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HEALTHCARE AND WELLNESS TOURISM FOR PEOPLE WITH OCCUPATIONAL DISEASES IN CENTRAL KAZAKHSTAN

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Abstract: This study examines the scientific and theoretical foundations of the concept of medical tourism, and current trends in its development in the Republic of Kazakhstan and within the territory of Central Kazakhstan, which is of great importance in improving the professional health of the population since Central Kazakhstan is the largest industrial center. The purpose of the study is a scientific justification for the development of new directions of medical tourism in the field of occupational pathology with visits to healthcare facilities within Central Kazakhstan. The main method of research is a spatial analysis of the location of industrial regions with geoecological influence and priority healthcare organizations for developing new medical and health tourism routes for occupational pathology patients. The results of the study showed that the city of Karaganda has an absolute advantage for the further development of medical tourism in the contingent with production-related pathology.

Key words: medical tourism, health and wellness tourism, industrial center, occupational health clinic, anthropogenic load, occupational diseases, production-related pathology

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INTRODUCTION

The entry into scientific and practical use of the term "medical tourism" was largely facilitated by the foreign practice of developing the tourism industry as one of the leading and most dynamically developing sectors of the world economy. In countries with high-income levels, where they pay great attention to the development of this industry (Canada, Singapore, Japan, Spain, the United Kingdom, Dubai, Israel, and others), two types of tourism are traditionally considered related to the goals of treatment and recovery - medical tourism and wellness tourism (Savel'eva et al., 2020; Vetitnev and Kuskov, 2010; Dracheva, 2010; Kol'cova, 2015; Valorie and Crooks, 2010). These two types of tourism are often combined by a more general category - healthcare tourism. Currently, it is important to closely monitor global trends in medical tourism, taking into account the implications for the health and safety of patients and for health systems in a broader sense (Birch et al., 2010; Cheung and Wilson, 2007; Turner, 2007). Freire et al., 2012 defined medical tourism as a patient's journey for the purpose of treatment and/or prevention of diseases outside the usual place of residence. At the same time, the duration of such a trip can range from one day to one year.

On a global scale, medical tourism is considered to be sufficiently developed, characterized by a steady growth rate, and a profitable business worth 60 billion US dollars with an annual growth of 20%. The industry may move from the business model of medical tourism to the more precise term "medical outsourcing". The UN Economic and Social Commission for Asia and the Pacific has defined health and medical tourism as an international phenomenon describing the movement of travelers outside their region of residence in order to receive medical care that is not available in their country of permanent residence due to the high cost (Cortez, 2008; Zhong et al., 2021). Frustrated by high costs, long waits, and bureaucracy, more and more people in Europe and North America are seeking medical care in developing countries such as Thailand, India, Brazil, and others. For a small price and almost immediate access, these medical tourists can get a treatment that, according to supporters, is no worse, if not better, than anything they could get at home. There is a concept of “price discrimination”, which is a situation where different prices are indicated for the same product in different places, for instance, it is possible to get certain wellness services in Kazakhstan cheaper than in Russia (Sansyzbayeva et al., 2021). Under this model, governments and private enterprises seeking to take advantage of the cost savings of medical tourism will enter into formal agreements with foreign medical service providers that will set quality standards and ensure patient safety (MacReady, 2007). However, the industry is still in its infancy, the biggest issues concern the quality of service, more reliable data and academic research are needed.

The sphere of medical tourism in the Republic of Kazakhstan is currently under formation, about two thousand foreign citizens from China, Russia, Mongolia, the USA, Japan, and others visit the country annually in order to receive medical care (as medical tourists), and the popularity of domestic medical tourism among the local population is growing. Citizens

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are increasingly moving within the country to receive medical services, if earlier Kazakhstanis had to leave the country for the treatment of certain types of diseases, today there is an opportunity to seek help from local medical organizations.

In accordance with the Law of the Republic of Kazakhstan dated June 13, 2001, No. 211-II "On tourism activities in the Republic of Kazakhstan", the term "medical tourism" is defined as a type of tourism involving combining recreation with receiving specialized medical care, including high-tech medical services, outside the place of residence. The main factors ensuring the attractiveness of the country as a destination with developed medical tourism are: political and social stability; reputation and positive image in the field of healthcare; investments by the state and the private sector in healthcare infrastructure; the number of medical organizations with international accreditation; equipping medical organizations with advanced equipment; successful introduction of modern medical technologies; availability of competent and highly professional medical personnel; developed tourist infrastructure. The aim of the study is a scientific justification for the development of new directions of medical tourism in the field of occupational pathology with visits to healthcare facilities within Central Kazakhstan. The scientific and practical significance of the article is determined by the fact that the development of new routes of medical tourism is proposed and the tourist potential of medical and wellness services for persons with occupational diseases in the Republic of Kazakhstan is evaluated.

