

DOI: 10.21005/pif.2020.41.C-02

ARCHITECTURAL AND URBAN PLANNING SYSTEM OF HEALTH CARE IN GERMANY AND THE UNITED KINGDOM

Irina Bulakh

PhD of Architecture, docent / architect
Author's Orcid number: 0000-0002-3264-2505

Associate Professor
Department of Design architectural environment
Kyiv National University of Construction and Architecture, Kyiv, Ukraine

Olena Kozakova

PhD of Architecture / architect
Author's Orcid number: 0000-0003-0593-266X

Associate Professor
Department of information technologies in architecture
Kyiv National University of Construction and Architecture, Kyiv, Ukraine

Olena Chala

PhD of Architecture / architect
Author's Orcid number: 0000-0002-4852-5039,

Teacher of architectural projecting
Department of information technologies in architecture
Kyiv National University of Construction and Architecture, Kyiv, Ukraine

Margaryta Didichenko

MA Architecture / architect
Author's Orcid number: 0000-0002-4306-8596,

Assistant
Department of Design architectural environment
Kyiv National University of Construction and Architecture, Kyiv, Ukraine

ABSTRACT

The article deals with the features of the architectural and urban organization of the health care system and the network of medical and preventive institutions of Germany and Great Britain of state and private levels of subordination. The levels of health care delivery and their share in the overall provision of medical services to the population of the countries are examined. The total number of treatment and prevention facilities across countries is analyzed. Particular attention is paid to determining in German and English health care systems the location of a network of child care facilities.

Key words: architecture, urban planning, hospital, outpatient clinic, network of healthcare facilities, Germany, United Kingdom.

1. INTRODUCTION

Today, like most post-Soviet countries, Ukraine is undergoing a complex but important medical reform process. The system of organization, levels and forms of providing medical care, sources of funding, forms of subordination, and more, are changing. Of course, over time, the reform should also cover the architectural and urban organization of health care in Ukraine. Hospital districts have already formed in this area, but there is repeated duplication of medical facilities in one area. In order to determine the next steps of rational and effective architectural-urban organization of medical-preventive health care institutions, it is necessary to study the experience of world countries whose medicine meets modern standards of quality of medical services. Particular attention is paid to the analysis of the organization of health care facilities for children (Bulakh, 2019).

In the whole civilized world, the state of development of medicine testifies to the standard of living of the country's society, the attitude of the state to the citizens of its country, and the concern for the health of the next generations. The health of the nation is regarded as one of the important indicators of the level of development and civilization of the state and reflects the socio-economic status of society as a whole. According to the UN resolution, population health is considered to be the main criterion for the expediency and effectiveness of all areas of economic activity of the country without exception. It should be noted that according to research, about 75% of illnesses in the adult population are due to living conditions in childhood and young age. Unfortunately, today in Ukraine we cannot be proud of the high quality of medical care, especially it concerns the level of medicine for the pediatric population of our country. The lion's share of functioning children's health care facilities are the inheritance of Soviet and even pre-Soviet times in the development of the Ukrainian healthcare sector (Chala, 2013). Today, approaches to the systematization and organization of medical care, conditions for the existence of medical institutions within the city have changed, which necessitates the urgent need to introduce appropriate and effective changes in the architectural and urban organization of children's medical institutions (Bulakh, 2017). Healthcare facilities are an integral part of the social infrastructure of modern urban settlements, in which they play one of the key and city-forming functions, actively shaping the architectural and urban space-space environment. Located mainly in the dense fabric of the city, health care facilities stimulate the development of new nodes and elements of the urban framework (Bulakh, Kozakova & Didenko, 2019).

2. MATERIALS AND METHODS

The research is mainly composed of a systematic and comprehensive analysis of the medical network and hospital complexes of the leading countries all over the world. An analysis of literature, normative, information sources, graph-analytical methods, photographic fixation, and field examination were used in the study (Kozakova, 2015).

The scientific and methodological basis for the research are fundamental works in the field of history of architecture and urban planning: A. Ikonnikov (1973), S. Khan-Magomedov, O. Orejska, I. Vysochyn, M. Votinov. Theoretical and practical issues of urban planning systems analysis were considered in the research of K. Linch (1982), A. Gutnov (1972), V. Glazychev (2008); using system analysis in architectural and urban planning systems of Y. Surmin, G. Lavryk, V. Timokhin (2008). Architectural typology and planning of medical institutions were investigated: R. Allen (1978), J. Bishop, P. Blandella, T. Bulychova (1984), T. Zyuzina-Zinchenko, K. Pidgirnyak (1990). Foreign experience of architectural and spatial organization of medical institutions is covered in the works of architects: Ch. Schirmer (2007), Ph. Meuser (2007), H. Nikl (2007), H. Nicki-Weller (2007). The main focus of the researchers was focused on solving the theoretical issues of forming the architecture of medical institutions or the organization of the architectural environment of medical institutions of a certain professional area, while at the same time, the study of the dynamics of architectural and urban development of the system of children's treatment complexes was undisclosed.

