker, and Medical Cosmetics, among others.

Bulgarian Medical University English-taught programs are described below:

Medicine

Medicine is a 6-year teaching program, starting with undergraduate degree-level courses that lead to a master's degree in medicine upon graduation, whereby the professional qualification of "Physician" is awarded. After this, graduates must pursue specialization via residency practice for 4 to 6 years, whether in Bulgaria or elsewhere. Possession of this Degree entitles the holder to practice medicine in any EU or non-EU country around the globe. English taught courses in Medicine comprise 10 semesters and 1 year (310 calendar days) of state clinical internships. More

specifically, the program consists of 2 years of pre-clinical study, 3 years of clinical study and the last year of clinical practice (internship). Hence, the aforementioned first 2 years of medical school focus on the fundamentals as well as science courses, while clinical studies and training examine the application of biomedical science precincts mastered during the first 2 years of medical school, and the last year of medical studies focuses exclusively on practical training. The final assessment of knowledge and expertise acquired by the medical student upon completion of the program is made by the State Examination Board via comprehensive theoretical and practical examinations. After this, the student must continue with their specialization via residency practice which, if completed in Bulgaria, may be government-funded, sponsored, or self-funded for EU students including Bulgarians, or self-funded for non-EU students, and is completed with the State Specialty Examination after the Ministry of Healthcare has announced residency positions for which students apply through their universities.

Dentistry

Dentistry is a 6-year taught program, instructed entirely in English, starting at an undergraduate level and leading to a master's degree in dental medicine. Optionally, graduates may choose to specialize for 3-4 years, whether in Bulgaria or abroad.

Pharmacy

The Pharmacy program lasts 5 years, commencing with undergraduate level courses and leading to a master's degree upon graduation. Subsequently, candidates may choose to pursue specialization in a particular area for 3 years, whether in Bulgaria or abroad.

Nursing

The program in Nursing lasts 4 years, with courses and practical training taught exclusively in English, and leads to a bachelor's degree in nursing. The curriculum consists of 7 semesters that focus on theoretical and practical study at the Medical University and the University hospital, and 1 semester of state clinical practice or internship.

Midwifery

The program in Midwifery lasts 4 years, with courses and practical training taught entirely in English, and leads to a bachelor's degree in Midwifery. The program consists of 7 semesters, during which students focus on both theoretical and practical study, and one semester of either state clinical practice or an internship. Academic training includes theoretical and clinical courses in the form of lectures, seminars and individual work.

All Bulgarian Medical Universities offer postgraduate medical study programs, including in paediatry (specialization training or residency specialization) for graduates who have completed their 6-year undergraduate medical studies that have led to a master's degree. Subsequently, after graduation, students must specialize in a medical field which typically lasts 4-6 years depending on the program they have graduated from. Postgraduate medical study focuses on the acquisition of a medical specialty according to the approved EU training medical programs and is complete once students have finished licensure examinations offered by the State Examination Commission if specialization takes place in Bulgaria. Most medical graduates of Bulgarian medical universities, whether Bulgarian, EU citizens or non-EU citizens, prefer to continue with their specialization in Bulgaria.

Bulgarian medical specialization training takes place at the Medical University Hospitals or affiliated clinics, and it includes full-time practical training 8 hours per day in a position with duties pertaining to the curricula of respective specialties. In every medical University there is a Commission

for Postgraduate Education appointed by the Rector and admits to the Speciality State Examination only the candidates who have completed the respective specialization curricula successfully. In turn, medical specialists who have successfully passed the Specialty State Examination receive a certificate of a recognized specialty by the Medical University.

Every year, medical residency specialization positions are announced on the website of the MoH end of October, in the section “Normative Acts” under the heading “Regulations, Instructions and Orders”, and are separate for EU candidates (including Bulgarians) and non-EU candidates, based on availability of funding, not the experience gained. In turn, EU candidates including Bulgarians are admitted to specialization positions through an application as well as a mandatory residency examination process and subsequently must secure funding, but non-EU candidates are admitted through an application process as they are self-funded.

In order for a specialization position to be secured, be it through government funding, sponsoring or self-funded, besides the relevant documentation that is required when applying for specialization, all EU applicants including Bulgarians must complete an entrance or eligibility exam. This Specialty State Entrance Examination lasts 4 hours, during which candidates must expand on 2 topics from a given list of topics.

More specifically, regarding funding for such specialization positions, both non-EU students and EU students may choose to pay for their specialization themselves, so long as they have found a position, adducing a specialization fee to the University, annually. Alternatively, for EU candidates only (including Bulgarians), funding is available for specialization positions announced by the Ministry of Healthcare (leading to respective residency Specialty State Examinations) in any of the following three ways:

1. The Bulgarian Government pays the Medical University specialization fees of each Postgraduate Medical student trained.
2. A sponsor pays the monthly specialization fees to the Medical University and the monthly salary of the Medical or Dental student.
3. The Postgraduate students themselves pay the specialization fees to the Medical University and he or she might get a monthly salary, if any funds are available through EU grants.

As should be expected, competition for Bulgarian Government funding of specialization positions is very high, but it is considerably lower when it comes to Sponsorships, or if sought specialization training positions are self-funded.

In Bulgaria, the number of medical specialists is almost exclusively filled by new graduates from Bulgarian medical universities. They are almost entirely Bulgarian citizens. (Ralitsa Ganeva, November 2023). As for the capacity of the Bulgarian education system to produce doctors, it currently far exceeds the number of Bulgarian citizens trained. On average for the period 2012-2021, about 1/3 of medical students are foreign nationals, and about 1/5 of dental students. Thus the inflow could be identified of medical specialists with the number of graduating students - Bulgarian citizens (assuming that they remain working in Bulgaria). The outflow is obtained as the resultant quantity of specialists in a given year, reduced by the size of the inflow. The outflow includes retired health professionals, deceased, leavers and those who have left the health sector.

In the last few years, however, the number of people leaving the system has begun to exceed the number of those entering the sector. For 2021 in particular, estimates show that 1015 doctors have left, while 902 have entered.

According to the data of the Ministry of Health for the period 2012-2021, the total number of doctors with an acquired specialty in general medicine who could enter the general practitioner stream amounts to approximately 1.7 thousand. Despite this relatively high figure, there was a net decrease of 647 GPs over the same period according to the NSI. Also, in recent years, the number of persons acquiring such a specialty has been decreasing, reaching 59 in 2021.

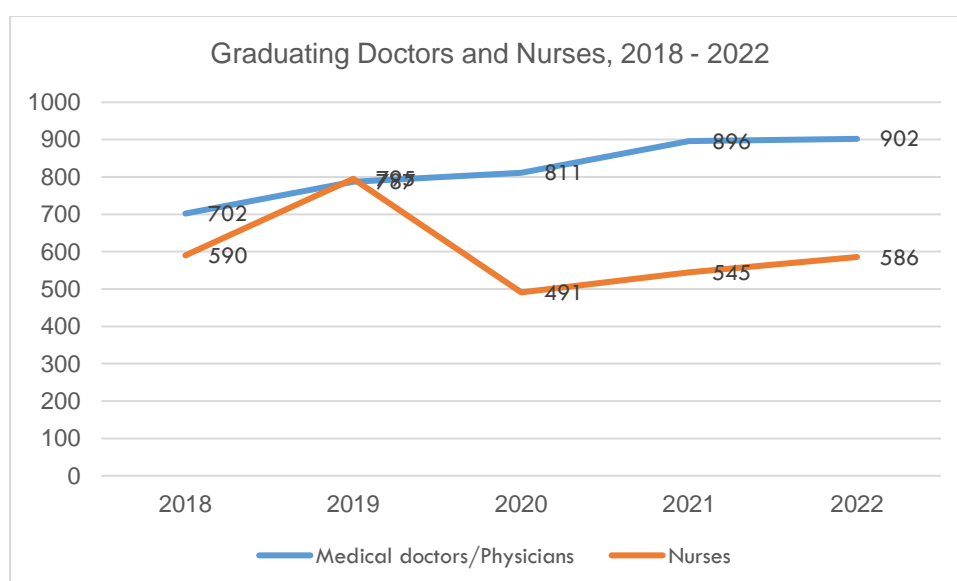
The situation with nurses is expectedly the least favorable – since 2014, the outflow of nurses has consistently exceeded the inflow, with the 2020 estimate of the excess reaching its maximum of 1,386. In 2021, this estimate amounts to 344 people, corresponding to an inflow of 546 nurses and an outflow of 890.

Solving these issues is a tremendous challenge to the government and a serious risk for the health sector impeding development and provision of adequate quality health service. Over the past decade, national health strategy documents have outlined some key problems and solutions, achieving limited results. Individual development and implementation of policies stimulating medical resources in the sector need to be planned at government level.

5.3. Medical Students and Brain Drain

In terms of providing enough doctors who have specialized in paediatrics and specialties, we need to look at the number of students graduating from universities as well as the numbers of those choosing to specialize in paediatrics. The data are represented on the figure below: there is an unstable trend of increasing the number of medical students that graduate in medicine over the years between 2018 and 2022. For the nurses, after a sharp increase in 2019, there is also a sharp decrease in 2020 but then the number is gradually increasing and has almost caught up with the number in 2018.

Figure 39: Number of Graduating Doctors and Nurses, 2018 - 2022

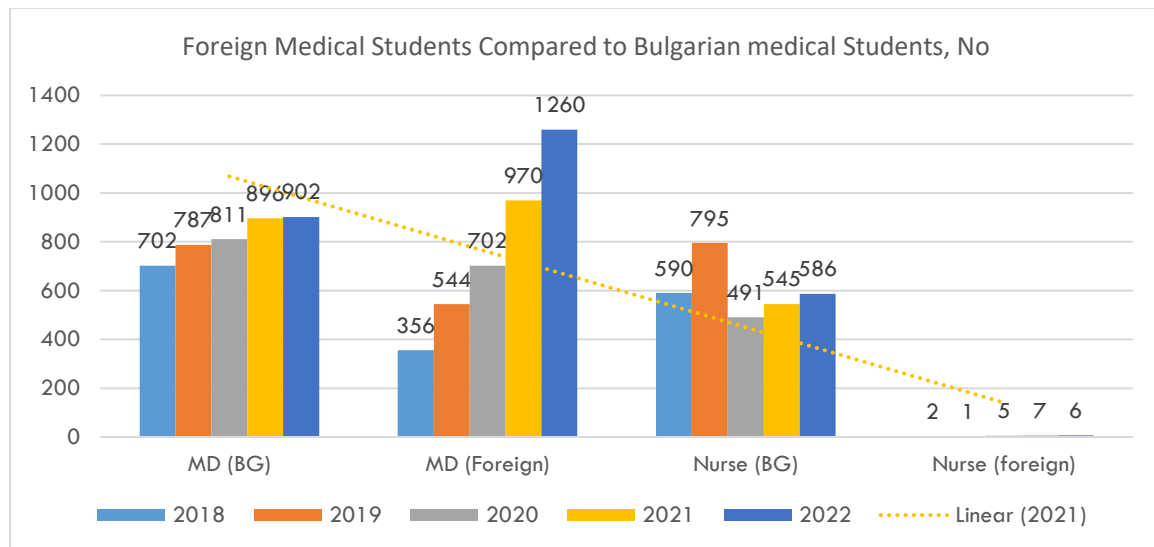


Source: MoH

The data of graduating medical and nursing students shows a steady increase every year. At the same time, the persistent trend of the number of graduating nurses being more than 50% lower (66% on average for the period) than that of graduating doctors is maintained.

Additionally, foreign students are also taught in medical specialities in Bulgaria. The number of foreign medical students is constantly increasing for the five-year period and for 2022 is exceeding the total number of Bulgarian medical students – it is 143% than the number of Bulgarian students. Education for nurses

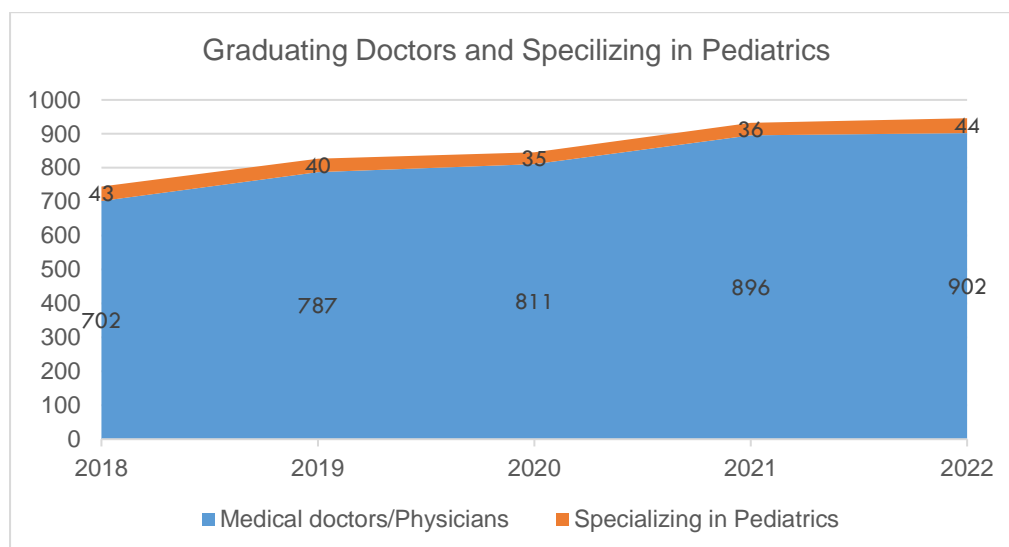
Figure 40: No of Foreign Medical Students studying in Bulgaria compared to Bulgarian medical students, 2018 - 2022



Out of a total of 4,095 medical graduates, only 198 (4.8%) chose to specialize in paediatrics.

There is another slowly emerging trend of an increase of graduates who decide to specialize in paediatrics. There is a decrease in 2020, 2021 but the numbers in 2022 recover to the level of 2018. The number of graduated specialists as visualized is growing slowly.

Figure 41: Number of Graduating Doctors and Specializing Paediatrics, 2018 - 2022



All the above-mentioned factors lead to a permanent shortage of specialists in most cities outside of Sofia, as well as to an increase in the age of employees at all levels of paediatric structures.

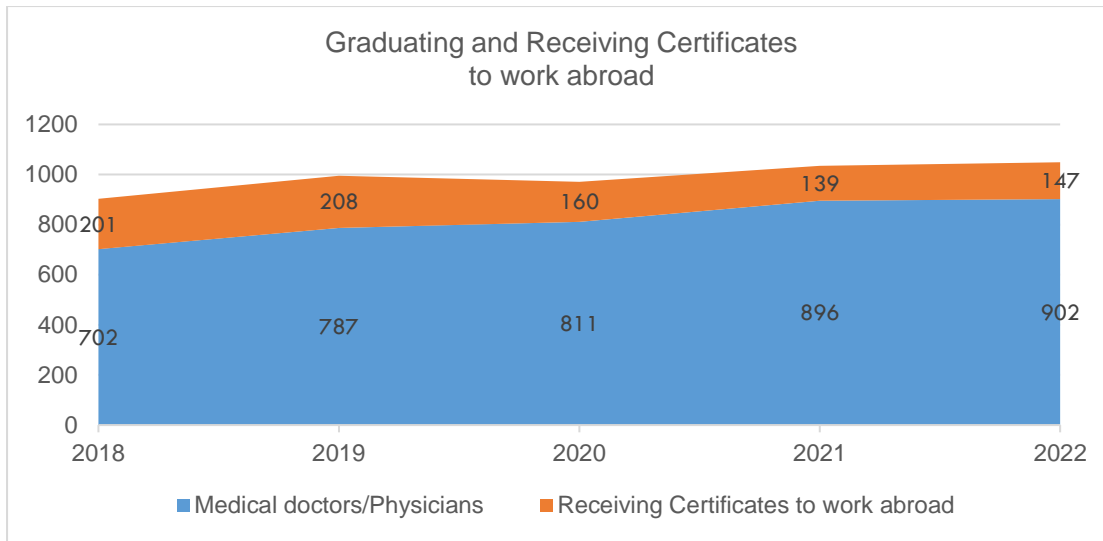
There is also a shortage of neonatologists (a total of 259 for the country), and in some districts there is only one specialist. (5.1.)

According to data from the NHIF, the distribution by hospital of doctors specializing in paediatrics is highly uneven across the country. In many of the districts, there is a lack of doctors in a large part of the paediatric specialties, which means that in the case of a need for specialized hospital medical assistance, the treatment must be carried out in another district. 420 (21%) of the total number of hospital specialists work in Sofia, 239 of those being paediatricians. In total, 890 specialists are concentrated in the five cities – Sofia, Plovdiv, Varna, Burgas and Stara Zagora (those five cities comprising the largest population aged 0-19) – which is nearly half of the available human resources for the whole country (45%).

Another alarming issue with medical doctors and university graduates is the “brain drain”.