LITERATURE REVIEW

According to the research of the international consulting company "McKinsey and Company", the main motivations for medical tourism are the following (Figure 1). The analysis carried out by (Ushakov and Vasyuta, 2022) shows that almost all modern states around the world are currently taking large-scale and comprehensive measures aimed at supporting health and medical tourism as a priority sector of the economy. It should be noted that many foreign hospitals have been accredited by the United States Joint Commission, which evaluates and accredits healthcare organizations in the United States. Through its subsidiary Joint Commission International (JCI). The Joint Commission accredits international medical institutions, as well as provides educational and consulting services to hospitals around the world. In Nur-Sultan city in 2008, at the initiative of the Head of State, JSC "National Medical Holding" was established and in 2016 transformed into the Corporate Fund "University Medical Center".

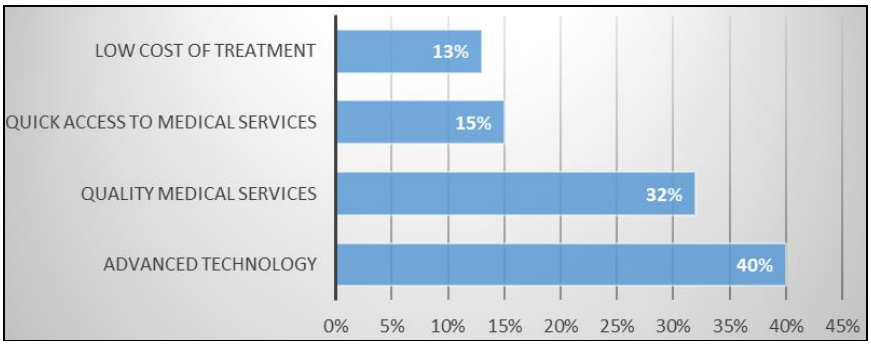

Figure 1. Motives for treatment abroad

It includes five innovative healthcare facilities – National Centers of Cardiac Surgery, Neurosurgery, Motherhood and Childhood, Child Rehabilitation, and the Republican Diagnostic Center, each of which has international accreditation by Joint Commission International (JCI). This accreditation, which must be held every three years, confirms the quality of medical services provided, the level of staff training, and the safety of patients in healthcare facilities according to international standards. In total, there are 7 such facilities in Kazakhstan, as well as 497 have national accreditations. In the above-mentioned medical organizations, foreign citizens are provided with services ranging from diagnostics (check-up - complete examination of the body) and ending to the most complex operations, including high-tech medical services: such as operations on the heart, spine, and brain.

Studies in 3108 U.S. counties and 67 Florida counties have shown conflicting evidence that tourism has a positive and/or negative impact on community sustainability. Geographically weighted regression combined with spatial moderation analysis was used to consider spatial interactions between communities. The data obtained show that the specialization of the tourism industry has a spatially heterogeneous mixed impact on the sustainability of the community and these effects are significantly affected by environmental pollution (Yang et al., 2022). Kazakhstan has the status of a state with an ecologically vulnerable territory, this is due to the increasing pollution of the environment in the Aral Sea region, the Semipalatinsk region, urbanized territories with the growth of various types of industrial production, and anthropogenic adverse impacts, due to the development of the economy for a long time, based on the raw material system of nature management, the main environmental pollutants are large industrial enterprises (Battakova, 2022).

Therefore, the prevention of occupational risks is relevant, as well as the market of medical and health tourism for people with occupational diseases (since they are common in large industrial centers), as an integral part of the tourism industry and the health care system requires special attention, since with its importance there is a risk of possible negative consequences for the health and life of the consumer in the case of low-quality or untimely services. Failure or absence of medical examinations in due time, as well as unfavorable factors of the production environment and the labor process, are the main causes of occupational diseases (Lukjanova, 2019). At the global and national levels, a healthy working environment is very important for social and economic development, therefore, the occurrence of occupational diseases is an important indicator of the working environment and working conditions (Pinosova, 2021).