3. MAIN MATERIAL

The German health care system is built according to the Bismarck model, which is based mainly on compulsory social security according to a defined income level. The Federal Ministry of Health, which develops the laws and principles of administrative work in the field of medicine, is responsible for the federal health policy at the federal level. Health insurance issues are addressed by the Federal Joint Committee, which includes doctors, representatives of clinics and patients. This body decides which medical services will be covered by the insurance policy and is responsible for providing the Germans with quality medical care (Beske, 1994). Germany's health care is based on a well-structured health insurance system consisting of state compulsory insurance (Gesetzliche Krankenversicherung) and private insurance funds (Private Krankenversicherung). State compulsory insurance (DOS) covers about 89% of the population, while about 9% of Germans have private insurance. The remaining 2% are representatives of professions subject to special insurance or persons who do not have insurance at all. Germany's health care system is based on the principles of solidarity, equal access and self-government. The last of these principles is implemented at the federal level through the Book of Social Laws; Monitoring of hospital infrastructure activity is carried out by the local authority of administrative-territorial units (lands) (Beske, 1994).

Classification of types of medical care in Germany (Bukhgoľts, 2000):

- Outpatient care or "family medicine", which is provided mainly in doctors' offices, sometimes in hospitals. About 90% of acute and chronic diseases are treated at primary care level.
- Secondary care – Specialized medical services provided by a specialist doctor on an outpatient or inpatient basis at a hospital or clinic following a referral from a family doctor.
- One-third health care is provided at specialized hospitals, clinics and medical centers serving several cities or regions (oncology, transplant and neonatology centers) (D'yachenko, 2000).

Outpatient medical care is provided to Germans in private medical offices (Privatpraxis), and outpatients are also admitted to hospitals. Any doctor who has a specialization (Facharzt) can open a private office. In this case, each city or settlement receives its own quota for the number of private medical offices. The majority of German doctors (45%) work in private offices, and family doctors own half of this figure. The doctor can work as one or in a group with other doctors (such 25%) thus forming already whole medical centers. Doctors of related specialties, such as orthopedists and therapists, can also work in one private office. Private cabinets are usually fitted as standard: they have several study rooms, a waiting room with a reception desk. Depending on the direction, the offices are equipped with state-of-the-art medical equipment (from digital cardiographs to state-of-the-art tomographs), which significantly affects the number of patients. Regarding the location of cabinets, there are virtually no restrictions, but more often they are arranged in residential homes (Kucherenko, 2000).

Inpatient care in Germany is provided in hospitals (Klinik), which fall into three categories: public (municipal) (29%), private (Privatpatienten) (36%) and charitable (35%). They can be both highly specialized and multidisciplinary. Private hospitals are usually small establishments that operate on a commercial enterprise basis. Charity hospitals are funded by non-profit organizations such as the Red Cross or from church budgets. The quality of medical services in all types of hospitals is almost the same. As for the staff, hospitals, unlike private offices, work mainly by doctors without specialization (Assistenzarzt) under the guidance of experienced and highly specialized doctors. The patient has the right to choose the hospital independently without being tied to the place of residence. The provision of medical care in hospitals is carried out on the principle of full or partial hospitalization, as well as in the form of pre-hospital or post-hospital treatment. Special status in Germany is given to university clinics that operate at any higher education institution. In such medical institutions, they not only accept patients but also develop new therapies. Some university clinics are located in large sections of the territory, forming medical campuses with their own infrastructure (road network, post office, restaurants, hairdressers, shops, etc.) (Kucherenko, 2000). The German health care system, as one of the best and most effective in the world, places particular demands on the organization of medical care for children. The German Children's Hospitals and Pediatric Departments (GKinD), together with the Working Group of the Federal Pediatric Hospitals Supervision (BaKuK) and the German Academy of Pediatric and Adolescent Medicine (DAKJ),

have developed criteria to ensure the quality of inpatient care for sick children. These quality criteria include: personal and professional requirements for staff; requirements for the organization of premises and technical equipment; participation in quality assurance activities of result (Venediktov, 1997). Today in Germany there are about 360 clinics and departments of pediatric and adolescent medicine and about 76 departments of pediatric surgery.