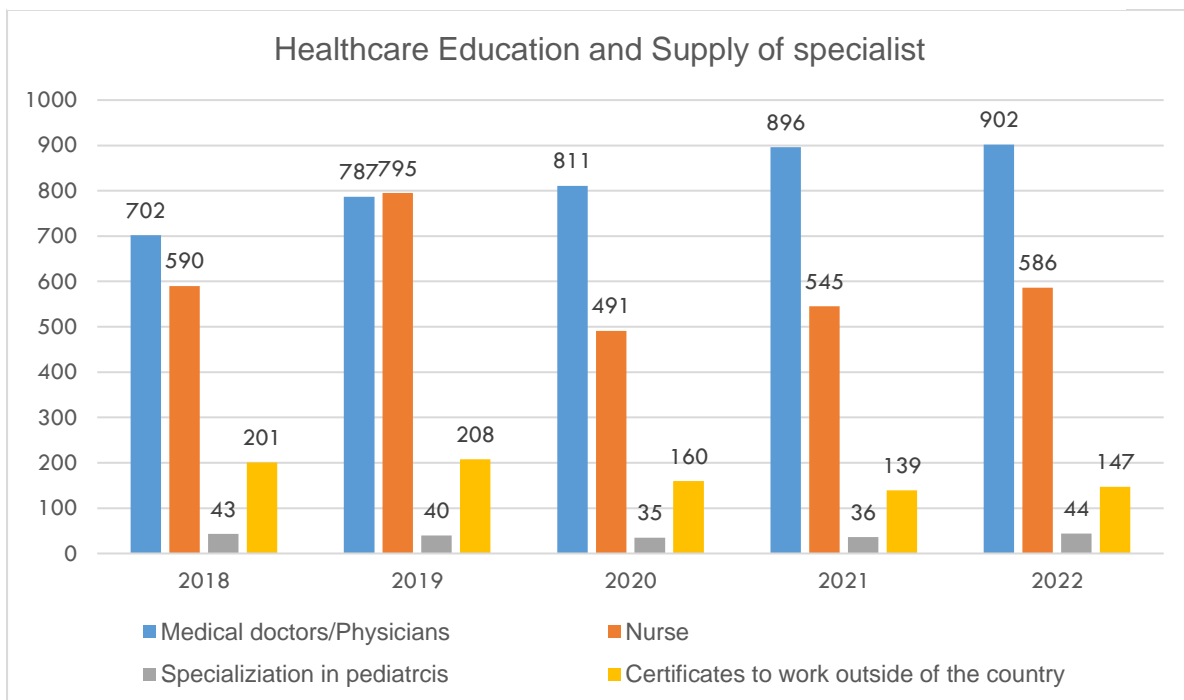
Data from qualitative surveys present that annually 200-300 medical professionals leave Bulgaria because of unsatisfactory work conditions or inadequate payment. It is difficult to track brain drain – number of specialists who left Bulgaria, both newly graduated and physicians with longer work experience. The MoH tracks only the issued certificates necessary for working abroad to medical specialists who have acquired their qualifications in the Republic of Bulgaria. However, the issuance of a certificate is not equivalent to going to another country for the purpose of settling there permanently. Some of the issued certificates are necessary for recognition of the professional qualification in another country for the purpose of training or short-term work, after which the medical specialist returns to Bulgaria. Some of the medical specialists wish to issue a certificate without having a specific opportunity to start working abroad. The number of issued certificates is displayed on the chart above in relation to the numbers of students who have graduated for the period 2018-2022.

Figure 42: Number of Graduating Doctors, who receive Certificates for Work/Study Abroad, 2018 – 2022



The up-to-date numbers and trends related to the present analysis is displayed on the Figure below.

Figure 43: Number of Graduating Healthcare Specialists, 2018 - 2022



The table below presents the comparison between the availability of paediatrics doctors and the demand in the different regions in Bulgaria according to the National Health Map.

Table 25. Paediatric Doctors, Needs and Availability, by region, 2021

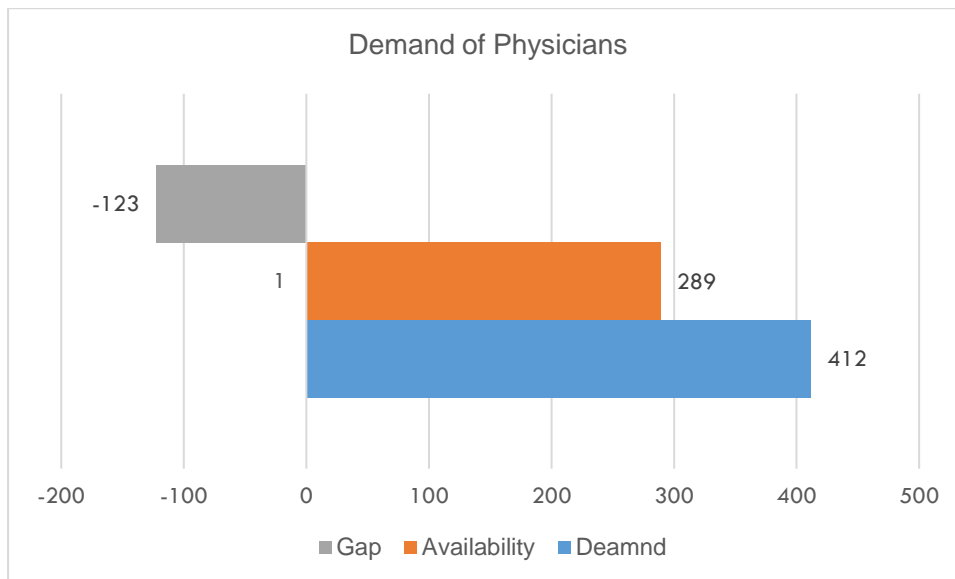
District	Demand/Need		Availability		Gap
	Physicians No	Provision to 100 000 ppl	Physicians No	Provision to 100 000 ppl	
Sofia Capital	225	17	190	14,39	-35
Sofia District	40	17	22	9,61	-18
Blagoevgrad	53	17	39	12,65	-14
Kyustendil	21	17	7	5,27	-14
Pernik	21	17	5	4,04	-16
Vidin	15	17	14	15,47	-1
Vratsa	29	17	18	10,37	-11
Lovech	22	17	7	5,42	-15
Montana	23	17	8	6,13	-15
Pleven	42	17	17	6,75	-25
Veliko Tarnovo	41	17	25	10,32	-16
Gabrovo	19	17	21	18,47	2
Razgrad	20	17	8	6,93	-12
Russe	38	17	14	6,15	-24
Silistra	19	17	6	5,36	-13
Varna	80	17	38	7,93	-42
Dobrich	30	17	12	6,87	-18
Targovishte	19	17	20	17,15	1
Shumen	30	17	12	7,02	-18
Burgas	70	17	69	16,78	-1
Sliven	32	17	7	3,69	-25
Stara Zagora	55	17	28	8,63	-27
Yambol	21	17	4	3,48	-17
Kardzhali	26	17	14	9,28	-12
Pazardzhik	44	17	25	9,39	-19
Plovdiv	114	17	47	7	-67
Smolyan	19	17	4	3,88	-15
Haskovo	40	17	15	6,32	-25
Total:	1208	17	696	9,94	-512

National Health Map

For the primary and secondary level of the catchment area (highlighted in blue in the table) and based on that information we can see the following demand of 123 physicians.

The analysis of the availability of paediatricians by region in the country shows that the total deficit is 512 specialists, and it is particularly pronounced in Yambol, Sliven, Silistra, Lovech, Pernik, Kyustendil, where the provision of paediatricians is around and below five doctors per 100,000 population on demand of seventeen physicians per 100,000 population. Only in two districts - Gabrovo and Targovishte, the availability of paediatricians meets the needs determined by the NHF.

Figure 44: Demand of Paediatric Doctors, 2021



5.4. Conclusions

- Overall, there is relatively high concentration of medical doctors (4,2 per 1000 people) but at the same time the second lowest number of nurses in the EU. The doctors and medical nurses are aging – 63% of all doctors are above 51 years of age. The distribution of medical doctors in the country is very fragmented. Paediatricians are a total of 4,8% (between 3.4% and 6,2% in different years).
- The concentration of specialized medical doctors is in large cities – Sofia as well as the cities where there are medical universities.
- There is a slow positive trend of increasing the graduates in medicines and the graduates specializing in paediatrics.
- At a more basic level and at regional scale the low number of specialists is crucial for providing access to health care in the first place, but also for meeting the standards of care as defined by the international practice and related to functional referral systems, ensuring respect, protection and fulfilment of child rights, competent and motivated human resources, and child-friendly physical environment.
- The shortage of specialists strongly influences at least two critical factors for the overall development of the health care sector in Bulgaria:
- The need for ever evolving capacity for cooperation among different institutions in the system for care in order to provide the best quality of service adequate to demand at national and regional level.
- Consolidation of knowledge and expertise to build upon a nation specific concept for research, development, and application of innovation in children's health care, which is even more important to sustain and scale innovations responding to a thorough assessment of the actual need⁵⁸.

⁵⁸ Standards for Improving the Quality of Care for Children and Young Adolescents in Health Facility, WHO, 2018, <https://www.who.int/publications/i/item/9789241565554>

- Currently, the education system only partially compensates for the departure of doctors and nurses. Needs identified by existing deficits remain unmet. Overcoming the shortages is a huge challenge for government. The possible solutions we propose are related to prioritising the training of medical professionals, retaining them in Bulgaria (including foreign trainees), attracting back Bulgarian professionals working abroad, and significantly improving working conditions and career development opportunities.
- There is a strong imbalance in the distribution of doctors, dentists, nurses and midwives across districts (Ralitsa Ganeva, November 2023). Depending on the type of medical professionals, between one-third and one-fifth of them are located in the Sofia (capital) district. More than half are located in six out of twenty-eight districts - Sofia (capital), Plovdiv, Varna, Pleven, Stara Zagora and Burgas. The medical universities in Bulgaria are also located in the centers of these districts. Overall, these districts have seen a dynamic increase in the number of dentists, midwives and obstetricians over the last two decades. The situation is different for general practitioners, psychiatrists, paediatricians and nurses - there has been a downward trend. In the remaining districts, the trend is downwards for all types of medical professionals.
- Five out of twenty-eight districts have a higher number of doctors per 100 thousand population compared to the median for the group of European countries analyzed - Sofia (capital), Plovdiv, Pleven, Varna and Stara Zagora. In all other districts the situation is less favorable compared to the median, with the greatest shortage of doctors in Blagoevgrad, Kardzhali and Haskovo. In twelve of the districts there is a shortage of dentists, i.e. they are less than the benchmark. However, it should be borne in mind that the overall shortfall represents only 3.1% of the 2021 availability. The situation is similar for obstetricians and gynecologists.
- There is a significant shortage of nurses. Although the total number of doctors in Bulgaria (4.2 doctors per 1000 population in 2019) is above the EU average of 3.9, there is a shortage of doctors in certain specialties, which has affected the treatment of patients during the COVID-19 pandemic. The number of practicing nurses in Bulgaria has remained relatively stable over the past 15 years and amounts to a total of about 31,000 nurses. However, with 4.4 nurses per 1,000 population, Bulgaria is one of the EU countries with the lowest nursing provision. The shortage of nurses is due to several factors, among which are the low number of nurses graduating, the loss of trained nurses due to emigration, the aging of the workforce (the average age of nurses is over 50) and dissatisfaction with wages and working conditions. In 2019, nurses organized protests across the country calling for fair pay, better working conditions and extra pay for night shifts and overtime. As a result, the minimum starting salaries for nurses working in public hospitals have been increased.
- Different specialties show slightly different trends. I.e., in Paediatric gastroenterology there are a total of 13 specialists as 5 of them are in Sofia and 4 in Varna, the rest being in Plovdiv, Stara Zagora and Pleven. A little better is the situation with Paediatric Endocrinology and metabolic diseases – 26 specialists in total as 10 are in Sofia, 6 in Varna and the rest are in the universities' cities with 1 exception in Ruse. For Paediatric Cardiology there are more specialists with similar regional distribution – out of 43 doctors, 30 are in Sofia and the rest being in the country where there are medical universities. The exception here is Montana. Paediatric Clinical Haematology and Oncology provide very limited resources – out of 33 doctors, 16 are in Sofia, 10 - in Varna and 7 - in Plovdiv. The other specialities suffer a similar situation as the most critical is probably Paediatric Rheumatology with just 10 specialists – 2 in Sofia, 3 in Plovdiv, 3 in Varna and 1 in Pleven and Vratsa.

- In summary, 24% of all specialized paediatric doctors are in Sofia, 10% are in Varna, 11,5% are in Plovdiv. This uneven distribution also follows the model of the hospital care with concentration of hospitals and beds in Sofia -city as well as in the university centres. It is expected that with the development and construction of the Regional Paediatric Hospital in Burgas there will be a slight shift in regional distribution.
- The analysis of the availability of paediatricians by region in the country shows that the total deficit is 512 specialists, and it is particularly pronounced in Yambol, Sliven, Silistra, Lovech, Pernik, Kyustendil, where the provision of paediatricians is around and below five doctors per 100,000 population on demand of seventeen physicians per 100,000 population. Only in two districts - Gabrovo and Targovishte, the availability of paediatricians meets the needs determined by the NHF.
- There is another slowly emerging trend of an increase of graduates who decide to specialize in paediatrics. There is a decrease in 2020, 2021 but the numbers in 2022 recover to the level of 2018.
- According to data from the NHIF, the distribution by hospital of doctors specializing in paediatrics is highly uneven across the country. In many of the districts, there is a lack of doctors in a large part of the paediatric specialties, which means that in the case of a need for specialized hospital medical assistance, the treatment must be carried out in another district. 420 (21%) of the total number of hospital specialists work in Sofia, 239 of those being paediatricians. In total, 890 specialists are concentrated in the five cities – Sofia, Plovdiv, Varna, Burgas and Stara Zagora (those five cities comprising the largest population aged 0-19) – which is nearly half of the available human resources for the whole country (45%).
- Data from qualitative surveys present that annually 200-300 medical professionals leave Bulgaria because of unsatisfactory work conditions or inadequate payment. It is difficult to track brain drain – number of specialists who left Bulgaria, both newly graduated and physicians with longer work experience. The Ministry of Health tracks only the issued certificates necessary for working abroad to medical specialists who have acquired their qualifications in the Republic of Bulgaria. However, the issuance of a certificate is not equivalent to going to another country for the purpose of settling there permanently.

CHAPTER 6. CATCHMENT AREA DEFINITION

Since this assessment concerns the National Paediatric Hospital in Bulgaria the location is decided to be in Sofia – capital.

It is set in the assignment that the first **National Paediatric Hospital** (NPH) shall be located in Sofia, that is part of the National Health Strategy of Bulgaria 2030 to improve access to medical care, to overcome healthcare inequality and to adequately address the needs of children and adolescents for access to quality and affordable healthcare.

Since the definition of the catchment area of the new NPH needs to consider the nationally accepted levels of competence but also those areas of influence where the hospital may function as a lead partner in the children's health care ecosystem, several potential roles are considered which differentiate three functional areas:

- The hospital acting as a first level of entry for the territory of Sofia City and Sofia District.
- The NPH contributing to overcoming regional disparities in child health care service provision where the 2nd level of competence is offered for Sofia and the region of Sofia, but also the surrounding area of Southwest Bulgaria (the Municipalities of Blagoevgrad, Kyustendil and Pernik) and some of the municipalities in the Northwest of the country – Vratsa and Montana. The geographical location, transport connectivity and demand analysis verify the potential of influence of the new medical institution.
- The NPH serving high-needs patients at a nation-wide scope and corresponding to the 3rd level of competence but also providing for a model where inpatient care of high quality goes along with development and sustaining innovative approaches and good practices of hospital care to influence the overall performance of the national health care system.

The hospital will cover the needs of these three catchment areas, providing both excellent diagnostics and research, basic and highly specialized hospital services.

The lack of paediatricians and specialist doctors with a paediatric focus is the main reason for the appearance of two types of 'migration' of patients:

- Two-stage: at first, from the hospitals in the smaller settlements to the provincial centres, and then, at the next stage of treatment, from the provincial hospital to Sofia.
- One-stage: even before receiving a clear diagnosis and starting treatment, seeking referral directly to Sofia in search of specialists and certainty in the diagnosis and treatment of their children.

However, in Sofia, patients and their parents are faced with another problem: the dispersal of different paediatric medical structures among separate hospitals, as well as the lack of a single structure to refer to the necessary diagnosis or treatment.

This way, a paradoxical situation transpires in which, despite the large number of paediatric medical facilities in Sofia, the availability of medical specialists and highly specialized equipment therein, patients are referred from one hospital to another and yet another hospital due to the medical specialists and the specialized equipment being dispersed between different, distant facilities. This creates serious difficulties for children's access to medical care and, thus, children's right to timely access to specialized multifaceted medical care, even in Sofia, is insufficiently guaranteed.

This problem is particularly serious in the event of an emergency, when medical assistance from the right specialists is needed in a short time frame, in a medical facility that has the necessary

equipment to deal with the problem. In such a situation, transferring the patient from hospital to hospital leads to delays in treatment and even to life-threatening situations.

Another existing problem occurs when it is necessary to treat diseases of a multispecialty nature, with the need for simultaneous follow-up and treatment by several doctors with different medical specialties. The current structure of paediatric hospital care at the national level and in Sofia does not provide sufficient conditions for this, putting at risk the effective treatment of children with such diseases.

Thus, the lack of coordination and interaction between the individual elements and units of the paediatric care system, combined with the shortage of specialists, lead to fragmentation in medical care, lack of multifaceted medical treatment and a decrease in the effectiveness of treatment of individual patients and in the performance of the system as a whole.

Sofia City being the capital and the largest city in Bulgaria has the profile of “health service centre” with many hospitals and hospital beds. The service though is provided by many hospitals – multi-specialty with different clinics and wards. The largest number of competence level 3 facilities are also situated in Sofia.

6.1. Definition of the Catchment Area

Due to many reasons through the years Sofia has become the most developed centre for healthcare in Bulgaria – being the capital and concentrating the largest population in Bulgaria. As described in the analysis, Sofia is the place where hospitals and human resources are concentrated, there are medical universities and colleges, the population is also concentrated but also a huge majority of population is directed for treatment to Sofia. The catchment area for the new NPH is assessed at three levels:

- (1) Primary level is Sofia city (Capital)
- (2) Secondary level is also covering Sofia – district, as well as all districts from Southwestern Bulgaria – Pernik, Kyustendil and Blagoevgrad, as well as Vratsa and Montana from Northwestern District. In the analysis further below primary and secondary level are often reviewed together as Sofia capital is part of the NUTS-2 Southwestern Bulgaria. While Vidin is also within the reach of this level distribution it is not included in the secondary level due to 2 main reasons – its transportation accessibility is not well interlinked with Sofia – it is more distant – travel distance by road is almost 240 km and it is far. As well as the population in Vidin as well as age structure is low. People from Vidin usually go for treatment to Montana or Pleven.
- (3) The tertiary level (3rd) encompasses the whole country. On many occasions data is accessible at national level.