Medical tourism is an important area for global health and for national health systems, especially now that there is easy access to medical information via the Internet and international travel is more accessible, given the fact of the globalization of healthcare (Beland, 2018). This work is devoted to the prospects for the development of medical tourism in Central Kazakhstan. Since enterprises in the coal industry, ferrous metallurgy, heavy industry, and mining

production are concentrated here, the working population in the industrial center needs to receive specialized treatment and a complex of medical and wellness services. Public health is aimed at developing this area competitively to attract foreign tourists and patients from other countries for medical tourism in Central Kazakhstan.

MATERIALS AND METHODS

The work was carried out on the basis of materials of medical statistics of the Republic of Kazakhstan on demography and morbidity of the adult population, the Institute of Public Health and Occupational Health of the NAO "Medical University of Karaganda" of the Ministry of Health of the Republic of Kazakhstan for the period from 2011 to 2020. The study of the relationships between variables was carried out by determining the correlation dependence, the statistical method of two-dimensional descriptive statistics, a quantitative measure of the relationship, the joint variability of variables used, the Kendall rank correlation coefficient ($\mathbf{r_{xy}}$), paired statistical relationships of correlation analysis were studied. The reliability of differences among unrelated samples was assessed by the t-criterion (Student). The results were processed using the Statistica 5.5 application software package. The dependence of the pollution level on the studied period was examined using the Tay-b correlation coefficient. Statistically significant values were assumed to be $p<0.05$.

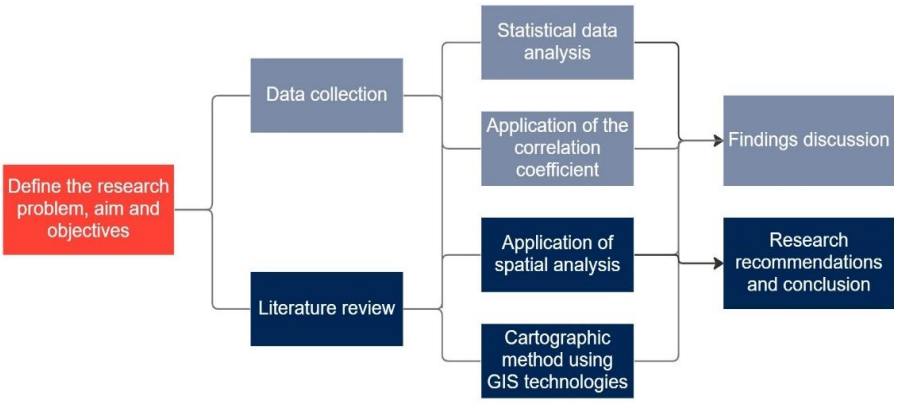

Figure 2. Research Methodology (Source: compiled by the authors)

This study was conducted using spatial analysis, cartographic methods, statistical data processing, official documents, and literary sources. The research methodology is presented in Figure 2. Spatial analysis was performed using the geographic information system ArcGIS. This platform for building and using Geographic Information Systems allows you to collect, manage, analyze, and distribute geographical information. We used a set of software products and tools to create maps and geographic information in real time, and updates can be made and edited by multiple users at once. The purpose of spatial analysis is to obtain new information from the obtained research data to make better decisions.

Assigning symbols to the source data and viewing them on the map is a form of analysis, maps initially include the interpretation of patterns and the relationships they display, spatial analysis takes a step forward by applying geographical, statistical, and mathematical operations to the data mapped. The ArcGIS system contains hundreds of analytical operations that can be used to solve a wide range of tasks, from finding objects that meet certain criteria to modeling natural processes or using spatial statistics to determine the information that a set of points can provide about the distribution of a phenomenon, for example, air quality or population characteristics (Wang, 2019). With the help of these research methods, data were collected on the presence and location of the largest industrial enterprises of the Republic of Kazakhstan, thus the zone most at risk of occupational morbidity of industrial workers was identified.