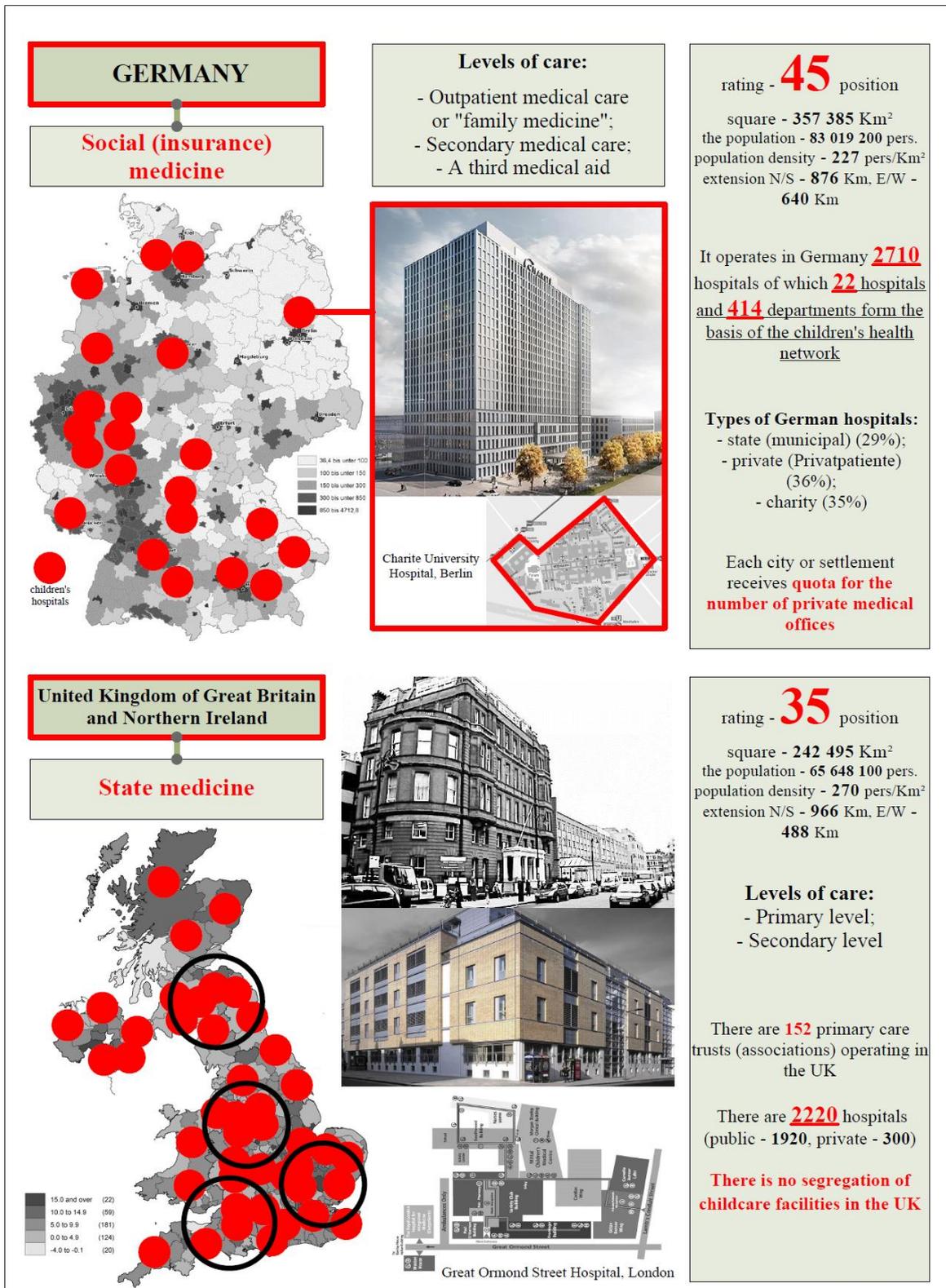
The attitude to the design and operation of pediatric clinics in Germany is special and aimed at creating optimal conditions for children during treatment: modern medical equipment is designed and adapted to the needs of children; new treatments are being developed, and conditions are being created for more involvement of parents in the healing process. The most famous pediatric clinics in Germany are: the Charite University Clinic in Berlin, the HELIOS Clinic in Berlin, the Deacon. Paul Gerhard in Berlin, Friedrichshafen Clinical Center, Eduardus Clinic in Cologne, CIM Integrative Medicine Center in Koblenz, Deacon Mannheim Clinic, GKH Clinic in Bonn, Schwarzwald-Baar Clinic in Berlin, Mainz University Clinic. For children in pediatric hospitals in Germany there is the possibility of hospitalization in a day hospital or around the clock. Children's wards in German hospitals in bright colors, reminiscent of home rooms, must provide a bed for mom, which helps to adapt the child to hospital conditions (Kovalska, Merylova & Bulakh, 2019).