The following table presents the characteristics of the districts, that fall within the three levels of the catchment area:

Table 26. Catchment Area

Level	District	Area	Population	Children
Primary	Sofia - capital		1217692	245935
Secondary	Sofia – district	1,348,9 km ²	137205	42834
	Pernik	2390,5 km ²	87601	19331

	Kuystendil	3084,3 km ²	74592	18047
	Blagoevgrad	6449.47 km ²	172440	55962
	Vratsa	3619,7 km ²	89109	28220
	Montana	3635,5 km ²	74578	20200
Tertiary	All Districts		4746910	1215040

Source: NSI

The district of Vidin although part of NUTS-2 Northwest region is not included in the Secondary Catchment Area due to the fact that it is more distant than the other Districts as well as it has easier access to Pleven.

The map below shows the three levels of catchment on the map of Bulgaria:

Figure 45. Map on the levels of Catchment



The National Long-term Health Map specifies that at the national level, the creation of a national center for complex treatment of children (National Paediatric Hospital) is supported, integrating hospital and outpatient services in the field of diagnosis, treatment and monitoring of children with diseases in the scope of all medical specialties. It is envisaged for the NPH to provide complex diagnostics and treatment and the application of highly specialized medical activities, provided with high-tech equipment and competent medical staff, all of which will be provided in a friendly environment adapted to the children's psyche. The center will be the leading unit for advisory assistance in relation to the other structures of the national pediatric network and for the training of medical specialists.

In Chapters 3, 4 and 5 important elements of the Catchment Area Definitions are reviewed.

6.2. Catchment Area Justification

Population

The demographic and socio-economic data is extensively reviewed in Chapter 3, 3.1. As of 31.12.2022, 4 746 710, or 73.6% of the total country's population, reside in urban areas and 1 701 000, or 26.4% - in rural ones. There are 5 256 settlements in Bulgaria by the end of 2022, of which 257 - towns and 4 999 - villages.

Half of the country's population (51.5%) lives in Southwestern and Southcentral regions. The smallest, according to the population number, is the Northwestern region - 672 thousand persons, or 10.4% of the country's population. The population number decreased compared to 2021 in all statistical regions; highest is the decrease in Northeastern region - by 1.5% and lowest - in Southwestern region - 0.1%.

Table 27. Catchment Area Population

Districts	Total Population			Children up to 18		
	Total	Men	Women	Total	Men	Women
Southwest, Total	2016554	967549	1049005	382109	371894	378062
Blagoevgrad	288161	139761	148400	55962	28572	27390
Kyustendil	108703	52220	56483	18047	52220	56483
Pernik	111746	53436	58310	19331	53436	58310
Sofia - district	227610	111132	116478	42834	111132	116478
Sofia - city	1280334	611000	669334	245935	126534	119401
Northwest, Total	451156	218252	232904	234530	218252	232904
Catchment Area Districts	265046	128449	136597	48420	128449	136597
Vratsa	148874	72166	76708	28220	72166	76708
Montana	116172	56283	59889	20200	56283	59889
Lovech	113356	54868	58488	113356	54868	58488
Vidin	72754	34935	37819	72754	34935	37819
Bulgaria, Total	6 447 710	3 099 503	3 348 207	1215040	624805	590235

The primary catchment area concentrates 25% of the population in the country and 20% of the children and the secondary catchment area – 39% of the population and 34% of the children.

Level of Catchments Area	Population	Children (up to 19)
Primary	1280334	245935
Secondary	2281600	430529
Tertiary	6 447 710	1215040

Outpatient Facilities and Consultative Centres

Level of Catchments Area	Outpatient facilities that provide paediatric services, 2022	Health consultative centres for mother and child health
Primary	88	2
Secondary	202	8
Tertiary	652	31

The primary Catchment Area concentrates 13,5% of the outpatients' facilities that provide paediatric services and the Secondary – 31%.

Medical Facilities and beds (Inpatient)*

Level of Catchments Area	Hospitals	Beds
Primary	67	10712
Secondary	118	17753
Tertiary	341	54707

Almost 20% of all hospitals in the country and hospital beds are concentrated in the Primary Catchment Area, and 35% of the hospitals and 32,5% of the hospital beds form the Secondary level of the Catchments Area.

And by level of competence, 45% of the level 3 hospitals are concentrated in the Primary Catchment Area, 47% in the Secondary, for 2nd level though it is just 9% in the Primary Area, 28% in the Secondary.

Level of Catchments Area	Level 3	Level 2	Level 1
Primary	17	6	2
Secondary	18	18	17
Tertiary	38	65	62

As it could be seen the biggest share of hospital beds is in Sofia and Southwestern Bulgaria as is the biggest gap but also a comparatively low rate of usability. The low usability could be potentially explained with also shortages of paediatric specialists as is the case in most districts. In the medical universities' cities, there are paediatricians and paediatric specialists but still not enough to cover the needs.

Demand and Availability of paediatric beds, 2021 (Primary, Secondary and Tertiary Level)

	Need by competence level				Availability				Usability, %	Gap
	1st	2nd	3rd	Total	1st	2nd	3rd	Total		
Primary Level (Sofia Capital)	110	132	121	363	-	20	203	223	48	-140

Secondary Level	359	267	121	747	199	232	231	662	59	-185
Tertiary Level	1471	880	452	2803	711	1302	626	2639	67	-164

The next table presents the numbers of patients directed to Sofia from the different districts in the country (Secondary and Tertiary Level) to Sofia

Level of Catchments Area	Referrals
Primary	NP
Secondary	117 127
Tertiary	219 399

If we take a closer look at the proposed **Secondary Catchment Area** a big number of patients from these districts are directed for treatment to Sofia. The numbers are higher in 2018 and 2019 and there is a sharp decrease in 2020 followed by an increase of the patients. Still, the patients from the catchment area are between 52 and 53% of all patents. This 53% are formed from 6 districts to compare with the rest of 21 districts.

Medical Personnel by the end of 2022, incl. Share of Paediatricians

Level of Catchments Area	Doctors (physicians)	Healthcare specialists	Paediatricians
Primary	7163	9887	269
Secondary	10697	15433	466
Tertiary	29599	44493	1438

If we look though at paediatricians with different specialities, the concentration is mostly in the Primary Catchment Area – 24% and then for the Secondary – 35,5%. For some specialities though 50% and more (Cardiology, Neurology, Clinical Haematology, Surgery) are mostly concentrated in the Primary Catchment Area.

District	Total	Gastroenterology	Endocrinology and metabolic diseases	Cardiology	Clinical Haematology and	Neurology	Nephrology and Haemodialysis	Pneumology and phthisiology	Psychiatry	Rheumatology	Surgery	Neonatology	Paediatricians
Primary	483	5	10	30	16	12	4	15	11	2	31	78	269
Secondary	709	5	10	31	16	12	5	18	13	3	32	98	466
Tertiary	1,996	13	26	43	33	26	13	40	23	10	67	264	1,438

6.3. Transport Connectivity

Transport Connectivity is reviewed on the three different levels of the Catchments Area:

- (1) First level: City of Sofia and Sofia District

- (2) Second Level: City of Sofia and Sofia District, NUTS 2: Southwest Bulgaria and from NUTS2: Northwest Bulgaria – Vratsa and Montana District
- (3) The whole country

The expected area to be covered on the day-to-day basis will include Both first and second level with exclusion of Montana probably as there is 3rd level hospital there.

Figure 46. Primary Level Map



Currently, Sofia Hospitals cover a large area on a day-to-day basis, that is visible by the needs assessed (7.1.) – Sofia-city cover the needs of the catchment area on level 1 and level 2 due to the existing capacity and available medical services, geographical situation, transport network.

The travel time and availability of transport is reviewed in the table below:

Table 28 Availability of Transport from the 2nd level catchment area

	Distance, km	Distance, Min (by Car), min	Travel time by bus, min	Travel time by train, min
City	Sofia	Sofia	Sofia	Sofia
Blagoevgrad	104 km	90	120	204
Pernik	39 km	45	80	96
Kyustendil	106 km	86	180	220
Vratsa	120 km	120	120	180
Montana	110 km	122	150	180
Sofia District (Ave)	70 km	80	100	100

Source: own calculations

Table 29. Availability of Transport from the 2nd level catchment area.

Districts and Municipalities	No of Municipalities	By Rail	By other Public Transport	By Car
Sofia District	22	14	22	22
Blagoevgrad District	14	6 (+3)	14	14
Kyustendil District	9	5	9	9
Pernik District	6	3	6	6
Vratsa District	10	4	10	10
Montana District	11	7	11	11

Source: own calculations

Access through public transportation (train or bus) is possible, with all route options to Sofia that currently offer paediatric services taking about 120 min travel time (except train when travel time is more than that).

Sofia city has a well-developed public transportation system that includes subway lines (connecting also to the Railway Stations, trams, bus lines that provide good coverage of the city and excellent access to the hospitals that are situated in areas with public transportation. All types of transport networks are developed within the Metropolitan Municipality. This includes the following elements of the communication and transport infrastructure: railway network, international airport, networks of mass urban public transport (buses, tram, trolley, metro), road and street network with service facilities, taxi transport (routes taxis and taxis), shared vehicles for public use (cars, mopeds, electric scooters), parking spaces and the regulation facilities.

Sofia is the country's most important railway junction and is located on the corridor „Orient/ Eastern-Mediterranean“, making the connection with the interior of the country in 5 directions. There are 16 railway stations, and 12 railway stops on the territory of Sofia District. Central Station reports the largest flow of people, 75% of the total number.

There is also Bus Stations for intercity bus transfers, which makes Sofia very accessible.

Sofia is also accessible by road, as there is good connection to the district city south (Pernik, Kyustendil and Blagoevgrad) road connection also towards the North (in reconstruction) and highways to the East (Southeast, Trakia Highway) and Northeast (Hemus).

Figure 47. Secondary Level Map



Based on the transport accessibility and availability of hospitals Sofia currently serves as a medical center for all these locations and gathering point for many patients from the whole country. As noted on the map, the other options that have similar availability of medical services are the cities where there are medical universities.

CHAPTER 7. STAKEHOLDER ANALYSIS

Children’s health care, and in particular the construction of a National Paediatric Hospital, is a complex and multifaceted topic that attracts various stakeholders. For the purposes of the Needs Analysis and determining the scope of the activities of the National Paediatric Hospital, those stakeholders should be grouped into several main categories:

- Civil stakeholders: patients, parents, patient advocacy organizations, other interested NGOs.
- Professionals: doctors, health care professionals (nurses, laboratory assistants, rehabilitators, etc.), health managers of public and private medical institutions, medical students, Bulgarian Medical Association, paediatric associations, Bulgarian Association of Health Care Professionals, etc.
- Public authorities: Ministry of Health, National Health Insurance Fund (NHIF), medical universities and faculties of medicine, etc.

The various stakeholders in the establishment of the National Paediatric Hospital have different roles and motivation for participation and those determine their involvement during different stages of implementation of the project and operation of the hospital.

Some of the motivation, however, is shared among all participants in the process:

The implementation of the project will lead to the creation of a unique paediatric medical institution of a national type which by encompassing within itself all the necessary structures, will make it possible to achieve the highest level of medical care for children and adolescents aged 0 to 18.

The construction of the National Paediatric Hospital will thus guarantee comprehensive, multifaceted, and high-quality medical care for children.

This will facilitate achieving the strategic task of reducing the general level of child mortality, as in terms of this statistic Bulgaria currently ranks in one of the first places in the European Union.

The construction of a National Paediatric Hospital will improve health outcomes for the entire population, increase the number of healthy life years, as well as implement full-fledged measures for effective prevention.

Establishing such a medical facility will also significantly raise the training standards for both medical students and paediatric specialists.

7.1. Expectations of the Main Stakeholders

7.1.1. Stakeholders Identified

Below are the main stakeholders whose opinion should be considered in the Needs Analysis and in determining the scope of activities of the National Paediatric Hospital, as well as the stage at which it is important to conduct a survey of their opinions.

Stakeholder	Role	Priority of the need for analysis of expectations	Stage at which to conduct survey
1. PATIENTS/ PATIENT ADVOCACY ORGANIZATIONS			

<p>Patients/ Parents</p>	<p>Main users of the hospital's services</p>	<p>Highest priority! The National Paediatric Hospital must be fully focused on providing the highest level of care. The capacity, infrastructure, staff, etc. of the hospital will be determined according to the needs of this group. Currently, one patient may have to be treated at several medical facilities, some far away from one another (in Sofia), or patients must undergo treatment at local medical facilities lacking the capacity for providing sufficiently qualified, high-quality care. Their expectations should be analysed at the national level.</p>	<p>Preliminary stage</p>
<p>Patient advocacy organizations Other interested NGOs</p>	<p>Representatives of major groups of patients with specific diseases</p>	<p>High priority! They are intimately acquainted with the needs and requirements of individual groups of patients, as well as of children in general. They possess expertise on the quality of services in Bulgaria and abroad. A survey of their expectations will present those of the patient groups in an aggregated form. Their point of view will allow to formulate clearly both the overall concept of the hospital and its individual specifics. They may be valuable advisors in the process of identifying needs and in the design and construction of the Hospital.</p>	<p>Preliminary stage Project implementation stage Paediatric Hospital operational stage</p>
<p>2. HEALTH PROFESSIONALS</p>			
<p>Specialists</p>	<p>Doctors/Nurses/Laboratory technicians at the hospital</p>	<p>Highest priority! Medical professionals from the service region and the target region can influence the decision-making process in the field of health policy and regional policy, including the accumulation of health care resources. Medical specialists will have the opportunity to work at the newly built National Paediatric Hospital and improve their skills in the relevant fields. The specialization option can attract graduates with families to the region and improve health resource outcomes.</p>	<p>Preliminary stage Project implementation stage Paediatric Hospital operational stage</p>
<p>Health managers in Sofia</p>	<p>They are responsible for the operation of the medical facilities in which the existing</p>	<p>High priority! The attitudes of hospital directors of medical institutions in Sofia and other Bulgarian cities should be surveyed.</p>	<p>Preliminary stage</p>

	paediatric hospital units work	To establish functioning units in the National Paediatric Hospital, a restructuring of the existing units must first be carried out which will result in a need to modify the existing activities and lead to possible difficulties for the existing hospitals with paediatric structures in Sofia.	
Health managers in other cities – provincial and municipal levels	They are responsible for the operation of the medical facilities in which the existing paediatric hospital units work	High priority! It is also important to study the attitudes of the directors of multi-specialty hospitals with paediatric units to clarify the overall coordination between all elements of the children’s health care system.	Project implementation stage
Bulgarian Medical Association / Bulgarian Paediatrician Association	They are responsible for the development of medical standards, as well as the professional improvement and career development of their members.	Medium priority! Medical professionals from regional and national doctors’ associations have a strong influence in decision-making and strategy development for the National Paediatric Hospital.	Project implementation stage
General practitioners	They provide a major part of paediatric primary care	High priority! A survey of their expectations should be done in view of the need to create a clearly structured paediatric care system and the coordination and interrelationships between its individual elements, incl. mechanisms for prevention, referral, and monitoring.	Project implementation stage
Medical students/residents	Future employees of the National Paediatric Hospital.	High priority!	Project implementation stage Paediatric Hospital operational stage
3. PUBLIC AUTHORITY			
Ministry of Health	Sets health policy in Bulgaria	Highest priority! All important policy decisions in the field of health care must be approved by the Ministry. It sets the agenda for the entire healthcare sector and approves medical standards for each medical specialty. The degree of readiness for a complete change in the policy of children’s health care depends on the Ministry of Health, incl. and to implement the 2030 health strategy to achieve the indicators set out in the document.	Preliminary stage Project implementation stage Paediatric Hospital operational stage

		Choosing the hospital's model, determining its structure, scope, and capacity, as well as providing specialists to work therein also fall under the Ministry's purview.	
National Health Insurance Fund	Main source of funding	High priority! The financing of hospital care is carried out mainly through the NHIF. Regardless, the Ministry of Health determines the priorities in the development of health care, incl. hospital care. The status of the future Paediatric Hospital also depends on the decisions of the Ministry of Health.	Preliminary stage Project implementation stage Paediatric Hospital operational stage

7.1.2. Participants in the Interviews and Focus Groups

Participants

Within the framework of the present analysis, written personal interviews were conducted with leading doctors who are heads of clinics and departments in the main hospitals in Sofia, in which the largest paediatric structures in Bulgaria operate. Along with this, two focus groups were held – the first with the Ministry of Health and the second with representatives of NGOs that participate in the Public Council of the Ministry of Health.

The participants in the written interviews and in the focus groups were asked questions related to the following groups of topics:

- Benefits of establishing a National Paediatric Hospital, for patients and for working doctors and nurses.
- Disadvantages of establishing a National Paediatric Hospital.
- Risks inherent in establishing the Hospital.
- Main concerns caused by the three-stage project design for building the National Paediatric Hospital: preparatory work, implementation of the project, and operating the hospital.
- The two approaches to the Model for building the medical facility:
 - Option 1. By restructuring/closing all remaining paediatric hospital units in Sofia, or
 - Option 2. Keeping basic paediatric hospital units in Sofia.
- Main reasons why one would choose the new hospital as a new workplace.
- Potential activities that could be overtaken by the Ministry of Health to motivate doctors/nurses to work at the Hospital.
- The way the project is being discussed, and how to organize it to achieve maximum efficiency.
- The place and role of NGOs in the project implementation process.