STUDY OBJECT

There are various sources of environmental pollution in the Republic of Kazakhstan, spatial analysis of the location of industrial regions with geoecological influence has shown that the territory of Central Kazakhstan is most polluted by emissions from ferrous, non-ferrous metallurgy, and coal mining enterprises (Alimbaev et al., 2020). There is a danger of heavy metals contamination of the soil near ore mining at the Temirtau Metallurgical Combine and the Balkhash Mining and Metallurgical Combine, the enterprises of JSC ArcelorMittal, Kazakhmys Corporation LLP, coal mines Abayskaya, Saranskaya, Shakhtinskaya, Kirovskaya, Tentekskaya, mine named after “Kuzembayev", mine named after “Lenin", "Western" and JSC "Shubarkol Komir" (Figure 3). This all applies to Central Kazakhstan.

Sources of increased risk of mercury pollution are represented in Temirtau, the former Karbid plant, and the Pavlodar Petrochemical Plant. Currently, measures are being taken to clean up the Nura River, in Pavlodar, it was noted that mercury is located between two clay layers, as a result of which the cleaning of the territory is impractical.

The consequences of the development of oil and gas fields in the Caspian region, covering the West Kazakhstan, Atyrau, and Aktobe regions are associated with contamination of soil, reservoirs, and ultimately, drinking water with oil hydrocarbons. In addition, emissions of chromium-containing dust are recorded during the extraction of ores and processing of chromates at enterprises located in Aktobe. These are industrial enterprises of Tengizchevroil LLP, JSC KazMunayGas, JSC Ferroalloy, Aktobe Chrome Compounds Plant, Atyrau Oil Refinery, and Don Mining and Processing Plant.

Harmful effects are caused by emissions of lead-zinc and titanium-magnesium combines in the East Kazakhstan region, JSC “Ulbinsky Metallurgical Plant”, LLP “Kazzinc”, industrial waste of phosphorus and lead enterprises of the South Kazakhstan region, JSC “KazAtomProm” of the Suzak uranium mining enterprises. In Ekibastuz city, the largest amount of coal is burned at a thermal power plant to generate electricity, releasing heavy metals into the atmospheric air.

Study design: We conducted a retrospective cohort study to study the prevalence of occupational morbidity, its causes, and recovery. To identify statistical differences and determine the degree of interrelationships between the relative movements of the two variables in groups, the correlation coefficient (r) was calculated, and the reliability of differences

among unrelated samples was evaluated by the t-criterion (Student). The results were processed using the Statistica 5.5 application software package. The dependence of the pollution level on the studied period was studied using the Kendall Tay-b correlation coefficient ($\mathbf{r_{xy}}$), the values of $p<0.05$ were statistically significant.

In these living conditions, the influence of environmental factors, namely, man-made impacts, largely determines the quality of health of the country's population. It is necessary to develop a new direction of medical tourism in the field of occupational pathology with the development of a new route of health tourism for people with occupational pathology.

Figure 3. The largest industrial enterprises of the Republic of Kazakhstan, 2022
(Source: Prepared by the authors, based on the materials of the Bureau of National Statistics of the Republic of Kazakhstan)

RESULTS AND DISCUSSIONS

The main role in shaping the development of medical tourism is assigned to the city of Nur-Sultan. Modern clinics have been deployed in the capital of Kazakhstan that meet international standards when assessing the current state in the field of domestic medical tourism, the most popular types of medical services, as well as healthcare organizations for foreign citizens coming to the country for treatment, are the following (Table 1).

Table 1. Medical specialization of medical tourism in Kazakhstan
(Data source: Compiled by the authors, based on the materials of medical statistics of the Republic of Kazakhstan)

Name of the organization	Types of demanded medical services
JSC "National Center of Neurosurgery" Corporate Foundation of "University Medical Center", Nur-Sultan city	Neurosurgery
JSC "National Scientific Cardiac Surgery Center", Corporate Foundation of "University Medical Center", Nur-Sultan city	Cardiac surgery
RSE "Republican Center for coordination of transplantation and high-tech medical services", Nur-Sultan city	Transplantology
JSC "National Scientific Center of Motherhood and Childhood", Corporate Foundation of "University Medical Center", Nur-Sultan city	Reproduction (IVF)
RSE "National Scientific Center of Traumatology and Orthopedics named after Batpenov N.D."	Orthopedics and traumatology