The UK security system is built in accordance with the Beveridge model, whereby funding is provided from the state budget, contributions are collected through a general tax system at central, regional or local levels. All citizens are covered by insurance that provides a uniform amount of medical services. The responsibility for allocating the budget among healthcare providers is mainly the regional health authorities. The National Health Service of Great Britain, the National Health Service of Wales, the National Health Service and the Northern Ireland Health and Welfare Service are responsible for health of citizens in the United Kingdom. Each of these services operates independently and the responsibility for their work lies with the government of the part of the UK where the health service is located.

A leading role in the structure of the United Kingdom health system is played by the Government Department of Health, which creates and centrally monitors the implementation of laws and regulations in the medical field, with local NHS decision-making taking major decisions at the local level. The strategic Health Authorities is the bridge between the above two levels of the UK health organization (Saltman, 2000).

All healthcare of the United Kingdom is allocated to primary and secondary care. Both service groups provide relevant NHS trusts, which are subject to regional strategic health management. Primary care is universal (without age grouping), the most developed network in the country, and is available in numerous GPs, outpatient surgery, dental and ophthalmology offices. Secondary level of medical care provides specialized medical services in hospitals, dispensaries, as well as the work of psychologists and psychiatrists. The main feature of the UK health care system in this study, aimed at determining the dynamics of urban development of a network of children's treatment complexes, is the lack of children's specialization in primary and secondary care settings - in the UK, all healthcare facilities provide broad-based treatment without a clear distribution by age or disease group (Saltman, 2000).

Depending on the field of activity, all trusts in the UK health care system are divided into several groups, the main of which are primary care trusts (152) that provide primary care to the public. The primary trusts are responsible for the work of 29,000 general practitioners and 18,000 state dentists; finance clinics in the jurisdiction of other trusts; provide emergency care to patients from other government agencies and the private sector; directly organize primary and secondary prevention activities, and control local epidemiological situation and vaccination of the population. These local organizations that together form the basis of the NHS and spend 80% of the total health budget (Saltman, 2000). The private healthcare sector in the UK is much smaller than the NHS, but it has all the equivalent of an outpatient clinic, specialist clinic, hospital. Private healthcare in the private sector is very popular with the British - there are more than 300 private hospitals in the UK (Bulakh, 2019).



Great Ormond Street Hospital, located in central London, is considered one of the best and oldest (1852) United Kingdom hospitals with a powerful pediatric treatment profile. In order to expand and modernize the hospital, the construction of a new building under the direction of John Sisk BDP Architectural Bureau began in 2017. Thanks to a successful architectural solution (the concept of four houses), the new hospital building is in line with the historic national scale of London's Ormond Street. Other top UK hospitals include Randall Children's Hospital and Southend University Hospital NHS (Didichenko, 2018).

3. RESULTS

A study of the features of the organization of the architectural and urban health care system in Germany and the United Kingdom revealed some similar and distinct features. In both countries, the architectural and urban system of health care facilities is extensive and includes numerous types of health care facilities, which are divided into two main levels of public health care: primary care within family medicine and secondary care (multidisciplinary intensive care hospitals). A similar feature of the architectural-urban system of health care in both countries is the lack of isolation of the pediatric population for service in separate medical institutions in the country. Children in Germany and the United Kingdom are being treated in multidisciplinary settings, together with the adult population, which is an important finding for countries with an excess of healthcare facilities and specialization, including age groups. A distinctive feature of the architectural and urban health system in Germany is a third level of medical care (specialized and highly specialized hospitals and medical centers). A distinctive feature of the architectural and urban health system in the United Kingdom is the problem of obtaining medical care, waiting for routine surgery. This phenomenon is related to the over-optimization of the country's medical establishments due to the exclusively state form of financing the medical sphere.