In response to the invitations, 16 doctors from the main hospital paediatric-oriented structures sent written answers to the questions.

Hospitals and Doctors who responded to the interview:

“Prof. Ivan Mitev” University Specialized Paediatric Hospital (<https://usbaldb.com>)

Among the respondents there were:

- Director of the medical facility,
- Gastroenterology Clinic,
- Children's Nephrology and Haemodialysis Clinic,
- Children's Neurology Clinic,
- Children's Pneumology Clinic,
- Paediatric Rheumatology Clinic,
- Clinic for the treatment of children with genetic diseases,
- Neonatology Clinic, and
- Children's intensive care unit.

Paediatric Clinic of the University Multispecialty Hospital for Active Treatment "Aleksandrovska" (<https://alexandrovska.com/bg/клиника-по-педиатрия>)

The clinic focuses on pulmonology. Regrettably, no response was received from the Clinic for Eye Diseases, Department of Children's Eye Diseases – a unit unique to the country which treats the main flow of children with eye diseases, incl. newborns.

University Multispecialty Hospital for Active Treatment and Emergency Care "N. I. Pirogov" (https://pirogov.eu/bg/otdelenie-po-pediatriia_p1797.html)

Among the respondents there were:

- The Paediatric Anaesthesiology and Intensive Care Clinic,
- Paediatric clinic,
- The Department of Paediatric Orthopaedics and Traumatology, and
- The Paediatric Surgery Clinic.

University Multispecialty Hospital for Active Treatment "Tsaritsa Yoanna – ISUL" EAD, <https://isul.eu/clinicsd.html?id=17/Клиника+по+детска+клинична+хематология+и+онкология>

Among the respondents were:

- The Department of Paediatric Otorhinolaryngology, and
- The Clinic for Children's Clinical Haematology and Oncology.

The Children's Cardiology Clinic, National Cardiology Hospital, <https://www.hearthospital.bg/departments/department-pediatric-cardiology/>

Nongovernmental Organizations, participating in the Public Council to the MoH:

There was a focus Group held with representatives of the following stakeholders (NGOs):

The National Network for Children (<https://nmd.bg>)

The National Network for Children is an alliance of civil society organisations and supporters, working with and for the children and families across the whole country. The promotion, protection and observing the rights of the child are part of the key principles, that unite us. We do believe that all policies and practices, that affect directly or indirectly the children should be developed, applied, and observed, taking into account the principle of the best interest of the child and with the active participation of children and young people themselves.

Spina Bifida and Hydrocephalus - Bulgaria Association (<https://sbhb.org>)

Spina Bifida and Hydrocephalus-Bulgaria Association was established by parents in 2011. The experience of the organization is related to supporting the families of children with disabilities and creating a community. Advocacy for the rights and policies to support children and families is a permanent part of the work of the Association. The organization is a member of the international federation IF SBH. International activities provide some knowledge in modern support systems for children and their families.

National Civil Initiative “For True Paediatric Hospital”

Civil initiative of citizens and organizations that started the activity to create a modern Paediatric Hospital 3 years ago. Active part of the Public Council (<http://detska-bolnitsa.org>)

Foundation “Ida” for palliative care for children (<https://idahospice.org>)

A community of doctors, parents, relatives of children with "terminal" diseases and volunteers from various fields: psychologists, speech therapists, journalists, designers, photographers, etc. Their goal is to build a working palliative care system for children of all ages, regardless of where they are - in a health facility or at home, as well as a children's hospice that offers the full range of services for children and parents, regardless of diagnosis and life expectancy.

Foundation “For Our Children” (<https://detebg.org/en/main-3/>)

For Our Children Foundation is a Bulgarian non-governmental organization that has been supporting vulnerable Bulgarian children and their families since 1992. “For Our Children” is the successor of the British human rights organizations “European Children’s Trust”, “Christian Children’s Fund” and “Every Child”.

Foundation “For the Good” (https://zadobroto.com/en/portfolio_page/project-firefly/)

A non-governmental organization that works for the benefit of children by implementing various campaigns. One of them, Svetulka (Firefly), is aimed at improving the environment for treating children in hospitals.

Ministry of Health (<https://www.mh.government.bg/bg/ministerstvo/vatreshna-struktura/>)

A Focus Group was held with representatives of “Treatment Activities” Directorate experts – the core experts that will become part of the new Department “Mother and Child’s Health”.

Municipality of Burgas (<https://www.burgas.bg/en>)

A Focus Group was held with the core team of the municipality that is working on the development of Burgas Paediatric Hospital – deputy mayor on construction, deputy mayor on education, social services and healthcare and the team leader for the Paediatric Hospital project.

7.2. Analysis of the Qualitative Studies, Major Highlights

7.2.1. Communication and Coordination of Effort, as key factors for the success of the project

The main purpose of the questions asked was to clarify two issues: First, whether there is a channelled flow of communication, internal as well as public, which provides regular, structured, and

comprehensive information for all target groups (doctors, nurses, various hospital specialists, patients, medical students, NGOs - patient advocacy and professional organizations). Secondly, whether there is an existing mechanism in place for discussing the process of implementing the construction of the National Paediatric Hospital and whether there is joint coordination between all interested parties.

All participants were asked the following questions:

- **Are you familiar, and to what extent, with the idea of building a National Paediatric Hospital (NCH) in Sofia?**
- **From where do you get information about the progress of the project?**
- **At what implementation stage is the project of building the NCH?**
- **Do you think a change is needed in the way the NCH project is discussed? If yes, in what direction – for example, should there be more grassroots project information, more opportunities for collaborative discussions, targeted opinion polling or something else?**
- **In your opinion, what is the role of non-governmental organizations (including patient advocacy organizations) in the process of discussing and implementing the NCH project?**

The main group of respondents are aware to a different degree of the project for the construction of the National Paediatric Hospital, although they are not aware of the details of the plans for the construction of the building, the formation of the teams, as well as the main processes accompanying the implementation of the project. This conclusion applies to the representatives of all groups, and none of them was fully acquainted with the development of the project. It seems there is a lack of a unified system for communication and informing all interested parties at the same time and to an equal extent, which is also confirmed by the answers to the question of where they get information about the project:

I got the information from the discussions held with colleagues, from the public media and social networks.”	Doctor
“From colleagues at the Public Council.”	NGO
“This should come from the Ministry of Health. The Public Council has the minutes that are uploaded to the Ministry of Health’s web page, and we have the web page “For a True Paediatric Hospital” where we try to let some people know what’s going on. From then on - nothing from the Ministry of Health.”	NGO
“My information is is mainly from the media.”	Doctor
“I got the information from the discussions held with colleagues, from the public media and social networks.”	Doctor

	NGO
“This should come from the Ministry of Health. The Public Council has the minutes that are uploaded to the Ministry of Health’s web page, and we have the web page “For a True Paediatric Hospital” where we try to let some people know what’s going on. From then on - nothing from the Ministry of Health.”	
	NGO

From the responses of the respondents, the main stakeholder group, the doctors – who must be both be the driving force of the process and will be the main stakeholder group affected by the project’s implementation – is the least informed with the actual advancement of the project.

“This should come from the Ministry of Health. The Public Council has the minutes that are uploaded to the Ministry of Health’s web page, and we have the web page “For a True Paediatric Hospital” where we try to let some people know what’s going on. From then on - nothing from the Ministry of Health *NGO*

“This should come from the Ministry of Health. The Public Council has the minutes that are uploaded to the Ministry of Health’s web page, and we have the web page “For a True Paediatric Hospital” where we try to let some people know what’s going on. From then on - nothing from the Ministry of Health *NGO*

Doctors

“There needs to be greater awareness among the paediatric guild regarding the project and the stages of completion.”

There is a need to provide more information to the medical community, as well as multidisciplinary discussions and debates

An example is given of a meeting held by a former Minister of Health with “all leading specialists (heads of clinics and departments in paediatric specialties)” and it is emphasized that such a format is suitable for discussing the Hospital project in all its stages.

All surveyed groups are from those stakeholders which should be included in the process from the very start, already in the discussion of the main conceptual topics: the need for building such a hospital, its scope and structure, functional connections within it and with other medical facilities, etc.

Nevertheless, the survey’s findings clearly show that a structured and, above all, constant dialogue involving all the main stakeholders is lacking; the discussions happen sporadically, and the topics that are discussed depend not on the natural progression of the process but are spur-of-the-moment and are rather a reaction to themes or issues which have emerged in the meantime. It is generally agreed that the participation of these key stakeholders in the whole process will greatly contribute to their awareness of and personal engagement with the subject. As opinion leaders in their social and professional groups, and in society, they could play the role of ‘ambassadors’ and referents for the ideas and goals of the project and especially its realization.

From this background logically follow the respondents’ proposals on how to change the mechanisms for informing and discussing the subject with the various stakeholders.

It would be good to have regular meetings with the team in charge of the new hospital project and to receive up-to-date information on the stage it is at.

The discussion of the NCH project should be publicly accessible to doctors and patients.

It is desirable for us to get informed through an official and freely accessible, dedicated site administered by the Ministry of Health or the Company (Health Investment Company for Paediatric Hospital), in which all the information is uploaded - who proposed what and for what reason a given decision was made, etc. In this way, it will also be possible to seek individual responsibility.

A more detailed study of the activities of similar hospitals in European countries leading in health care, especially in those with a population close to ours in terms of number and structure, and presentation of this information. No one knows exactly what needs to be done.

It is advisable to seek out specialists (architects, engineers, etc.) with experience in building similar facilities. And then, a broad public discussion with clear objectives and set time frames for each stage of the discussion.

Doctors

We wish to create a dialogue.

It is important that someone leads the process – for that, a unit from the administration could be selected which will not be constantly changed, but it should have a clear plan, and a deadline. Then maybe we'll have some hope. In other words, to have one person to communicate with and who organizes matters and makes the big picture happen. For me, this is one [main factor]. The other thing is that there should be some way to hear the people who will be using this hospital. I don't see that, so far. Also, for other health care units, other hospitals.

NGO

There must be a communicator. There must be someone to tell the story, to explain, because behind all the talk we at the Ministry of Health are doing our work. This will take the pressure off us as well. And the emphasis instead will be on a proper understanding of the process.

I agree with that, however I think it shouldn't be too much, but it should be done regularly and spot on.

And that's why I keep thinking that Dr. XXXX is right in saying that information should be properly presented and that the process should not be isolated, without communication. Precisely, in order not to break this psychological contract - in which are, on the one hand, the expectations of society and, on the other hand, the real-life activities, and opportunities. It is therefore important that information is not presented in an inappropriate way without being explained, or else it will be misunderstood.

Ministry of Health

During the discussions and interviews, a question was also asked about NGOs that are involved in the construction of the Paediatric Hospital and their role in this process, about their opportunities to facilitate communication in it as well as provide added value to the expertise on the quality of children's healthcare from the point of view of active and informed healthcare service consumers. The opinion on this topic is also quite unanimous, as a large part of the respondents, incl. doctors and representatives of the Ministry of Health, are convinced that NGOs should be active participants in these processes. An opinion is also expressed by all participants that, at one stage of the project until now, there was a moment when they were the more active party in it, thus seizing the initiative from the Ministry of Health and the Investment Company, which led to an imbalance in the interaction between all stakeholders, on the one hand, and in the communication of the project, on the other hand.

The engagement of the non-governmental sector will serve as a guarantee for the transparency of the project activities, it has the opportunity to shape a positive attitude of society towards the project and to speed up the construction of the NCH.

Their role is significant. What is needed are public control of the process, clear deadlines, and responsible persons.

The opinion of these organizations should be heard and taken into account but should not be leading (determining).

They should have an advisory function.

Their role is to moderate the relationship with society and provide and analyse information about society's expectations and needs. They could subsequently carry out campaigns, as well as regular activities aimed at the living environment and social and cultural activities in the hospital. Patient advocacy organizations could participate in information campaigns, discussions and activities on early diagnosis and improving access to treatment for various groups of diseases.

Their active participation in the discussions is important. It is necessary to take their opinions into account when making decisions, but they should not be imperative and leading. I believe that constructive suggestions and sharing of experiences are valuable, but the experts in the respective fields have the final say.

I believe they are well intentioned and can help explain the benefit of such a facility, support doctors and in the future provide psychological and psychosocial support to children, parents, and staff.

Doctors

I think that NGOs had the upper hand in all that talk, which clearly annoys the rest. And the NGOs themselves tried to seize the whole process and lead it – for a long period.

The role of the Public Council and the NGOs in it is to promote and explain the hospital to the public. The focus did shift a bit in the beginning, there were various disputes on this topic. It is very important, at last, that everyone should know what role they play in this process.

It is precisely for this reason that the minister hastened to create this Council, which was convened 4 months earlier because of the great public interest and need for such a communicator.

Ministry of Health

On their part, NGO representatives are clearly aware of the power of their expertise, as well as the opportunities they can offer to the institutional participants in the process of building the Paediatric Hospital. They express readiness to support the processes with their rich experience and expertise in working with children, with their ability to use various resources, including also international experience.

The hospital is at the point where some of the civic organizations and some in the paediatric community are making a frantic effort to talk to each other and work together because they realize that we have no other chance to make this hospital happen. We don't like each other. We have different priorities. We have a different idea of what a good hospital means. However, after so many years of fighting each other, we have concluded that the only chance for this to work is to find a way to talk to each other, and we are currently making efforts to do that.

NGO

The representatives of the NGOs also emphasize the need to create a good and effective internal organization of the building process of the Paediatric Hospital, clearly defining that it is not just the creation of a building - that is, a purely investment process, but a reorganization of the entire system of child health care at all levels, in all elements and in all regions of Bulgaria, not only in Sofia.

When asked about the stage that the project is currently at, all survey participants were clear: an early, unclear stage, still chaotic and unbalanced:

- without a general work plan with all project stages included,
- without a clearly appointed person in charge of the process,
- without a structured mechanism for dialogue and discussion of the project,
- without an established communication channel for providing regular, factual, and accurate information to the public about the progress of the project.

The hospital is not just a building, the hospital is much more than that, and for this process to be brought to the end, achieving a quality result, it is necessary to be clear who from the Ministry of Health is responsible for it.

The stage is the stage of no results.

Somewhere things are breaking down and going extremely slow and no responsibility is taken. And above all, the right questions are not being asked. Who are we doing this for? Why do we do it? What are the needs of those for whom this is being done?

We are at a stage where there is a desperate need for an agreed action plan and clarity on what the continuity is between the various teams of the Ministry of Health, the Health Investment Company, etc. So that it can be clear what we are doing from today until the moment when we cut the ribbon of the hospital, in which there should be enough sufficiently well-trained medical specialists, and specialists from other sectors, including social, educational, etc. It's just a crying need, because what we see over the past – let's count them – already five years since 2018, what we have is a constant restart of the process.

NGO

This is an initial stage because the construction of a National Paediatric Hospital has different elements. It has a construction part, a medical part, it must be staffed with human resources, and these different steps that should lead to one whole, to the formation of a Paediatric Hospital, are at different stages of their development.

Ministry of Health

It is still in its infancy. Things are being discussed.

I am not informed if anything at all has been happening in recent years.

Doctors

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Their role is significant. What is needed are public control of the process, clear deadlines, and responsible persons.

The opinion of these organizations should be heard and taken into account but should not be leading (determining).

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Their active participation in the discussions is important. It is necessary to take their opinions into account when making decisions, but they should not be imperative and leading. I believe that constructive suggestions and sharing of experiences are valuable, but the experts in the respective fields have the final say.

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Ministry of Health

It is still in its infancy. Things are being discussed.

I am not informed if anything at all has been happening in recent years.

Doctors

Conclusions

1. It is necessary to develop a comprehensive plan for the implementation of the process of building the NPH with clearly defined stages, responsible persons and indicative time frames and deadlines for their implementation. All groups of activities must be listed in this plan:

- to determine the scope, functions and structure of the hospital.
- for investment activities: construction works, procuring equipment and furnishing, and related activities (e.g. deadlines for conducting and awarding public contracts).
- communication activities.
- for building a hospital team.
- for engaging all stakeholders.
- including also activities to build a strategy for the development of the hospital in the long term (3/5 years or more).

2. It is necessary to establish a mechanism for a structured, continuous dialogue (including through the Public Council) between all key stakeholders, as well as a mechanism for attracting and joining new stakeholders with a view to the development of the project.

3. It is necessary to develop a unified communication strategy to inform the different target groups. Such a communication strategy would help both to provide current information about the realization of the project and about the scope and functions of the future hospital, as well as to avoid the risk of over-expectation on the part of the users of the service.

4. A team is needed to implement the communication activities aimed at individual target groups and at society as a whole, considering their specifics and the use of different communication channels, targeted messages and activities in accordance with them.

5. Conducting a sociological survey to explore the medical community's attitudes, expectations, ideas, and motivations for starting a new job as this community is expected to work at and interact with the new hospital this survey would help refine the messages and actions aimed at the medics.

6. A similar survey should also be conducted among users of paediatric health services: parents with children or patient advocacy organizations.

7.2.2. The Positives of building the National Paediatric Hospital

The purpose of this group of questions was to bring out the common benefits that the individual interviewed groups see from the implementation of the project, and on this basis to identify their common interests and opportunities for interaction and support.

All participants were asked the following questions:

What do you think are the main benefits of creating such a national multispecialty paediatric centre?

- For the patients
- For doctors/nurses in paediatric facilities

Separate questions were asked regarding benefits for patients and benefits for those working in paediatric structures, and the responses of all respondents clearly show the symbiosis between their interests.