It follows from the table that high-tech medicine is attractive for medical tourism in the following areas: open heart surgery, with the help of which Kazakhstan became one of the 22 countries in the world that have the ability to perfor m such types of operations. On October 19, 2017, in Nur-Sultan city, JSC "National Scientific Cardiac Surgery Center" for the first time in the country performed an operation to implant a completely artificial heart. A patient suffering from severe end-stage heart failure was implanted with an artificial CARMAT heart (a French development in which the European aerospace and defense concern Airbus SE participated). It was a bioprosthesis weighing a kilogram, which can replace a human heart. Another promising area that can be confidently noted is in vitro fertilization (IVF), which has

been successfully mastered by domestic medical organizations in recent years. There is a tendency of increasing demand for this medical service in the world. According to the data of Kazakhstani clinics engaged in reproductology, the need for IVF is growing every year, and the demand exists not only among the local population. Thus, on average, more than 800 people from Kyrgyzstan, 134 from Uzbekistan, 72 from Russia, 41 from countries such as the USA, Canada, China, Turkey, etc. apply to medical organizations annually. If the cost of this service in Kazakhstan is about $2,000-2,500, then in Europe it is about $15,000, and in US clinics it is $19,000-20,000 (Lokshin et al., 2022).

Nevertheless, we are currently considering an additional direction – the need to develop medical tourism in Central Kazakhstan, as the most industrially developed region, only in Karaganda city are concentrated scientific potential, university clinic, a network of wellness centers, and the only scientific and medical center in the direction of the occupational pathology service, which should become a center of medical tourism for workers with a professional diagnosis. Another important direction for the future is the potential of health and wellness services for people with occupational diseases. This is a completely new route of medical tourism.

Occupational diseases have been with us since time immemorial, and they have evolved along with occupational medicine. As the nature of work changed, new diseases emerged, and it took decades for people to associate them with the work they did. These diseases have been termed “occupational diseases” (Lumnitzer et al., 2013).

It should be noted that the main part of occupational diseases is masked in the structure of general morbidity, therefore, workers with health disorders that have arisen in the course of work do not receive proper medical care and appropriate social compensation for loss of health. As a result, there is a weighting of the initially detected pathology, a polysystemic lesion of the body, which requires a long stay on the sick list, and in addition, disability is growing. On average, in the republic in recent years, during primary medical examinations, only 40% to 50% of occupational diseases from all identified cases are detected. Diagnosis of other occupational diseases occurs when patients contact medical organizations. Medical and social rehabilitation of patients with occupational diseases is carried out partially, although these measures contain reserves for preserving the further working capacity of sick patients.

The assessment of occupational morbidity indicators of the population of the Republic of Kazakhstan for the 10-year observed period from 2011 to 2020, the level of occupational morbidity was: in 2011 - 3,439, in 2012 – 3,435, in 2013 – 3,460, in 2014 – 3,430, in 2015 – 3,254, in 2016 – 3,291, in 2017 - 3,671, in 2018 - 3,659, in 2019 - 2,871, in 2020 - 2,156 (Table 2). These figures are much higher among the population living in Central Kazakhstan, namely in the Karaganda region (44.9%): in 2011 – 1,596, in 2012 – 1,512, in 2013 – 1,611, in 2014 – 1,712, in 2015 – 1,600, in 2016 – 1,678, in 2017 – 1,843, in 2018 - 1,896, in 2019 - 1,518, in 2020 - 1,427. Accordingly, the Central Kazakhstan region is the leader in this indicator and this justifies the choice of the organization of medical and health tourism for people with occupational diseases in this area on the basis of the Occupational Health Clinic.

Table 2. Occupational morbidity, 2011-2020
(Data source: Compiled by the authors, based on the materials of medical statistics of the Republic of Kazakhstan)

Regions of the Republic of Kazakhstan	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	r_{xy}	p
Nur-Sultan	10	10	12	11	10	9	17	19	15	10	-0.409	0.241
Almaty	2	1	2	-	1	2	5	2	1	2	0.176	0.650
Almaty region	2	1	-	2	-	-	-	1	1	3	-0.112	0.832
Akmola region	21	41	22	39	38	28	31	26	21	19	0.674	0.007
Aktobe region	129	139	165	143	160	158	189	163	168		0.611	0.022
Atyrau	13	11	11	9	10	10	4	7	4	-	-0.493	0.072
East Kazakhstan region	1211	1316	1289	1202	1164	1116	1163	1061	772	619	0.200	0.421
Zhambyl region	215	198	188	177	165	172	238	244	215	60	-0.090	0.719
West Kazakhstan region	35	25	6	19	3	11	9	10	10		0.310	0.249
Karaganda region	1596	1512	1611	1712	1600	1678	1843	1896	1518	1427	-0.289	0.245
Kostanay region	10	5	10	6	-	4	1	2	1	-	-0.148	0.615
Kyzylorda region	1	1	1	-	10	1	-	5	1	2	-0.318	0.312
Mangystau region	8	4	4	2	2	4	-	2	2	1	0.000	1.000
Pavlodar region	10	10	8	12	8	9	7	10	9	6	-0.094	0.714
North Kazakhstan region	3	4	4	4	3	2	3	3	-	1	-0.417	0.145
South Kazakhstan region (Shymkent city from 2018)	176	151	127	92	80	87	161	36	62	1	0.111	0.655
Turkestan region								13	71	5		
Total	3439	3435	3460	3430	3254	3291	3671	3659	2871	2156	0.067	0.788