4. CONCLUSION

1. The German health care system is based on the principles of solidarity, equal access and self-government. There are three levels of health care delivery in the country (primary, secondary, and tertiary specialized levels). In order to provide medical assistance to the child population of Germany, all conditions are created - primary care is provided by family doctors, and the second and third level of medical care are conducted in the developed architectural and urban network of children's hospitals in Germany.

2. The best features of the health care system in the UK: coverage of the entire population of the country with free medical services, a network of primary and secondary care, a quality and up-to-date hospital equipment and more. Despite the benefits, there are significant drawbacks in British medicine and the most important of these is the long waiting time (up to 5 hours in case of emergency and urgent medical care; up to 6 months in the case of complex surgery) associated with increased workload, doctors and an aging nation. Britain, like other countries, is experiencing a crisis in the medical system caused by the state form of funding, a significant increase in the cost of maintaining and modernizing the network of health care facilities, etc. Among the effective measures taken by the UK government are: increasing primary care to prevent exacerbations, closing inefficient hospitals, reducing the number of smaller hospitals by merging them into more powerful medical complexes with better equipment, lack of hospital specialization, reducing hospital care, reducing hospital stay.

BIBLIOGRAPHY

- Allen, R. (1978). *Posobiye po proyektirovaniyu bol'nits*. Moskva: Stroyizdat (in Russian).
- Beske, F. (1994). *Zdravookhraneniye Germanii: Sistema. Dostizheniya. Perspektivy razvitiya*. Moskva: Rarog (in Russian).
- Bukhgol'ts, E. (2000). *Sistema zdravookhraneniya v Germanii*. Moskva (in Russian).
- Bulakh, I. V. (2017). *Peredumovy reorhanizatsiyi merezhi dytyachykh likuval'nykh zakladiv Ukrayiny. Suchasni problemy arkhitektury ta mistobuduvannya*, 47, 444-450 (in Ukrainian). Retrieved from <http://library.knuba.edu.ua/books/zbirniki/01/201747.pdf>. Access 2019-12-19
- Bulakh, I. V. (2019). *Common Features of Architectural Design of the Medical Purpose Building, Science & Technique*. Minsk, 18(4), 311-318. DOI:10.21122/2227-1031-2019-18-4-311-318 Retrieved from <https://sat.bntu.by/jour/article/view/1990>. Access 2019-12-19
- Bulakh, I. V. (2019). *Artistic and Aesthetic Formation and Evolution of Architectural and Urban Planning Space. Science and Innovation*, Kyiv, 15(5(5)), 57-66. DOI: 10.15407/scine15.05.057 Retrieved from <http://scinn-eng.org.ua/archive/15%285%29/15%285%2904>. Access 2019-12-19
- Bulakh, I., Kozakova, L. & Didichenko, M. (2019). *The innovative trends in architecture and urban planning of health care institutions. International Journal of Innovative Technology and Exploring Engineering*, 9(1), 317-323. DOI: 10.35940/ijitee.A4111.119119. Retrieved from <https://www.ijitee.org/wp-content/uploads/papers/v9i1/A4111119119.pdf>. Access 2019-12-19
- Bulycheva, T. A. (1984). *Tsentrал'nyye rayonnyye bol'nitsy*. Moskva: Stroyizdat (in Russian).
- Chala, O. (2013). *Means of landscape architecture and requirements for them in a barrier-free environment. Urban planning and territorial planning*, 50, 718-721 (in Ukrainian). Retrieved from http://nbuv.gov.ua/UJRN/MTP_2013_50_104. Access 2019-12-19
- D'yachenko, V. G. (2000). *Okhrana zdorov'ya materi i rebenka v usloviyakh sotsial'no-ekonomicheskikh reform*. Vladivostok: Dal'press (in Russian).
- Didichenko, M. O. (2018). *Definition and rating of the morphology landmarks of the urban planning system. Urban planning and territorial planning*, 68, 130-139 (in Ukrainian). Retrieved from http://nbuv.gov.ua/UJRN/MTP_2018_68_19. Access 2019-12-19
- Glazychev, V. L. (2008). *Urbanistika*. Moskva: Novaya ploshchad' (in Russian).
- Gutnov, A. E. (1972). *Sistemnyy podkhod v izuchenii goroda: osnovaniya i kontury teorii gorodskogo razvitiya*. Moskva: Nauka (in Russian).
- Ikonnikov, A. V. (1973). *Formirovaniye gorodskoy sredy*. Moskva: Znaniye (in Russian).
- Kovalska, G., Merylova, I. & Bulakh, I. (2019). *Urban improvement of comprehensive schools and out of school educational establishments in Ukraine. International Journal of Innovative Technology and Exploring Engineering*, 8(12), 1765-1770. DOI: 10.35940/ijitee.L3229.1081219. Retrieved from <https://www.ijitee.org/wp-content/uploads/papers/v8i12/L32291081219.pdf>. Access 2019-12-19
- Kozakova, O. (2015). *Characteristic forms of elements of buildings with guest functions. Urban planning and territorial planning*, 58, 214-225 (in Ukrainian).
- Kucherenko, V. Z. (2000). *Naiboleye izvestnyye sistemy zdravookhraneniya razvitykh stran. Ekonomika zdravookhraneniya*, 7, 5-12 (in Russian).
- Linch, K. (1982). *Obraz goroda*. Moskva: Stroyizdat (in Russian).
- Nickl, H. & Nicki-Weller, H. (2007). *Hospital Architecture*. Verlagshaus Braun.
- Pidgirnyak, K. Y. & Pidgirnyak, V. P. (1990). *Arkhitektura zdaniy lechebnykh uchrezhdeniy*. Kyiv: Budivelnik (in Russian).
- Saltman, R. B. (2000). *Reformy sistemy zdravookhraneniya v Yevrope: analiz sovremennykh strategiy*. Moskva: GEOTAR Meditsina (in Russian).
- Schirmer, Ch. (2007). *Hospital Architecture: Specialist Clinics & Medical Departments*. Germany.
- Schirmer, Ch. & Meuser, Ph. (2007). *New Hospital Building in Germany: General Hospitals And Helth Centres*. Germany.
- Surmin, Y. P. (2003). *Teoriya sistem i sistemnyy analiz: ucheb. posobiye dlya vuzov*. Kyiv: MAUP (in Russian).