From the patients' point of view, the main assessment is that the positives outweigh the negatives, and that the most important benefit is the possibility of receiving multifaceted paediatric medical care, which is precisely the main goal of building such a medical facility. Now, the various children's specialists exercising specialized activity in the field of children's diseases (in hospital facilities or units of the 3rd level of competence) are scattered across nearly 15 hospitals in Sofia alone. Such fragmentation of activities does not facilitate multifaceted, timely diagnosis and treatment of children. With the creation of a National Paediatric Hospital, patients will have access to comprehensive multidisciplinary care, state-of-the-art diagnostics, and treatment. Thus, the child will be placed at the centre of comprehensive care, and the family will be supported and cared for without having to visit specialist medical units scattered across a vast territory, without having to be transported or referred for additional consultations and diagnostic procedures outside the hospital facility. Cases of delayed or postponed treatment due to the necessity of referring the patient from one hospital to another will be reduced; this is especially important for children, in whom the disease can progress extremely quickly.

"Comprehensive service at a high professional level, access to highly qualified specialist internists and surgeons (all gathered in one building); directing seriously ill children to a reference centre, where there is an opportunity and experience to deal with rare and serious diseases, will lead to the cessation of the practice of 'bouncing' patients between separate hospital facilities for consultations with different specialists.

They can receive information or treatment of children with severe illnesses or so-called 'diagnosis-related' diseases.

The opportunity for speedy provision of expert committees for a given case. Minimizing the time to transport critically ill patients between various hospital units and facilities. Peace of mind for parents knowing that the best is being done for their child.

Parents will be spared a lot of worries associated with the current patchiness of the service."

Doctors

The possibility of building modern hospital infrastructure from scratch will allow the spatial expansion of clinics and the creation of *"modern single rooms, with a private bathroom, with a room for games and activities for the child patients"*, as well as space for the parents.

The participants in the studies indicate that the lack of complex paediatric care has lasting negative consequences for public health, indirectly deepens the demographic crisis in the country, and leads to *"severe damage to the image of the entire healthcare sector"*.

The opportunity to improve the training opportunities for medical and health care students and paediatric specialists was highlighted as an important positive.

"Trainees will have access to a wider palette of cases providing learning opportunities, as well as better training conditions."

Doctor

"There should be a single hospital where a child, together with his parents, can go and get the comprehensive service they are looking for. Which includes powerful diagnostics. It is very important to

have powerful diagnostics, as well as different types of treatments, to respect the principle that the patient, when he enters the hospital, should receive comprehensive care.

At present, the interrelations between outpatient and hospital care are such that they do not allow – especially where children are concerned – to make the fastest decisions and to undertake the most adequate treatment measures. With the new hospital gathering everything needed under one roof, these obstacles to interconnectedness will be overcome.

In this way, we will cover all criteria for the quality of medical activity - timeliness, effectiveness, and efficiency. And so, when all of that is done, we will achieve the last component - quality.”

Ministry of Health

The representatives of the NGO emphasized, that with the establishment of the National Paediatric Hospital, many problems faced by children and their parents in need of specialized and up-to-date care will undoubtedly be solved. However, this will not become effective and sustainable if the analysis of the structure and scope of the Hospital does not consider changing the overall organization of paediatric care in Bulgaria. The overall success of the project will largely depend on this.

"National Paediatric Hospital is not some oasis in the desert, isolated from everyone and everything else.

This hospital must be a centre that maintains a standard of children's health care, otherwise there are emergency rooms and paediatric clinics in many places.

At the end of the day, we continue to rely on the fact that this is a very complex, multifaceted, multi-component process.

NGO

There are many positives from the establishment of the National Paediatric Hospital for the doctors and other specialists working in paediatric units in Sofia, indicated by the interviewees:

- The lack of comprehensiveness – which presently deprives medical specialists of the possibility to monitor in detail the condition of a specific patient due to his transfer to another medical facility – will be overcome.
- Working within a multidisciplinary team is also an excellent opportunity to achieve the best results due to the possibility of teamwork with different specialists.
- The creation of the National Hospital will allow the acquisition of a higher qualification due to the opportunities to work with diverse and severe pathology, as well as for discussions with different specialists of individual severe or polymorbid patients.
- Providing good hospital infrastructure will also ensure peace of mind in daily work because of rapid access to good diagnostics (imaging and clinical studies), quick consultations and proper dealing with emergencies.
- The hospital will also enable the exchange of experience and knowledge for doctors, one-stop training for interns and better 'mobility' opportunities for nurses.

"We will all work in one place, which will significantly improve both the work of the medical staff and the rapid diagnosis and treatment of sick children.

There will be uniform rules, easier communication and, above all, comprehensiveness.

Such a centre is extremely necessary as it will provide complex treatment for children, will save a lot of worry and travel of patients and their parents between different hospital facilities, an opportunity for a maximally optimized interdisciplinary approach, as well as excellent practical training of the medical staff."

Doctors

7.2.3. Issues and Challenges Facing the NPH Project

The focus of this part of the study was to reveal the main problems and challenges that creating the Hospital could cause. The goal is for the results of the analysis to serve as a basis for building various strategies for overcoming concerns and negative attitudes or preventing potential risks on the part of the Contracting Authority.

All participants were asked the following questions:

What do you think are the main disadvantages of creating such a national comprehensive paediatric centre?

- For the patients
- For doctors/nurses in paediatric facilities

Please indicate what, in your opinion, are the main risks to the establishment of the NDB?

The doctors from the various medical facilities were asked the following questions:

What are the main concerns raised by the project?

at the implementation stage

at the stage of carrying out an activity

Will the establishment of the NCH lead to upheavals in the operation of the medical facility entrusted to you?

Logically, the survey participants found more advantages than disadvantages in the idea of creating a National Paediatric Hospital. Still, the project raises several concerns, which are detailed by interviewees from the three groups:

First, the main concern is caused by the danger that the project will not be implemented at all. Due to the long period in which the subject of a Paediatric Hospital has been discussed without reaching a real result, the participants express hesitation as to whether it is possible at all or whether yet another "restart" is imminent.

The other concern expressed by the participants is the possibility of carrying out inadequate feasibility studies which will set erroneous architectural and engineering parameters for the creation and construction of the Hospital.

The need to provide many staff (doctors, nurses, laboratory assistants, etc.) has also been cited as a potential problem. In a situation of acute shortage of personnel, the logical conclusion is to provide a team of the Hospital by attracting doctors and nurses from already existing units and by restructuring the latter. And this, in turn, causes concern among some of the surveyed doctors. According to the specialists, if it comes to closing/restructuring of existing units, this will create even bigger problems in the children's healthcare system.

"There is a risk of the "depopulation" of existing structures, and this, in turn, could lead to a limitation of timely access to medical care in various places - not only in Sofia, but also in the region."

Doctor

The other serious concern is the danger of creating excessive expectations for the new hospital that will not be realistic and the inability to meet them will reflect badly on the future hospital's reputation.

Creating the wrong impression that there is only ONE place in Bulgaria to treat their child.

There are no drawbacks, the centre should be the main, but not the only, unit for the diagnosis and treatment of paediatric patients.

Doctors

Over-expectation is a huge risk.

It's a mega-hospital with all the specialists, with perfect equipment and a good environment - of course, that gives rise to over-expectation, that here they will be provided with the most unique treatment and their children will never be sick again – something everyone strives for as a feeling, but which cannot happen in reality. This hospital, no matter how big it is, cannot take a large patients volume from the whole country, everyone. Yes, the most severe, most specialized, most urgent cases – yes, but not all.

MoH

The effective management and financing of such a mega-structure also raises concerns among some of the surveyed doctors and doubts whether this could create difficulties for its sustainable functioning, including for its financial sustainability.

Managing a large staff is difficult, especially considering that the medical professionals from the old structures will have their usual daily life and working habits regarding the organization of work disrupted. A mechanism must be created by which the medics are convinced of the benefit of moving their structures, and the best administrative mechanism for this must be found.

The hospital should be of national importance and receive special funding from both the NHIF and the Ministry of Health.

Doctor

The staffing deficit regarding health care specialists and professionals is a serious problem throughout Europe and has therefore been identified as a major risk to the realization of the National Paediatric Hospital project. The selection of personnel was indicated by the respondents as a main, important problem for the National Paediatric Hospital, but a large part of them – mainly doctors – share that this problem is a consequence of an existing trend, rather than the Hospital being pointed to as its cause.

Regarding the construction of the NCH, there should be a staffing strategy, which at this stage should have been defined and implemented. It cannot be expected that the mechanical transfer of personnel from one structure to the NCH will be an optimal solution, especially considering the average age of those currently working and the lack of skills and desire to work with children among recent graduates.

Yes, but not only because of the emergence of a new structure, but because of a decades-long, short-sighted policy for training and retaining such specialists to work in state hospitals. Even moving the available personnel does not solve the problem in the long term (retirement, leaving, etc.). In the absence

of a prior idea how to deal with this deficit, an undeniable vacuum will result when opening such a large state medical structure.

Doctor

Some of the surveyed doctors express optimism that the construction of the Hospital will motivate their colleagues to work in a new environment, as they believe that.

A large part of the specialists in SBAL Paediatric Hospital will move, the working conditions will be better in the new hospital. Most paediatricians who work in medical facilities connected to the Sofia Medical University have a desire to join forces and work at one place.

Doctor

Asked to choose which of the factors presented to their attention would have the strongest influence on choosing a new workplace, 95% of them indicated all the following as determining:

- Higher remuneration
- The team / colleagues they will work with
- Availability of leading medical specialists
- More modern equipment
- Better opportunity for professional development
- Better opportunity for career growth
- Opportunity for an academic and teaching career

80% of respondents believe that the following are also important:

- Keeping the existing team
- The new, better workplace environment

Asked to determine what else is important when choosing a workplace and specifically for work at the National Paediatric Hospital, the respondents indicate:

- Comprehensive and high-quality medical care for children
- Better care they will be able to provide their patients with
- The possibility of easy access and easy collaboration with all other paediatric specialties
- The possibility of internships in leading Paediatric Hospitals in Europe or America
- Optimized, multidisciplinary work approach.

While the respondents are optimistic that it is possible to find and motivate doctors to work in the Hospital, the lack of nurses is a serious concern among them. The shortage of nurses in the paediatric wards has been a major problem for years, especially after the termination of the "paediatric profile" at the Faculty of Public Health (FPH). It is mentioned that a particularly big problem is finding and training nurses in specific areas (intensive care units, cardiac resuscitation, oncohematology), where the lack of nurses is defined as a risk of blocking the operation of some of the clinics or departments. Some of the respondents suggest looking for more flexible forms of hiring and transferring nurses from one department to another, as well as opening a branch of the National

Health Service for the training of paediatric nurses, entirely based in the NCH, believing that this would lead to “partially overcoming the problem of nurse shortage”.

A large part of the surveyed doctors directs their recommendations to the Ministry of Health, as the main driver of healthcare policy. They range from ideas aimed at the very process of building the Paediatric Hospital to regulatory changes that will have a long-term and more comprehensive effect on children's health care.

Opportunity for full qualification, specialization and adequate remuneration, provision of modern medical equipment for work - all this will help to decide.

First of all, the Ministry of Health must maintain adequate communication with the relevant specialists regarding the analysis of the needs for the construction of the relevant structures in the composition of the NCH, the preparation and implementation of a specific plan for the implementation of the projects, providing opportunities for increasing qualifications in specific areas, providing an adequate work environment, providing fair remuneration, according to the specifics and complexity of the activity.

Some of the suggestions made by doctors include:

A special status of the medical facility as a unique structure is needed to guarantee decent wages, modern equipment, development opportunities.

I think this will not be difficult, but the teams that are ready to be included in the project should be prepared at the very beginning and they should be the ones who will determine the requirements for structure, equipment, and connectivity.

To have a specialized unit that deals with the overall documentation related to the treatment of children, for the centres of expertise, for reference international networks, as well as for national and international projects. If possible, the work of the NCH should not be tied to political commitments, i.e., there should be stability and continuity of the top management.

The hospital should not be a commercial company under commercial law, as most multi-specialty and specialist hospitals currently are, i.e., steps should be taken to change the hospital's status to a non-commercial company.

To have a logical and consistent management strategy, i.e., the rules should not be changed continuously, but should be dynamic to address changing conditions in Bulgaria and around the world (e.g. breaking out of a new pandemic or war).

A change is needed in the overall concept of children's health care and in financing with adequate payment. Actual valuation of the performed activity and not one based on a Clinical Pathway (on a per-capita basis with a price for a minimum stay). Additional targeted funding (outside the clinical pathway) By presumption, the hospital will admit the most problematic and acute patient cases, where diagnosis and treatment will not be completed within the minimum hospital stay.

Introduction of adequate "daytime inpatient" payment, which would take over a large part of the diagnostic clarification and reduce the number of overnight and holiday hospitalizations, thus alleviating the problem of staff shortages.

Doctors

The representatives of non-governmental organizations place another particularly important emphasis on changing the attitudes of doctors and nurses, of those working at the National Paediatric Hospital, and in all other paediatric structures.

My opinion is that the essence if we want to have a systemic change, not a change in one department. Because the truth is that the balance in the doctor-patient-child relationship must be changed. Therefore, in my opinion, it is critically important to go to the medical universities where the old professors teach with a completely different mindset, and to work on changing the attitudes, the philosophy of communication and interaction with the patient and his relatives.

In fact, in the medical education of young people – not only doctors but everyone who works in this system – there is an urgent need to create a segment that, first, teaches them that the patient is a person and what rights that person has. And secondly, how we communicate, what we do.

Yes, attitudes are hard to change, but when there are rules, when you know you can't escape those rules. People learn. We, as a patient organization, work with the students of the Student Association of the Medical University of XXXXX. We do joint campaigns, discussions on separate topics.

NGO

An important emphasis in the opinion of the NGO is placed on the need to take measures to protect those working in the Hospital from professional burnout and overwork.

Now, some doctors are developing skills for communicating with the parents of the children - to spend as little time as possible on this person, to remove him from the workplace area as effectively as possible. And that's not a bad thing. This is a way of self-protection – professionally, but also emotionally. These doctors, nurses – they are empathetic and must be able to maintain their mental health, to protect themselves from burnout. And we can support them to do it in another way, not by "running away from parents".

The topic of professional burnout of doctors and nurses, which further increases the pressure on the system, is a serious challenge for the representatives of the Ministry of Health.

We have a shortage of doctors and nurses, but not only because of people leaving to work abroad. The truth is that it is very difficult to work with sick children, especially in difficult specialties. A lot is required there. The wear and tear, the emotional wear and tear is immense. This is the most difficult thing – caring for and treating a child whose prognosis is known to be poor. We are talking about paediatric resuscitation, we are talking about severe leukosis, and other acute conditions, in which a fatal outcome occurs within 3 to 5 months. These are hard things that wear out the doctors and nurses very quickly. That is why measures must be taken to overcome these processes.

MoH

For those surveyed by the Ministry of Health, the biggest risk and challenge facing the National Paediatric Medical Service is the lack of paediatricians and specialists from paediatric-oriented subspecialties, as well as the considerable age of those working in the individual units.

There is another risk facing the hospital - the lack of so many trained personnel and specialists. Because, for example, there are specialties such as paediatric cardiology, where doctors can be counted on the fingers of 1-2 hands not just in Sofia but in all of Bulgaria. And we need to develop opportunities to attract doctors to choose paediatrics and the paediatric focus.

MOH

In this regard, the efforts made by the Ministry to overcome this problem are also presented:

- Increase the number of places for medical students and healthcare professionals (nurses, midwives, laboratory assistants, rehabilitators, etc.)
- Increase the number of places for paediatric specializations.

This is what we do - the Department of Education and Qualifications of the Ministry of Health, which deals entirely with personnel-related policy, every year carries out analyses and proposes an increase in student places, and steps are taken to increase the places for specialists by working together with the Ministry of Education and Science.

MoH

- Search for opportunities to improve working conditions in paediatric structures - incl. by increasing the remuneration of paediatricians, since the low salaries are a strong incentive to choose other specialties or to work abroad.

In the direction of the very requirements and the pay for working in the medical facility are also working to have a change. Until now, the conditions for starting work, for specialization, even the remuneration of paediatricians were more restrictive and so there was an outflow of people wanting to work in paediatric settings - especially in the hospitals.

MoH

A perceived risk is the difficulty faced by young doctors specializing in paediatrics. Paradoxically, even in the absence of sufficient personnel, young doctors still have difficulty getting access to the actual treatment of children, which is a key factor not only in their professional development, but also in gaining confidence and trust in their own abilities.

This problem temporarily disappeared during the COVID-19 pandemic, when every doctor, even non-graduates, were involved in the treatment process, but after the normalization of the situation, young doctors are again pushed into peripheral activities and duties - especially in the hospital environment.

The problem has also been identified as a risk to the child healthcare system by the representatives of the Ministry of Health, and they inform that a solution is being sought in this direction as well.

The problem is that the age of paediatricians has gone up. Part of the young graduating doctors go abroad, and it would be difficult for us to attract them back –it cannot be done with enthusiasm alone, but it is also not possible to do with money alone. Many of the people who go abroad do not put financial resources first. They say, "I want training". Unfortunately, in our country there is resistance in terms of sharing the experience from the older to the younger. That is, we will have to try to go back to famous doctors, creating a following and training specialists. It is the same with nurses because there is a shortage of nurses at the national level.

Therefore, when designing this hospital, it should also be thought of as a scientific centre, so that it can attract young people - to study, specialize there and then stay and work there.

MoH

At the end, all participants in all groups and interviews emphasized the importance on two major issues: 1. Having clear leadership in the process and 2. Having well-structured and clear communication strategy towards all stakeholders – internal and external.

All groups identified as a major factor for success to have a clear process leader and to have institutional sustainability. Changes in the leadership are not welcome and hinder the trust of the stakeholders and societies.

Clear communication strategy will help discuss all steps in the process and keep the positive momentum and build thrust.