The results obtained allow us to establish that a statistically significant positive correlation was found between the number of patients and the level of emissions in the Akmola and Aktobe regions (Kendall's Tay-b ($\mathbf{r_{xy}}$), $p<0.05$ values were statistically significant). The above data allow us to conclude the causal relationship between anthropogenic pollution and occupational morbidity of the population of Central Kazakhstan. One of the explanations may be the influence of unfavorable factors of technogenic and, first of all, chemical factors of the environment, since large production complexes of the coal, mining, and metallurgical industries are located on the territory of Central Kazakhstan. In recent years, an intensive process of technical improvement and intensification of production processes has been carried out, which radically changes not only the working conditions of workers but also leads to the formation of an unfavorable environmental situation. Occupational pathology deals with the prevention of the development of

occupational and production-related diseases, diagnosis, treatment, and rehabilitation, as well as the prediction of the risk of damage to health under the influence of harmful production factors.

The provision of specialized highly qualified occupational pathology medical care is carried out the only in its profile scientific and medical republican center under the Ministry of Health - **the Clinic of Occupational Health**, now part of the Institute of Public Health and Occupational Health of the NAO "Medical University of Karaganda" in Karaganda city (Central Kazakhstan). Earlier – a separate RSE "National Center for Occupational Hygiene and Occupational Diseases" of the Ministry of Health, has its own history of creation in 1958 in the city of Karaganda as part of the Central Kazakhstan Branch of the National Academy of Sciences of the Republic of Kazakhstan with branches in the cities of Ust-Kamenogorsk (Occupational Pathology Center), Shymkent, Aktobe to address issues of preserving the health of the working population in harmful and dangerous working conditions and conducting fundamental and applied scientific research on the management of workers' health from the perspective of assessing occupational risks in production. The choice of location and opening of the scientific and medical center in Karaganda is due to the fact that Central Kazakhstan is an economic and geographical region of the country, which is a large industrial region in which coal, mining, chemical industries, ferrous and non-ferrous metallurgy, the largest mineral resource base of the country are deployed. In this regard, in this region, there is the largest number of workers in industrial enterprises and a high concentration of patients with production-related pathology. Currently, the Occupational Health Clinic coordinates the Occupational Pathology Service of the Republic, a 105-bed hospital that has been deployed to provide specialized highly qualified and rehabilitative care to patients suffering from occupational diseases using modern and innovative technologies.

The structure of the occupational health clinic is represented by departments: **occupational therapy** for the rehabilitation of dust lung diseases, pneumoconiosis, dust bronchitis, occupational allergies, bronchial asthma, deforming osteoarthritis, occupational dermatoses, occupational poisoning, chronic intoxication when working with lead, mercury, beryllium, manganese, fluorine, nitrates, chromium and others; **occupational neurology** for rehabilitation occupational radiculopathy, vibration disease, encephalopathy, and others; consulting and diagnostic department of the day hospital.

Modern methods of endoscopic, ultrasound diagnostics, X-ray diagnostics, assessment of the function of external respiration, electrocardiography, audiometry, electromyography, assessment of allergological status, setting of allergological samples, genetic analysis, determination of heavy metal salts in biological media, neurophysiology, psychocorrection, physiotherapeutic methods of treatment, electrophoresis, magnetotherapy, ultrasound, diadynamic currents, paraffin treatment, UHF-therapy, inhalations, breathing exercises, massage, physical therapy.