Timokhin, V. O. (2008). *Arkhitektura mis'koho rozvytku. 7 knykh z teorii mistobuduvannya*. Kyiv: KNUBA (in Ukrainian).

Venediktov, D. D. (1997). *Mezhdunarodnyye problemy zdravookhraneniya*. Moskva: Meditsina (in Russian).

AUTHOR'S NOTE

Irina Bulakh – PhD of Architecture, Doctoral studies. *Education*: Master of Architecture, Department of Design architectural environment, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Place of work*: Associate Professor, Department of Design architectural environment, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Publications*: 95 publications, of which 86 scientific papers, 9 works of educational-methodical publications. PhD dissertation “Principles of symbolizing the architectural and artistic image of the urban environment” (2016), Doctoral dissertation “Dynamics of the city planning development of the system children treatment complexes”. Contact | Kontakt: bulakh.iv@knuba.edu.ua , irabulakh81@gmail.com

Olena Kozakova – PhD of Architecture. *Education*: Master of Architecture, Department of Architecture, Kyiv National Academy of Fine Arts and Architecture, Kyiv, Ukraine. *Place of work*: Associate Professor, Department of information technologies in architecture, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Publications*: 23 publications all in scientific papers (8 in scientific publications of Ukraine, 8 publications in scientific publications of other countries, 7 abstracts for conferences. PhD dissertation “The formation and development of traditions of Western Ukrainian hotel’s architecture of XVII – XIX centuries” (2016), Field of research: architecture, urban planning, theory and history of architecture, design of hotel buildings. Contact | Kontakt: olena.kozakova.arch@gmail.com , kozakova.om@knuba.edu.ua

Olena Chala – PhD of Architecture. *Education*: master of Architecture, department of Architecture of Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Place of work*: teacher of architectural projecting at Department of information technologies in architecture, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. PhD dissertation “Barriers free architecture for recreation zones”. Field of research: architecture, urban planning, theory and history of architecture, architectural projecting of medical institutions and recreation zones, universal design, barrier free architecture. Contact | Kontakt: olena.chala.architect@gmail.com

Margaryta Didichenko – Master of Architecture, PhD candidate. *Education*: Master of Architecture, Department of Design architectural environment, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Place of work*: Assistant, Department of Design architectural environment, Kyiv National University of Construction and Architecture, Kyiv, Ukraine. *Publications*: 18 scientific papers, including 6 publications in scientific periodicals of Ukraine, 6 publications in scientific periodicals of other countries, 6 abstracts for conferences. Field of research: theory of architecture, architecture, urban planning, urban morphology, historical areas development. Contact | Kontakt: didichenko.margo@gmail.com, didichenko.mo@knuba.edu