CHAPTER 8. GAP ANALYSIS AND CONCEPTS

8.1. Basic Principles of a National Paediatric Hospital Model

A study by the European Association of Paediatrics, Union of National European Paediatric Societies and Associations (EPA-UNEPSA) identified four different types of Paediatric Hospitals in Europe:⁵⁹

- Multidisciplinary hospitals with pediatric departments,
- independent Paediatric Hospitals,
- university Paediatric Hospitals, and
- highly specialized children's centers of competence and centers for mothers and children.

80% of the 46 respondent countries indicated that they had independent Paediatric Hospitals, with 21 countries having fewer than 5 independent Paediatric Hospitals each. The number of Paediatric Hospitals and beds relative to the number of children varies considerably between countries. Unfortunately, also in this study, the respondents reported the lack of a single, unified database that would allow the evaluation and validation of all the main factors determining the different share of Paediatric Hospitals and hospital beds per 1 million children's population.

The analysis shows that in Bulgaria there are various pediatric structures within multidisciplinary hospitals, as well as a single independent, stand-alone university Paediatric Hospital, but a highly specialized pediatric center of competence is lacking in the country.

That is why the efforts of the institutions are aimed at creating a high-tech pediatric hospital that will meet the needs of child patients for a similar type of medical service.

The creation of a national Paediatric Hospital is also a top priority in the National Health Strategy 2030:

The main focus of these efforts will be the creation of a National Paediatric Hospital, which will provide comprehensive, highly specialized medical services for children and will be the main coordinating unit of an integrated hospital network pediatric care, including structures at the regional and district level. The necessity of establishing such a national center for comprehensive treatment of children, integrating inpatient and outpatient services in the field of diagnosis, treatment and monitoring of children with diseases encompassing all medical specialties, is also indicated in the National Map of the Needs for Long-Term Healthcare Services.

We want it to be subordinated to the understanding of a child's life and development as a process and to provide necessary and adequate services at every stage of a child's life, both when the child is healthy and in need of appropriate care, monitoring and prevention, as well as in critical situations, which require timely and high-quality medical care.

The European Association of Paediatrics, Union of National European Paediatric Societies and Associations (EPA-UNEPSA) develops and recommends to its members several models for creating and building highly specialized pediatric centers.

⁵⁹[https://www.jpeds.com/article/S0022-3476\(16\)31376-2/full-text](https://www.jpeds.com/article/S0022-3476(16)31376-2/full-text)

8.1.1. 'Top-down' Model

National or regional governments or other funding institutions develop a blueprint for the number, location, structure and management of new highly specialized pediatric competence centers. This is followed by an invitation to professional hospital architects and public health policy leaders to create a detailed plan for building the pediatric centers of competence. If a monolithic (hierarchical) management system is chosen for the center, the director of the new pediatric facility should act as a 'liaison officer' between the facility owner, administration, medical team, and patients and their families.

8.1.2. 'Bottom-up' Model

Under this model, a working group is created which is composed of various heads of Paediatric Hospital units. The task of this working group is to prepare a detailed plan on how to ensure and organize adequate delivery of pediatric healthcare services in their region or country. Such a consensus-based decision-making process can be complicated and may take many years.

8.1.3. Combination of both models

National or regional governments plan the number, structure, and funding of new highly specialized paediatric centers of competence. Their proposal is presented to a working group made up of heads of Paediatric Hospitals, who are to discuss it and report to the Government / Ministry the results of their discussions on the location and management of the new structure. This working group should also propose a plan for the implementation of the approved model for the construction of the new facility, which should include a broad discussion on the project for the new structure involving all key stakeholders.

The results of the studies and analyzes of all interested parties show that, at this stage of the development of the project of the National Pediatric Hospital, it is appropriate to apply the third "mixed" model for the construction of such a hospital structure. Only in this way can the lost public trust be restored while, at the same time, the relevant expertise gained by the stakeholders can be used to the maximum extent for the benefit of the project.

The European Paediatric Association/Union of National European Pediatric Societies and Associations recommends during the development of projects for the construction of a multidisciplinary high-tech hospital complex to take into account a number of main recommendations, united in 5 groups of concepts:

1. Concepts for a health economic design of Paediatric Hospitals require:

- Reliable and valid data on the status quo and effect of existing investment interventions to be used in the needs analysis.
- Valid data on health status, health determinants of children in the region/country, incl. mortality, morbidity, quality of life, effectiveness of hospital treatment.
- A health economic framework based on child rights. Development of equity of Paediatric Hospital health care with healthcare services for adults.
- Analysis of existing health insurance/insurance companies and hospital care providers amenable to change.
- Engaging politicians and other stakeholders at regional, national and European level.

2. Concepts for a psychosocial design of Paediatric Hospitals require:

- A baby- and child-friendly healthcare model in accordance with the terms of reference of the Council of Europe.
- Understanding the benefits of improving communication between children and their caregivers in a hospital setting.
- Psychomental care aimed at achieving some kind of normalcy of the hospital environment: setting up a kindergarten/school, playgrounds, provision of story tellers, visits of hospital clowns, access to adequate media (e.g. child-friendly videos), a children's library, translators for non-native-speaking children, spiritual care providers, etc.

3. Concepts for an environmental design of Paediatric Hospitals require:

- Child-friendly architecture (e.g. pleasant entrance/registration/waiting zone), easy way finding and need for additional signs for children, bright corridors (normal light, friendly colors of the interior e.g. orange, yellow, etc., rooms with 2 to 4 beds, flexibility of rooms according to seasonal variations, playroom open for family members from 8 am until 8 pm etc.
- Participation of children and adolescents, and designers and artists during the architectural planning period of hospitals.
- Built-in architectural flexibility on floors.
- Beds allocated according to specialties' needs, rather than medical standards.

4. Concepts for a cultural design of Paediatric Hospitals require:

- Respect for children's rights, equity and social justice. Giving priority to non-invasive care, short duration of hospital (inpatient) care, 24-hour presence of parents on the wards. No mixing of adult and child patients in the same room or ward.
- Provision of security (e.g. guarded entry doors, etc.), safety (e.g. fire alarm and emergency exits), hygiene (prevention of cross-infection), air conditioning and other measures.
- Social and educational care: access to health educators, schooling in hospitals.

5. Concepts for health policy designing of Paediatric Hospitals must respect the following principles:

- An adolescent is not a young adult.
- A schoolchild is not a small adolescent.
- An infant is not a small child.
- A neonate is not a small infant.
- A premature newborn is not a small neonate.
- A pediatrician is not a "small" doctor.
- A Paediatric Hospital is not an inexpensive hospital.
- Investing in children is a profitable enterprise for society, but not always profitable for hospital economists.
- Integrating child health research into hospitals will improve care outcomes.⁶⁰

⁶⁰<https://www.jpeds.com/action/showPdf?pii=S0022-3476%2816%2931376-2>

8.2. Possible Concepts

After the analysis and study of demand and supply at the national and regional level, it becomes clear that the construction of a multi-specialty hospital for the treatment of children's diseases of the 3rd level of competence, providing complex and comprehensive medical care in all pediatric specialties, is needed. It should also be the center of a coordinated network of interconnected and complementary regional inpatient and outpatient pediatric institutions.

Paediatrics is an integral specialty, the essence of which is to monitor the development of the child - both healthy children and children with various diseases. Patients with a certain pathology need to be promptly and accurately diagnosed, receive adequate treatment, and follow-up after discharge.

In this context, the need to build a multi-specialty university hospital of 3rd level of competence is determined by the need to cover all the child's health problems in one medical facility. At the moment, specialists working with children are scattered in several medical facilities in Sofia and throughout the country. This way, the currently existing organization of children's health care, together with the lack of qualified staff, put the lives and health of children at risk.

The lack of an integral approach to the diagnosis and treatment of children affects the quality of education of students and specialists in the field of pediatrics. This, in turn, naturally leads to a decrease in interest in specialization in pediatric specialties. Therefore, the creation of a national pediatric hospital - a single hospital complex with all medical specialties represented, both therapeutic and surgical, with the mandatory inclusion in it of a powerful diagnostic-consultative block with offices in all specialties - will affect the training of students and the specialization of doctors, and this, in the long term, will change the trend of staff shortages in a positive direction.

At the same time, the new hospital should be a generator of ideas for policies for the development of children's health care - that is, it should be a scientific and methodical center in the field of pediatrics. This necessitates building close functional links with all medical universities and faculties in Bulgaria and abroad.

When developing a model of the structure, scope and capacity of the National Paediatric Hospital, the following factors should be taken into account:

- **Ensuring accessibility** - access to health care is a right of all Bulgarian children, so the NDB will increase the resources available to patients to access the care they need.
- **The model of the National Paediatric Hospital** should guarantee access to pediatric health services, both for the region of Sofia and Western Bulgaria, and from all over Bulgaria - the referrals from the regional and municipal hospitals.
- **Need for integrated care** - the collaboration of all health care providers in the health care system is key to ensure the achievement of appropriate quality of care. The opening of the hospital will imply and catalyze a change in the entire existing system of pediatric care, generating an opportunity to create a new model of care that meets demand in a comprehensive way. In this sense, it will be necessary to create a comprehensive plan for the restructuring and optimization of the children's health care system, in which the principles of care that must be applied by all participating medical professionals and health institutions should be marked, so that the patient feelings of safety and confidence during all the diagnostic and treatment processes he undergoes.

- **The establishment of the Paediatric Hospital** should be at the center of a complex of services at the municipal, regional and national level, of a network of cooperation between all health care providers, and in this sense is a basic but not the only element of this system, which should be completely redefined to meet the current needs of pediatric health care, but also the real capabilities of the participants in the process of providing it.
- **Incorporating state-of-the-art technologies** for diagnosis and treatment, as well as information systems that enable data sharing between professionals, will support continuity of care across the system, especially when patients return home. The use of technology in the hospital environment is an indispensable tool guaranteeing the successful development of medical care. New technologies significantly improve the diagnostic and therapeutic capabilities of each medical facility, and the use of telemedicine for patient follow-up after discharge significantly solves the problem of not having enough specialists at the regional level.
- WHO defines health innovation as a new or improved solution with transformative potential to accelerate positive health impacts. The WHO Innovation Assessment Framework illustrates the multi-stakeholder collaborative approach that WHO is taking to scale up innovation by linking three dimensions of innovation scale: 1) countries' health requirements and priorities, 2) the supply of ready-made innovations, and 3) assessment throughout the period from creation (through partners) to implementation and sustainment of innovations. Hospitals complement and increase the efficiency of many other parts of the health care system by ensuring the continuous availability of services for acute and complex conditions. They concentrate scarce resources within well-planned referral networks to effectively meet population health needs.
- Hospitals are an important part of the overall development of the healthcare system. Currently, external pressures, shortcomings of health systems and privatization in the hospital sector are leading to a new model of health care in many parts of the world. In this new model, hospitals play a key role in supporting other health care providers and reaching out to the community of quality home care services and are essential to a well-functioning referral network. They are also relevant to health systems as a tool for coordination and integration of care.
- **The National Paediatric Hospital** should have the capacity to offer patients state-of-the-art methods for diagnosis, treatment, rehabilitation and follow-up of patients that meet international standards for complex, high-tech medical care.
- **Achieving efficiency** by providing sufficient development resources by changing the pediatric care financing system, a highly professional team for the Hospital and a work organization that allows maximum use of the existing hospital infrastructure, including by introducing an integrated hospital information system, which ensures good traceability of all flows in the medical facility - medical, financial, administrative. Hospital information systems, which facilitate the management of hospital clinical and administrative information, are now used worldwide by healthcare systems.
- **The National Paediatric Hospital** must have a high-tech system used not only to store/share clinical information about patients, but also to conduct prospective studies of individual diseases, to create models for the future development of hospital care and optimization of the operation of the hospital itself, as well as its relations with other health structures.

- **Ensuring patient safety** by developing a culture of patient safety and care, ensuring the availability of critical resources needed to treat patients, as well as managing the hospital infrastructure (Building Management System). Patient safety is considered one of the most important elements in medical care. The risks associated with patient care activities are numerous. It is important for the DBB organization to guarantee a safe environment for the patient, thus guaranteeing the trust of the patient and his family members.
- **The use of safety protocols at the National Paediatric Hospital** will help avoid some of the typical risks associated with providing medical care in hospitals, such as medication errors, nosocomial infections, surgical site infections, patient identification errors, etc.
- **Ensuring comfort for children** - creating a friendly hospital environment on the one hand and on the other - improving communication with patients and their families during care is vital, especially when it comes to pediatric patients, to give them security and confidence in the system.
- Creating a friendly and friendly environment in **the National Paediatric Hospital** means developing a comprehensive concept that covers both the design of appropriate infrastructure, the provision of equipment and furniture, adapted to the age of patients, and the creation of a new type of organization of all hospital activities - from admission to patient follow-up. The goal is for patients and their parents to find in NDB a partner and ally whom they can completely trust.

The opportunities or what path will be chosen to implement the project was discussed also during the focus groups.

Within this group of questions, the possible options for the implementation of the project and the need to restructure the system of pediatric care were discussed.

Participants were asked the same questions:

In your opinion, which option is more favorable for the development of children's health care?

Creating a National Children's Hospital and closing all other pediatric hospital structures in Sofia?
(Yes or No)

Creating a National Children's Hospital and preserving basic pediatric hospital structures in Sofia?
Please specify which ones. (Yes or No)

All survey participants shared opinions on this topic through two conditional perspectives:

- **That which is possible** to implement as a project, according to the current situation and all the limitations it imposes.
- **That which needs** to be implemented as a project to fully meet the needs of the children's healthcare system in Bulgaria.

It is the answer to the question of what decision the Ministry of Health will move towards that will determine all other actions on the construction of the Children's Hospital.

We have to have an answer on what the Ministry wants to build: a hospital for the children of Sofia or a true National Children's Hospital. Because the overall organization on pediatric hospital care must

be related to what the national children hospital does. So that the National children's hospital is not some oasis in the desert isolated from all others who live with their own problems.

NGO

The representatives of the medical profession are more unipolar and categorical in their opinions. Of all those asked whether the creation of a National Children's Hospital should go hand in hand with the restructuring/closing of the rest of the pediatric structures in Sofia, 11 answered "no" and only 5 supported the idea. And vice versa: the option of creating a National Children's Hospital and preserving basic pediatric hospital structures in Sofia is supported by 11 of the respondents whereas 5 find it unacceptable.

The reasons for choosing an option in which the National Children's Hospital unites the main structures working in the various hospitals in Sofia, together with keeping another part in separate places in the city, are diverse, with the prevailing opinion being that more should be directed to the National Pediatrics severe cases, polymorbid patients, with severe pathology or difficult to treat in other medical facilities in Sofia and in the country. The prevailing opinion is that this medical facility should concentrate in one place all the leading specialists in the main pediatric and pediatric-oriented specialties and thus ensure the complexity of the diagnosis and treatment of children.

The National Hospital will possess 3rd level of competence, a university hospital with specialized clinics in all subspecialties. It will not be for banal pathologies that should be treated in the other city hospitals.

Such a structure should prioritize treatment of complicated diagnostic and therapeutic cases but, at the same time, an algorithm for transferring patients from other medical facilities should be developed and function smoothly, when such a situation arises.

Doctors

From the point of view of the doctors, the closure of all other pediatric units in Sofia will lead to the referral of all patients to the National Hospital, which will make its work difficult on the one hand, and will hamper access to its services for patients who need treatment for general diseases, as well as patients in need of more specialized care.

Yes, children with milder or more commonly occurring illnesses can be treated in another pediatric facility or unit. Especially during a pandemic, it is good to also have several other pediatric structures in Sofia.

General paediatric wards should be maintained for treating such diseases which do not require 3rd level of competence.

In order to ensure maximum accessibility to paediatric consultation, it is good to keep paediatric units in the more remote areas of Sofia. It will probably also be necessary to establish municipal outpatient paediatric centers.

Doctors

Some of the surveyed doctors also express the opposite opinion, namely that only by physically merging all existing pediatric units in Sofia will the necessary resource be achieved, and that preserving some of the existing paediatric units will lead to a scattering of the available human resources which will endanger the operation of the future hospital. An opinion is also expressed that due to the specifics of their activity some of the structures, such as cardiac surgery, treating burns and scalds, or child psychiatry, cannot be removed from the multi-specialty hospitals in which they

currently operate, either because of the need for guaranteeing specialist care in the other departments, or for other reasons.

I believe that the merger of all current paediatric units in Sofia is the only realistic scenario and the only working scenario. Currently, the workload of these units is adapted to existing needs. If duplicate - they will not have enough work. Current teams and units have been created over many years and there is no reserve for duplication. Human resources will be fragmented, and the quality of care will deteriorate rather than improve. The only workable solution is to bring all children's units as they currently are together under one roof.

Doctors

The representatives of the NGO also believe that the National Hospital should offer treatment to children in all specialties, but while also preserving part of the pediatric units in certain areas of Sofia and Bulgaria. For them, the process of defining the scope and functions of the NCH should run hand in hand with the process of restructuring overall pediatric care in the country, so as to guarantee interconnectedness, coordination and communication between the individual levels of medical care provision – both locally across the country's regions and in the individual districts of Sofia, as well as in the National Hospital.

For me this Hospital must be a resource center. This is how I would describe it. A center providing technologies, standards, high quality – there is no need, in my opinion, for the National Hospital to be overly large a structure, to be physically too large-scale.

In my mind, this hospital must possess flawless technology for communication and work, compatible with the other hospitals. At the same time, you should have enough regional hospitals of a similarly high level because physically people with children may not be able to get there.

There must also be regional and larger and smaller hospitals. And there also must be a good organization in place determining when, who, in what cases seeks the regional level of health care, or the regional university hospital, or the National Hospital – and there should be established technology allowing a doctor at the National Hospital to also perform operations in Varna. This is modern medicine.

NGO

For the representatives of the Ministry of Health, the biggest challenge is not what structure to choose for the new Hospital, but how to ensure its proper operation by providing enough teams of doctors, nurses, laboratory technicians and other personnel.