The Clinic employs highly qualified specialists with qualification categories in occupational pathology, categorization of up to 85-90% of medical personnel, researchers with academic degrees of up to seven candidates of medical sciences and five doctors of medical sciences. Therefore, rehabilitation measures should be included in the program of medical and health tourism of occupational pathology patients. Domestic medical tourism is a complex of services provided by specialized health centers, such as the Bereznyaki sanatorium, the Zhosaly sanatorium, the Balkhash dispensary, the Balkhash sanatorium, the Karkaraly dispensary, sanatorium "Sayaly", sanatorium "Zhartas", somatic sanatorium "Karlygash", all these organizations are located in Central Kazakhstan. Below is a brief description of them.

The Bereznyaki sanatorium is located 150 kilometers from Karaganda, near the village of Kyzylkayyn, surrounded by picturesque nature, an abundance of coniferous and deciduous trees and shrubs, a birch grove, the Nura River flows nearby, there is a sports complex with a swimming pool, a medical center includes a physiotherapy complex, a magnetoturbotron, hydrocolonotherapy, shock wave therapy, dry carbon dioxide bath, mud treatment, massage, halotherapy, treatment with red deer antlers and hydrotherapy.

The sanatorium "Zhosaly" is located 130 kilometers from Karaganda in a picturesque place in the Karkaraly Nature Reserve. A special feature is a use for medicinal purposes of mineral water from the Aulie Bulak spring (Holy Key), as well as therapeutic silt mud of Lake Karasor. The Central Institute of Balneology and Physiotherapy conducted a balneological examination of the Zhosali mineral waters and concluded that it could be used to treat a wide range of diseases of the circulatory system, digestion, musculoskeletal system, chronic intoxication, including occupational poisoning with heavy metals and phosphorus, gynecological diseases and others.

The Balkhash health and wellness complex is located on the shore of Lake Balkhash, 4 kilometers from Priozersk, Karaganda region, equipped with the necessary equipment for recreation and medical rehabilitation. The sports equipment of the complex allows you to maintain and strengthen your health and physical strength, including a multifunctional sports hall, swimming pools, saunas, gym and fitness rooms, halls of physical therapy and table tennis, contains equipment for skating and skiing, snowmobiles, bicycles, lawn tennis equipment, balls for outdoor games and others. The following procedures are carried out in the medical and rehabilitation department: hydrotherapy (therapeutic showers, carbon dioxide, iodine-bromine, coniferous baths, underwater shower massage, hot tub "Karakala", underwater spinal traction), floating capsule, salt mine, inhalations, cedar barrel steam sauna, thermal therapy (mud applications of Tambukan mud, paraffin applications), physiotherapy (laser therapy, magnetotherapy, electrotherapy, light therapy, ultrasound), heliotherapy, automated mechanical bowel cleansing (intestinal irrigation), classical massage, anti-cellulite, stone therapy. Diagnostic tests: laboratory, ultrasound diagnostics, echocardiography, electrocardiography, daily monitoring of blood pressure, and reception of specialists: therapist, physiotherapist, neurologist, dermatologist, urologist, gynecologist, pediatrician, and psychologist.

"Balkhash Dispensary" is a multidisciplinary medical and preventive institution on the shore of Lake Balkhash. The medical base of the dispensary is equipped with modern medical equipment and its own mud, the source is the local Kossor lake, located between Tasaral and Saryshagan. The health resort accepts patients with pathology of the cardiovascular, respiratory, musculoskeletal system, diseases of the central and peripheral systems for rehabilitation.

The Karkaraly dispensary is located in Karkaralinsk, 200 kilometers from Karaganda, recovery is characterized by koumiss treatment (Kazakh national dairy product), and a wide range of diseases is cured: gastric ulcer and duodenal ulcer, chronic gastritis, cholecystitis, enterocolitis, functional disorders of the gallbladder and colon, chronic nonspecific lung diseases, atherosclerosis, hypertension, central nervous system disease and organs of hematopoiesis, bronchitis, tuberculosis, diabetes mellitus, urolithiasis, infectious, acute respiratory diseases.

Sanatorium "Sayaly" is a health and wellness complex 27 km from Karaganda on the banks of the Nura River. Rehabilitation in the sanatorium is carried out for respiratory diseases, occupational diseases, cardiac rehabilitation, after stroke, injuries, and operations. There is its own source of mineral water, the medical corps applies more than thirty procedures for recovery.