The creation of an all-in-one hospital building must be based on a clear structure that is approved by all parties. It must have the specialists around it, and what's most important: it should be good for the users – the society, the children with their parents.

We must create a hospital where a child together with their parents can walk in and receive the comprehensive service which they are looking for. And this means the hospital must have solid diagnostics, it must provide multifaceted treatment, according to the different specialties – surgery, conservative, rehabilitation, psychological, social and other services. Because the principle is that when a patient comes into the medical facility everything must be concentrated on his health, all in one place. This is the only way we will meet all the principles of good medical activity – to be timely, effective and efficient, and at the same time of excellent quality.

MoH

Such comprehensiveness can only be achieved by merging existing pediatric units to ensure enough doctors and nurses.

"It is easiest to move the hospital, which now exists in another building. Along with this, the rest of the units will have to be gathered together. Mainly because we don't have the necessary capacity, we don't have enough human resources to duplicate the units."

MoH

Also the representatives of the Ministry of Health are convinced that the National Pediatric Hospital should provide an opportunity to gather all the units in one place, but that some of the existing departments in the multi-specialty hospitals in some of the areas of Sofia should be retained.

The main idea of the NCH is: "All pediatric specialists under one roof, an end to children being bounced around different hospitals". The only units that make sense to remain outside the NCH are general pediatric structures in places. However, all profiled and narrowly specialized pediatric units should be united in the new hospital.

MoH

There is also a consensus among the respondents on the question of which units should be part of the National Pediatric Hospital:

The existing units from the Specialized Hospital for Active Treatment of Children's Diseases "Prof. Ivan Mitev", the Children's Department of Pirogov, the Children's Department of the National Cardiology Hospital, the Pediatric Oncohaematology Clinic at the "Tsaritsa Joanna" UMBAL - ISUL, as well as other presently functioning, highly specialized pediatric units: Children's ENT Clinic - ISUL, Children's Ophthalmology clinic - "Alexandrovska", Clinic of Pediatrics "Alexandrovska". This is the only mechanism to guarantee the possibility of comprehensive, multifaceted service for child patients.

MoH

8.3. Scenarios – New Model for the Development of Paediatric Care in Bulgaria

In order to outline scenarios for development of pediatric care in Bulgaria, with a National Pediatric Hospital to be constructed at its center, all available data and results collected during the production of the present analysis were examined.

Several official sources of information were used:

- National Statistical Institute (NSI),
- National Health Map with data for 2021,
- Data from National Center for Public Health and Analyzes (NCPHA) submitted officially by the Ministry of Health and published on the website of the Center,
- National map for long-term healthcare needs.

Although there exists a large volume of information and data, a considerable part of those is impossible to compare to one another, and different data sources may provide conflicting data for the same indicator. This makes it difficult to develop an unequivocal and indisputable data-based model for both the distribution of the various structures and the scope, volume and functionalities of the future Pediatric Hospital.

Regardless, on the basis of the analysis some general conclusions could be made, which served as a basis for the creation of an optimized model for pediatric hospital care.

Demographic and epidemiological conclusions and projections

According to NSI data as of 31.12.2022, in Bulgaria there are 1,099,696 children aged 0 to 17 inclusive, which represents 17.1% of the total population. The children up to 15 years of age number 913,419, or 14.2% of the total population. Adolescents aged 15 to 17 number 186,277, or 2.9% of the total population of Bulgaria. It is evident from the data presented that the number of children follows the negative trends for a fall in the number of children throughout the last years, but the share of children and adolescents of the total population of the member states approaches pan-European levels.

In 2022, 56,917 births were registered in the country of which **56,596 (99.4%) were live births**. Compared to the previous year, the live births decreased by 2,082 children, i.e. by 3.5%, which maintains the decreasing trend in the number of births in Bulgaria.

The coefficient of total birth rate in 2022 is 8.8‰, for comparison the coefficient of total birth rate for the EU-27, according to Eurostat data, is 9.1‰.

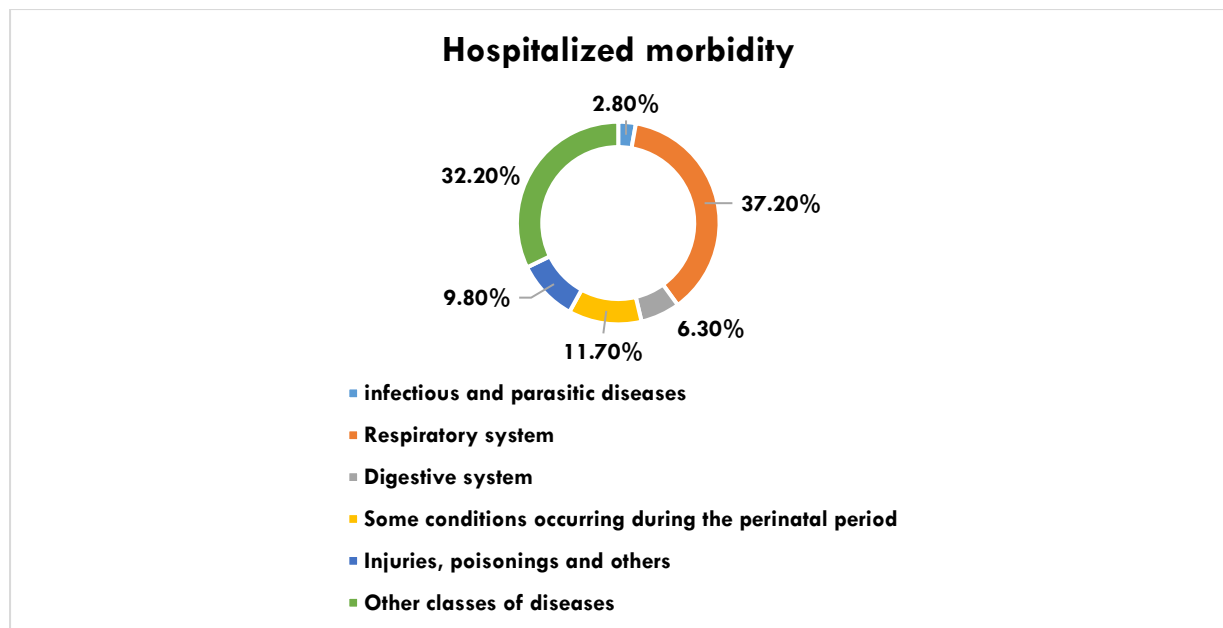
In **Bulgaria in 2022, the average number of live births per woman is 1.78**, marking an increase of 0.20 compared to 2021.

Together with these data, the forecasts for the development of the child population, presented in the analysis of demographic and epidemiological needs, part 4.1, should also be taken into account. These are also not optimistic, as according to NSI data for the period up to 2050, a decrease of the number of children can be expected by an average of 9.74%, which will also affect the potential demand for pediatric hospital care in years to come.

In 2021, 326 children under the age of 1 died in Bulgaria (against 301 in 2020), with the infant mortality rate being 5.6‰ in 2021 compared to 5.1‰ in 2020. In 2022, there were 274 deaths of children under the age of one year, and the child mortality rate is 4.8‰, which continues the decreasing trend of the infant mortality rate.

The NCPHA data for hospitalized morbidity in children under 18 years of age show the following for 2021: a total of 168,675 children were treated in hospital facilities, which makes 142 hospitalizations per 1,000 children. The most serious share of diseases (according to ICD disease classes) are diseases of the respiratory system 28.9%, in second place are certain conditions occurring during the perinatal period (11%) and injuries and poisonings (9.8%).

Significant differences between different provinces of the country are evident in the frequency of hospitalizations, which are determined both by the structure and capacity of the local pediatric network, and by the social status of the people living in the respective province.



The most significant conclusions from the epidemiological analysis indicate:

1. High incidence of diseases of the respiratory system. This type of illness leads to a significant number of hospitalizations in general pediatric and specialized pediatric institutions.
2. The number of diseases caused by injuries and other external causes is the second most significant cause for hospitalization, mainly in general pediatric institutions and less often requiring highly specialized medical assistance.
3. The incidences of perinatal diseases are also high, which affects the need for effective and affordable neonatal care.
4. In general, there is a tendency to decrease the percentage of hospitalizations (for both adults and children) compared to the total number of registered diseases. National outcomes for **hospital morbidity** in 2019 – 2021 shows a sustainable declining trend in the number of hospitalized children, regardless of the COVID-19 pandemic.

1. Service supply conclusions and projections

As it could be seen in the analysis (5.4) in Sofia City there is a concentration of a number of large hospitals with clinics and wards in pediatric care – paediatrics, neonatology and other specialties:

3rd. Level – 18 Hospitals with 21 Clinics and 26 Wards in them

2Nd Level – 7 Hospitals with 8 Wards in them

1st Level – 2 Hospitals with 2 Wards in them

Outside of Sofia in the 2nd level of catchment there is only one more hospital which is categorized as 3rd level.

According to NCPHA data, the annual utilization of pediatric beds in 2021 is 52%, which exhibits additional potential for restructuring the existing beds. Attention should be paid to the fact that a large part of the available pediatric beds is in municipal hospitals of local importance, possessing 1st level of competence, which means that they cannot provide full-fledged comprehensive care.

At the same time, as it could be seen at the analysis the needs and availability of pediatric beds by districts and competence level of the hospitals, there is in general shortage of pediatric beds in most districts of the country – wherever there is surplus, these are in districts where demography is not that good, there are not enough paediatricians and there are not enough patients for paediatric beds.

From the decisions of the Council of Ministers in connection with Art. 37 of the Law on Medical Institutions, it becomes clear that a project of the Municipality of Burgas for the construction of a Multidisciplinary Hospital for the active treatment of children's diseases in Burgas with 133 beds (10 of which are in intensive care) and the treatment of children's diseases in 17 specialties is in the process of implementation. The deadline for implementation of the investment is until 2025. After receiving an operational permit, the hospital will also receive accreditation for training students and specialists in medicine and health care at the University "Prof. Dr. Asen Zlatarov" in Burgas.

With the decisions of the Council of Ministers, funds have been allocated for the construction of a new standalone building for the relocation of the existing 2 pediatric clinics of the largest university hospital in Plovdiv, UMHAT "St. Georgi", with the aim of ensuring comprehensiveness of the treatment of children in the South-Central Region. The total number of beds available to patients is 130 (therapeutic as well as surgical) in 29 specialties, as well as an emergency unit within the Emergency Department of UMHAT "St. Georgi". Both structures are accredited for training students and specialists in medicine and health care at the Medical University of Plovdiv.

The public sources of information contain information about a stated planned investment by a private service provider, the "Heart and Brain" Hospital, projected to open a multidisciplinary pediatric hospital with capacity for emergency and intensive care in Sofia. The project envisages 413 beds, activities in 29 medical specialties and 4 clinical-diagnostic structures. At the moment, there is no information that the project has been considered by the Ministry of Health.

The change in pediatric medical capacity will be determined by the number of new beds created, as well as by the restructuring of existing ones - incl. also on regional and national levels.

Thus, to determine how this number might fluctuate, investment programs as well as strategy and policy documents publicly available were examined, the conclusions of some of which are described below:

National Health Strategy Bulgaria 2030, which formulated its main conclusion as follows:

"Despite the implementation of partial interventions in the field of maternal and child health, Bulgaria is still lacking a comprehensive and integrated national policy to guarantee the necessary structure, resources and organization of the pediatric assistance adapted to the needs of Bulgarian children. Only one part of the lack of such a policy is the so far unfulfilled dream of a National Paediatric Hospital."

From that conclusion also follows the formulation of a main priority to be implemented by 2030, namely "modernization of the pediatric care system at the regional, regional and national levels, including construction of a National Paediatric Hospital."

The National Strategy for Child and Adolescent Health and Pediatric Care 2030 defines the priorities that should be achieved in the coming years, seeking an integrated approach in their implementation in order to achieve maximum effectiveness of pediatric care at all levels and in all

regions. The Strategy also substantiates the need for building a National Pediatric Hospital, with the plan stipulating, in addition to constructing the National Paediatric Hospital, also “Modernization and equipping of pediatric hospital units providing specialized pediatric care of regional and national importance, according to the needs defined in the National Map of Long-term Healthcare Needs.”

The National Map of Long-term Healthcare Needs determines the need for future investments in pediatric hospital care on the basis of existing health institutions for inpatient and outpatient care, as well as the identified needs. The mapping of hospital care on offer indisputably shows serious regional imbalances in the provision of pediatric care from the three levels of competence and a need for a complete restructuring and rearrangement of hospital structures which, together with outpatient care practices, should guarantee balanced access to children's health care. The Map also outlines the necessary investments in hospital infrastructure.

The analysis on the entire body of existing information on the distribution of the existing medical institutions for inpatient and outpatient care, as well as on the number of doctors, shows that there exist strong territorial disparities in the availability of pediatric care across the different provinces of Bulgaria.

Table 30. Overview of several major indicators by districts

District	Pediatricians	Pediatric Beds	Pediatric Health care units (clinics/wards)			Number of outpatient care practices (primary and specialized)	Number of pediatricians/specialists in outpatient care
			1st Level	2nd Level	3rd Level		
Blagoevgrad	73	179	2	1		90	73
Burgas	119	235	3	4	3	97	110
Varna	199	296	3	1	1	173	199
Veliko Turnovo	55	105	2	1	1	66	55
Sliven	25	53	1	1		66	55
Vratza	31	85	3	1		41	31
Gabrovo	34	66	1	1		41	34
Dobrich	29	77	2	2		36	29
Kardjali	29	74	3	2		21	29
Kyustendil	23	72	1	2		30	23
Lovech	32	92	3	1		37	32
Montana	28	75	2	3		29	28

Pazardjik	71	338	7	1		55	71
Pernik	16	30		1		28	16
Pleven	83	189	7		3	60	83
Plovdiv	229	542	1	5	3	243	229
Pazgrad	25	62	2	1		25	25
Rousse	46	101	1	1	1	68	46
Silistra	30	72	2	1		30	30
Liven	32	157	2	2		48	32
Smolyan	18	63	3	1		43	18
Sofia - capital	483	840	2	9	16	554	483
Sofia	55	164	1			46	55
Stara Zagora	98	212	2		2	106	98
Turgovishte	32	82	2			27	32
Haskovo	47	119	2			62	47
Shumen	28	65	2			37	28
Yambol	19	37	2	2		12	16
TOTAL	1989	4482	62	45	27	2171	2007

National Health Map 2021, MoH

It can be seen from the data that there are 4 regional centers – the cities of Burgas, Varna, Plovdiv and Sofia (Bulgaria’s capital) – which concentrate a major part of both the institutions for inpatient and outpatient care, as well as the pediatricians working in them. As stated earlier in the analysis, only three of all provincial centers have specialists in all pediatric specialties: the cities of Varna, Sofia and Pleven. All the listed cities are university centers with faculties of medicine and health care, which - together with the number of people living in them - largely explains the concentration of medical institutions and specialists.

The main document that determines the needs of inpatient and outpatient health services and lays down forecasts for the development of the health care sector is the National Health Map. It defines and plans on a territorial basis the needs of the population for accessible outpatient and hospital medical care and implements the national health policy. The main goal of the National Health Map is to adapt the structure of the healthcare network to the needs of the population, guaranteeing every Bulgarian citizen equal access to health services. The Map lays down basic principles for determining the need for outpatient and inpatient care, which must be applied in the preparation

of each district map and thus guarantee the same level and quality of care. According to the Methodology for developing the Map, the provision of hospital pediatric beds should cover 10 to 15% of the total number of beds. The Map suggests a ratio of the achieved total number of pediatric beds by competence levels as follows – minimum 1st level : minimum 2nd level : minimum 3rd level = 50:40:20.

It can be seen from the obtained data (Table 32) that the majority (60%) of pediatric beds at the national level are in institutions of the 1st level of competence, 45% are in institutions of the 2nd level of competence, and 27% are in institutions of the 3rd level of competence – therefore, at the national level the recommended proportion of beds in the three competence levels is achieved. However, that is not the situation at the province level. In 19 out of 28 provinces (68% of all provinces) medical institutions of the 3rd level of competence are missing entirely. Four provinces have 3 or more such institutions concentrated in each of them, and in Sofia there are as many as 16 such institutions, mostly due to the dispersion of individual clinics and departments in third-level multispecialty hospitals. In 5 out of 28 provinces, there are hospital structures of only 1st level of competence.

Based on the gathered information, several major conclusions can be drawn about the existing supply of pediatric care services, which affect the possible scenarios for developing pediatric care in Sofia and at the national level:

- In Bulgaria as whole, as well as in Sofia, there is a sufficient number of pediatric beds, both general-purpose and specialized.
- A large part of these beds is scattered among various structures which are disproportionately distributed at the regional scale.
- Regional imbalance also exists in the access to specialized medical care of 3rd competence level – at province level, ranging from 0.77 per 1000 population in Pernik to 4.55 per 1000 population in Pazardzhik.
- The current trend for general decrease of the country's population, when applied to the pediatric population, projects a reduction thereof by 9.74 on average until 2050.
- Also there is a declining hospitalization rate at national level within the pediatric population observed for the period 2019 – 2021.
- The general trend on European level is a reduction of pediatric inpatient care at the expense of increasing outpatient treatment.

The conclusions obtained from the overall analysis of the supply and demand of paediatric care, from the snapshot thus created, clearly show that the main need at the national and regional level is not related to an acute shortage of hospital beds, but to restructuring the entire system of pediatric care in the medium term as well as providing more doctors and healthcare professionals in the long term.

The data cited in the report and the conclusions drawn, as well as the identified expectations of the main stakeholders, allow **two possible models for the creation of a National Paediatric Hospital to be derived:**

8.3.1. Model 1. Suboptimal

This option provides for only a National paediatric Hospital to be opened.