Sanatorium "Zhartas" is a general health resort, located on the territory of the Zhartas reservoir, 61 km from Karaganda. The laboratory and diagnostic department are equipped with X-ray equipment, electrocardiography, and a clinical diagnostic laboratory. The following methods are used: phytotherapy, inhalation, oxygen cocktail, acupuncture, massage, salt, iodine-bromine, sage, pearl baths, and mud of Lake Karasor are used.

Somatic sanatorium "Karlygash" is a children's sanatorium located in Zhezkazgan for the rehabilitation of children with somatic diseases aged from 3 to 14 years. Physiotherapy, ultraviolet irradiation, ultra-high frequency therapy, inhalations, physical therapy, massage, salt mine, oxygen cocktail, and darsonvalization are used. There are playgrounds equipped with sports equipment on the territory.

General problematic issues of medical tourism development in the Republic of Kazakhstan (including in Central Kazakhstan):

- lack of reliable statistical data and statistical records on incoming, internal, and outgoing medical tourists;
- lack of a medical visa;
- incomplete readiness of medical organizations to provide services to medical tourists (low level of corporate governance and service, lack of flexible pricing, the presence of a language barrier among medical personnel, and others);
- the weak infrastructure of medical organizations of regional significance;
- insufficient interaction of medical organizations with tourist operators;
- lack of medical tourism products;
- weak marketing and lack of recognizable brands of medical organizations;
- the negative image of domestic healthcare in society.

Main directions and solutions (including in Central Kazakhstan):

- formation of an interdepartmental Coordinating Council for medical tourism with the functions of coordinating and monitoring the activities of participants in the implementation of medical tourism;
- development at the state level of a regulatory National guide that clearly regulates the activities of all participants in the implementation of medical tourism (medical organizations, tourist operators, insurance companies, transport and logistics companies, providers of additional services, and others);
- formation of a mechanism for registration and issuance of a medical visa for foreign patients arriving in Kazakhstan for treatment;
- improvement of the existing system of statistical registration of medical tourists;
- organization and implementation of international accreditation for medical institutions Joint Commission International (JCI);
- introduction of medical insurance for foreign patients and improvement of existing insurance for Kazakhstanis;
- development of a marketing strategy for the development of medical tourism, conducting an extensive information campaign to familiarize citizens with the possibilities of domestic medicine and the formation of its positive and attractive image (accessibility, comfort, safety and quality of medical and tourist services);
- development of medical tourism products for both the local population and foreign patients, including the provision of medical services in combination with historical, educational, and cultural events;
- to increase the investment attractiveness of medical tourism, to provide certain benefits and preferences to domestic and foreign investors, to provide affordable loans for small and medium-sized businesses in terms of the development of medical tourism;
- improving the competence and qualifications of medical workers, increasing the number of international education grants for master's degrees and Ph.D. in tourism, introducing new educational programs at medical universities in the field of medical tourism, and attracting business representatives, including managers of hotels, sanatoriums, tour operators, clinic managers, graduates of the Bolashak program to teach some disciplines in tourism, increasing the number of foreign internships, advanced training for current doctors; improving the level of English language proficiency of the staff of leading medical organizations.

CONCLUSION

In general, today Kazakhstan can compete in terms of medical tourism, primarily due to highly qualified specialists whose wages are significantly lower than foreign colleagues, advanced medical technologies, favorable geographical location, and relatively low prices for in-demand medical services, and it is also important to note the presence of international accreditation in medical organizations. All these advantages will greatly help to promote medical tourism in Kazakhstan to the world market. The creation of a competitive field of medical tourism will contribute to the country's economy through tax revenues to the state budget, the inflow of investment, the emergence of new jobs, and also contributes to improving the quality of medical services and improving the health of the population. State support is a key factor in the sustainable development of medical tourism.

The study found that the city of Karaganda (Central Kazakhstan) has an absolute advantage and sufficient potential for health and wellness services for people with occupational diseases. A new route of medical tourism for occupational pathology patients is proposed, that is, foreign patients can be sent to a specialized institution located in Central Kazakhstan, with the most experienced doctors, scientific personnel, and standards, the only one in Kazakhstan in this profile is the Republican Scientific and Medical center under the Ministry of Health - the Clinic of Professional Health, such guidelines are necessary to ensure that the health and safety of patients are a priority; to establish and maintain high-quality standards of medical services provided; to recognize the country in regional and global markets and to create the possibility of selling medical tourism products in border countries due to the demand for domestic medical services.

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