In this option, mechanically, with an administrative act of the Minister of Health, all existing pediatric structures in Sofia, which function in multispecialty hospitals for active treatment, are physically united in a newly constructed hospital building equipped with highly specialized equipment.

The existing pediatric clinics in the other medical facilities in Sofia are accordingly closed.

New structures are opened which provide a part of the treatment that is presently most frequently sought abroad, i.e. oncological diseases and tissue and organ transplants

The total number of beds provided is a mechanical sum of the number of existing beds in Sofia, both general pediatric and specialized, with 30% of the number of beds anticipating the number of referrals from the rest of Bulgaria and the treatment of children currently being treated abroad.

The hospital is of the 3rd level of competence, a university center for training students and specialists.

The institutions for pediatric care in the remaining parts of the catchment areas and at the national level are preserved.

Rules for referral and coordination between the regional structures and the National Pediatric Hospital are created.

Positives of the model:

- Relatively faster to implement – after construction of the new building to house the National Pediatric Hospital.
- Concentration of all specialized and general pediatric care in one place.
- Comprehensiveness of the services is ensured.
- Sufficient staff for the needs of the new medical facility is ensured.
- Opening of new hospital services.
- Improved training opportunities for students and interns.

Risks to the model:

- Resistance and opposition by a number of the workers to the administrative restructuring of the existing structures, incl. refusal to relocate to the new facility.
- Logistics related to the need to relocate the existing clinics.
- Difficulties in the collaboration between individual teams – incl. work habits, communication, rules, etc. – within a single, common structure.
- Concentrating all pediatric care in one place will lead to directing all patients to the new structure and may lead to an overburdening of the hospital staff – in particular nurses, in view of the impossibility of securing new ones in the short term.
- Difficulties for patients due to established habits and the closure of the previously existing pediatric institutions.
- Discrepancy between overly high expectations and reality among both staff and patients.
- The main problems with a lack of sufficient specialized care at the national level remain unresolved.

8.3.2. Model 2. Comprehensive (Optimal) Model

Model 2. Comprehensive/Optimal Model, envisaging a common process for the opening of a National Pediatric Hospital and simultaneous restructuring of pediatric care in Sofia, Western Bulgaria and at the national level. To implement this model, at least the following actions are recommended:

Merger of the main specialized paediatric structures that work in the multidisciplinary hospitals for active treatment in the territory of Sofia with the aim of creating a National Pediatric Hospital providing integrated inpatient and outpatient services for diagnostics, treatment and follow-up monitoring of children with diseases encompassing all medical specialties. The hospital should guarantee the comprehensiveness of diagnosis and treatment by implementing highly specialized medical activities, high-tech equipment, and sufficient and competent medical staff.

The hospital should be a resource center both for treatment and medical expertise for patients, but also for advisory assistance to the other medical institutions of the national pediatric network and for the training of medical specialists: doctors, nurses and rehabilitators.

New, currently non-existent hospital clinics and wards are also being opened in order to provide treatment for all diseases characteristic of childhood, therefore an increase in the number of beds should be provided to allow admission of patients from all over the country, as well as part of the cases which nowadays are most frequently treated abroad – oncological diseases and tissue and organ transplants.

The total number of beds is the sum of the existing beds in the specialized institutions which will be merged into the future hospital, increased by up to 30% due to the newly established units and ensuring extra capacity to admit children referred from the province for receiving highly specialized treatment.

Preservation of the existing general pediatric hospital structures of the 2nd competence level in the main multispecialty hospitals in Sofia, which will guarantee access to hospital care in the largest Sofia districts.

Restructuring of the network of existing general pediatric hospital structures of the 2nd competence level in main multispecialty hospitals in the province centers both in the serviced region and of the other regions.

Creation of a network of regional specialized paediatric hospitals of the 3rd competence level for treatment in certain specialties with paediatric profile (gastroenterology, endocrinology and metabolic diseases, cardiology, clinical hematology and oncology, neurology, nephrology and hemodialysis, pneumology and phthiology, rheumatology) as well as medical institutions in other medical specialties possessing experience and specialization in the diagnosis and treatment of children. These are units in medical facilities for hospital care such as university multispecialty hospitals for active treatment, which guarantee a continuous emergency admission in 24/7 mode organized in an Emergency Department of 3rd competence level. Similar regional pediatric units can be built in at least four of the six regions of the country: in Plovdiv – Pediatric hospital complex at UMHAT "St. Georgi", in Varna – Pediatric hospital complex at UMHAT "St. Marina", in Burgas – the multispecialty hospital for active treatment of children's diseases (under construction), in Pleven – Pediatric hospital complex at UMHAT "Prof. Dr. Georgi Stranski".

Creation of a network of paediatric departments in provincial/municipal hospitals of 1st and 2nd competence levels which will provide quality pediatric hospital care at least in the 28 regions of Bulgaria.

Investing in strengthening outpatient pediatric institutions, incl. in units for urgent pediatric care in the neighborhoods and districts of Sofia and in small municipalities (with fewer than 15,000 people).

Building digital connectivity between all structures for information exchange, consultations and telemedicine services.

Adopting a new order of coordination between individual structures, incl. patient referral order.

Creating a new model for financing pediatric health care.

Positives of the model:

- A sustainable solution to a large part of the problems, imbalances and deficiencies in the child healthcare model in Bulgaria.
- Optimizing the use of available capital – beds, infrastructure, equipment and medical teams.
- Concentration of all highly specialized care in one place.
- Ensuring comprehensiveness of the service.
- Ensuring sufficient staff for the needs of the new medical facility.
- Opening new hospital services.
- Guaranteed access to hospital care at all levels, in all specialties and in all regions of the country.
- Established coordination and clear communication between individual units – at both regional and national levels.
- Established communication with international pediatric networks for inpatient and outpatient care.
- Improved student and graduate training opportunities.

Risks to the model:

- Slower implementation time schedule.
- Resistance and opposition by a part of the workers to the administrative restructuring of the existing structures, incl. refusal to relocate to the new facility.
- Difficulties in communication between individual units and the risk of patients being 'bounced around' between institutions.
- Risk of staff shortages due to inadequate restructuring of the model.

8.2. Model for the Structure of NPH in Implementation of the Comprehensive/Optimal Model

Taking into account the above principles and based on the data analyzes (of the demand and supply of pediatric hospital care at the national and regional level, of the network of connections and coordination between them), the opinion survey of the main stakeholders, as well as evaluating the general European trends in the development of pediatric care, the following model of the National Paediatric Hospital in Bulgaria can be formulated:

The National Paediatric Hospital in Bulgaria should be a national center: a multi-specialty hospital for comprehensive treatment of children that integrates inpatient and outpatient services in the field

of diagnosis, treatment and monitoring of children with diseases encompassing all medical specialties. **The hospital should be a high-tech institution possessing 3rd level of competence and covers all pediatric specialties and subspecialties. It should offer training opportunities to medical and healthcare students, as well as to pediatrics residents.**

The hospital serves children from 0 to 18 years of age, providing both a full spectrum of treatment (diagnosis, consultations, day hospital, hospitalization, emergency care, rehabilitation, and follow-up) of general pediatric diseases of 3rd level of competence, as well as specialized pediatric care of 3rd level of competence.

The Law on Medical Institutions and Ordinance 49 on the basic requirements that must be met by the structure, operation, and internal order of medical facilities for hospital care and homes for medical-social care determine the normative parameters that every hospital medical facility must meet:

According to Art. 6. from the Ordinance, the hospital consists of the following functionally separated structural blocks:

1. consultative and diagnostic, 2. inpatient, 3. administrative and economic.

(2) The consultative-diagnostic block includes: 1. reception office , 2. consultants ' offices, 3. medical diagnostic and/or technical laboratories, 4. wards without beds, 5. emergency department with beds for diagnostic clarification up to 24 hours, in case the hospital has opened one.

(3) The inpatient block includes clinics and/or wards with beds and, if necessary, also clinics/wards without beds according to Art. 9, para. 2.

(4) The administrative-economic block consists of administrative, economic, and service units.

(5) In hospitals where operative activities are performed, the necessary type and number of operating theaters shall be created.

(6) Medical facilities for hospital care may open pharmacies to meet their own needs.

The herein proposed functional structure of the National Paediatric Hospital covers the treatment of all significant diseases in childhood, both therapeutic and surgical, with a highly developed diagnostic-consultative block with offices in all specialties, including dental medicine and child psychology.

A. Admission and diagnostic offices

Outpatient consultations play an important role in the diagnosis and treatment of pediatric patients. In view of the need to provide a comprehensive service, consulting offices must be provided in all pediatric specialties and subspecialties. It is expected that the entire patient flow will pass through the Hospital's Diagnostic and Consultative Block (DCB), even those who will not be admitted for hospitalization in the medical facility afterwards.

The cabinets that are planned to be included in the DCB are as follows:

- pediatrics,
- pediatric cardiology
- pediatric surgery,
- Pediatric endocrinology and metabolic diseases,
- Pediatric nephrology and hemodialysis,
- Children's pulmonology and phthisiology,

- Paediatric clinical hematology and oncohematology,
- Paediatric neurology,
- Eye diseases for children aged 0 to 18,
- ENT in children aged 0 to 18,
- Orthopedics and traumatology for children aged 0 to 18,
- Infectious diseases in children aged 0 to 18,
- Rehabilitation for children aged 0 to 18,
- Anesthesiology and intensive care in children aged 0 to 18,
- Rheumatology for children aged 0 to 18,
- pediatric urology,
- pediatric gynecology,
- Toxicology for children aged 0 to 18,
- Allergology for children aged 0 to 18,
- Dermatology for children aged 0 to 18,
- Neonatology,
- medical genetics,
- child psychology,
- Pediatric dental care,
- Other admission-diagnostic offices at the relevant clinics and departments according to the requirements of the medical standards.

B. Functional and consultative offices

These are necessary both for providing a better diagnosis before admission and during the patient's stay, as well as for referral for treatment outside the hospital. Based on the analysis of the data and existing practices in hospital care up to this point, the following scope of this part of the structure of the Hospital is proposed:

- Office for upper and lower endoscopy,
- Office for conventional ultrasound,
- Office for echocardiography,
- Office for functional diagnostics of the nervous system,
- Office for electroencephalography,
- Office for electromyography,
- Office for Doppler sonography,
- Office for bronchoscopy,
- Office for functional breathing research,
- Office for child clinical psychology,
- Office for sleep diagnostics,
- Other functional offices at the relevant clinics and departments according to the requirements of the relevant medical standards.

C. The clinical-diagnostic units are another main unit in the activity of the future Paediatric Hospital, which should support the entire process of diagnostics, consultation, admission and treatment of pediatric patients.

These activities can be divided into two major structures:

1. **Imaging clinic** with functional division into departments according to the type of analyses:

- Radiology,
- Axial tomography,
- Ultrasound diagnostics,
- Magnetic resonance tomography.

2. A laboratory complex that includes at least:

- clinical laboratory,
- Microbiology laboratory,
- Virology laboratory,
- Cytogenetics laboratory,
- Toxicology and chemistry laboratory.

D. The hospital must also have a Multispecialty Pediatric Emergency Department, which will be the only independent pediatric emergency department in Sofia.

E. The main part of the activity of the Paediatric Hospital will be carried out in the Inpatient Block, in which treatment will be offered in the following clinics/departments:

- General pediatrics,
- Pneumology and phthisiology ,
- Nephrology and dialysis treatment,
- Endocrinology and metabolic diseases,
- Neurology,
- Rheumatology,
- Gastroenterology,
- Cardiology,
- Gastroenterology,
- Neonatology, incl. intensive care
- Hematology and oncology,
- Cardiology,
- Surgery - incl. abdominal, thoracic, urological, neonatal, neurosurgery, cardiac surgery,
- Pediatric gynecology,
- Ophthalmology,
- Otorhinolaryngology,
- Toxicology,
- Allergology,
- Infectious diseases,
- Pediatric anesthesiology and intensive care,
- Orthopedics and traumatology,
- Resuscitation,
- Palliative care for children,
- Medical genetics,
- Physical medicine and rehabilitation.

F. The hospital should also have a Hospital Pharmacy, which will manage the process of procuring, distributing and storing medicines and consumables for the needs of treatment and diagnostics of patients.

G. The overall operation of the Hospital will be supported by the structures included in the Administrative-Economic Block, which includes a management team, general and specialized administration, as well as service units: engineers, technicians, drivers, etc.

The proposed structure also complies with the requirements of the Law on Medical Institutions and Regulation 49, and has been developed taking into account the assumption that a part of the existing facilities on the territory of Sofia will be preserved:

- Clinic for burns and plastic surgery on the territory of the "Pirogov" UMBALSM - due to the specificity of the activity, the small number of specialists who treat both adults and children, as well as due to the relatively small number of children's patients, the treatment of children is offered in this specialty to continue to be performed on the territory of Pirogov Hospital.
- Children's Psychiatry on the territory of Aleksandrovska UMBAL - due to the specificity of diseases, especially in the borderline age (15-18 years), it is proposed to preserve the structure of Child Psychiatry on the territory of Aleksandrovska Hospital due to the possibility of collaboration and consultations with the specialists from Psychiatry for adults of the hospital.
- It is also proposed to preserve the Paediatric Emergency Unit at the Emergency Center of UMBALSM "Pirogov" - the preservation of the emergency structure is proposed in view of the existing stable perception among patients about the possibility of receiving emergency medical assistance in the "Emergency Hospital of Bulgaria" - Pirogov. Retention is offered for the first 3 years of the establishment of the National Hospital, creating the possibility of direct referral from the Emergency Department to the National Pediatric Hospital if admission is required.

Capacity of the NPH

The proposed structure coincides in terms of scope to a large extent with the NDB structure project presented by the Expert Team of the Health Investment Company for Paediatric Hospital and give an idea of the possible functional scope of the medical facility. The project of the structure was developed on the assumption that all existing structures on the territory of Sofia will be closed, and their teams will be included in the new National Hospital.

no	Structure	Level of competence	Number of beds
A. DIAGNOSTIC-CONSULTATIONS BLOCK :			
1.	Reception office		
2.	Admission zone and planned admission unit with reception-consulting office and functional-consulting offices		
3.	Septic manipulation room		
4.	Isolation room		
B. CLINICAL DIAGNOSTIC STRUCTURES:			
1.	Imaging clinic	III	
	radiology department		
	ultrasound diagnostics department		
	computer axial tomography department		
	magnetic resonance tomography department		
2.	Clinical laboratory	III	
	Microbiology laboratory		
	Virology laboratory		

	Cytogenetics laboratory		
	Toxicology laboratory		
	Laboratory of transfusion hematology		
C. MULTISPECIALTY PEDIATRIC EMERGENCY DEPARTMENT			III
D. OTHER UNITS WITHOUT BEDS			
1	Clinic of physical medicine and rehabilitation for children	III	
2	Department of Pathoanatomy , Forensic Medicine and Deontology	III	
E. INPATIENT BLOCK			
1.	Clinic of general pediatrics	III	20
2.	Clinic for intensive treatment of children with non-surgical pathology	III	10
3.	Children's palliative care department	III	10
4.	Clinic for children's pneumology and phthisiology	III	30
5.	Clinic of pediatric nephrology	III	15
6	Medical genetics clinic	III	10
7.	Clinic of pediatric endocrinology and metabolic diseases	III	20
7.1	Department of pediatric endocrinology	III	10
7.2	Department for children with diabetes	III	10
8.	Children's neurology clinic	III	15
9.	Children's rheumatology clinic	III	12
10.	Children's gastroenterology clinic	III	15
11.	Clinic of neonatology	III	35
11.1	Intensive care unit	III	20
11.2	Neonatal post-intensive care unit	III	15
12.	Children's hematology and oncology clinic	III	35
12.1	Department of clinical hematology	III	15
12.2	Hematopoietic stem cell transplantation unit	III	5
12.3	Department of pediatric oncology	III	15
13.	Children's cardiology clinic	III	32
13.1	Department of pediatric cardiology	III	20
13.2	Pediatric cardiology intensive care unit	III	8
13.3	Department of surgery of congenital heart malformations	III	4
14.	Clinic of pediatric anesthesiology and intensive care	III	10
15.	Children's orthopedics and traumatology clinic	III	15
16.	Pediatric surgery clinic	III	57
16.1	Department of abdominal surgery	III	20
16.2	Department of thoracic surgery	III	10
16.3	Department of neonatal surgery	III	10
16.4	Department of pediatric neurosurgery	III	7
16.5	Department of pediatric urology	III	10
17.	Department of pediatric gynecology	III	7
18.	Children's ophthalmology clinic	III	10

19.	Children's otorhinolaryngology clinic	III	11
20.	Children's toxicology and allergology clinic	III	10
21.	Department of infectious diseases	III	10
22.	Operating unit		15 operating theatres
F. ADMINISTRATIVE-ECONOMIC BLOCK , which will consist of administrative, business and service units			
G. OTHER UNITS			
1.	Day hospital		
2.	Center for rare diseases		
3.	Training center for parents of children with diabetes		
4.	National screening center for inborn errors of metabolism		
5.	National center for pediatric radiology with proton therapy		
6.	Pediatric research center		
7.	Simulation-training center for children's diseases		
8.	Children's transplantation center		
9.	Medical center for specialized outpatient care for children's diseases		
H. ADDITIONAL ACTIVITIES			
1.	Academic units		
2.	Department of pediatrics		
3.	Specialized transport unit equipped for resuscitation transportation of children of all ages (interaction with Helicopter emergency medical service (HEMS)) *		
4.	Mobile medical consultancy for children *		

Planning the capacity of the hospital, the structure of individual clinics and departments, their functional distribution, as well as determining the quantitative needs for doctors, nurses, laboratory technicians and other medical and non-medical personnel will depend on the choice of a model for the development of children's health care and is not subject of the present analysis.

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