

## THE CONTEMPORARY CONDITION AND TRENDS OF MEDICAL TOURISM DEVELOPMENT IN TOMSK REGION

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**Abstract.** This paper considers the development of the current tourist trend in Tomsk region that is medical tourism, due to the health resort resources identified, i.e. mineral water, therapeutic mud, etc. It analyses the sanatorium-and-spa base of a given sort of tourism, denotes the under-exploitation of the healing resources examined, and defines the basic tasks for the further development of this trend as well.

**Key words:** medical tourism, healing areas, resort resources, mineral water, therapeutic mud.

In recent years the increase in medical tourism has become stable all over the world. It is associated with human consideration for health. In global practice there are two polar models of resort business organization: Western European and Russian. Western countries have a sufficiently free organization of medical tourism, the concept of which is defined by the purpose of travel – a combination of recreation and restoration of health. At the same time, the medical services do not contradict the other services in the package of the tourist product and they are not always dominant.

Russian medical tourism puts emphasis on the therapeutic component and the recreational one is subordinate. Thus, Russian researchers consider medical tourism in their work as an independent type of tourism, which is aimed at the restoration of health and preventive measures. In this research medical tourism is considered as travel for the purpose of health improvement both with the help of rehabilitation and sanitary practice.

Medical tourism is based on balneology, the science of natural healing factors, their influence on the organism and using methods for preventive purposes. Balneology includes balneum therapy, mud cure, climatotherapy, thalassotherapy, aerotherapeutics, dietary cure, kinesitherapy, physiotherapy, and heliotherapy.

In the organization of health resorts account should be taken of the sanitary influence of the area on the organism stipulating a range of geographical factors, phenomena and their characteristics, such as geographical location, geological structure, climatic conditions, water basin availability and its water properties, etc. The main resort factors are landscape and climatic conditions, and the presence of therapeutic mud and mineral waters. The area possessing healing properties, which is used for sanitary and preventive purposes, is called a resort.

It is here where the main medical institutions have been built, such as sanatoria, preventive clinics, rehabilitation centers and others.

It should be noted that Tomsk region also has therapeutic areas. Local residents have been using them for healing purposes from time immemorial. The scientific basis of their specific properties was made only 100 years ago. Then in Tomsk in March 1922, the regional institute of balneal and physiotherapy was established under the order of “Sibzdrav” (Siberian healthcare) on the basis of a “hospital of active reserve”, the main tasks of which were to study treatment modes via the natural and precast factors and therapeutic exercises. After its establishment the institute staff began to study the resort resources of Siberia and the Far East. Within the first decade, 15 research expeditions were undertaken for identifying and practically using the natural recreational resources of Siberia and the adjacent territory. As a result, the scientific bases of all Siberian resort profiles were given (Chemal, Lebzjzhie, the Uchum lake, Tatarskoe, Kuldur, the Karachi lake, the Shira lake, Belokurikha and others) [1]. In 1926 the institute received the status of State Physiotherapeutic Institute and in 1956 it was renamed as the Tomsk Research Institute of Balneology and Physiotherapy of the Ministry of Healthcare of the RSFSR with the status of Republican Scientific Center of Siberia and the Far East for balneology and



physiotherapy. It became one of four institutions in Russia of the same profile. The main scientific focus of the institute is the study of the natural therapeutic resources of Siberia and the Far East. The therapeutic resources of Tomsk region were analyzed with much attention and particularly the mineral waters and therapeutic mud. Tomsk region is located in the south-east part of the West Siberian plain. The climate is continental-cyclonic with regular precipitation and quite sharp changes of weather within comparatively short periods of time. The main territory of the region lies in the taiga and only a small part in the south has the transition features of forest-steppe.

The research aspect of the territory with natural therapeutic potential according to recreational and balneal value can be regarded as a favorable zone with enough balneal potential [2]. This is the zone of UV-comfort with light resources providing more than 1800 hours per year. Heliotherapy is available from April to September. Climatotherapy can be provided for 200-220 days.

The most important resources for the development of medical tourism are the mineral waters, therapeutic mud and bioclimatic resources. Within the territory there are great stocks of mineral waters belonging to water-bearing complexes of the West Siberian artesian basin, one of the largest in the world: thermal water (from +43°) with bromine concentration (to 120 mg/l), iodine (to 30 mg/l), silicon acid (22-50 mg/l) and mineralization to 50-80 g/l. Iodine-bromine has been identified in Kolpashevo, Parabel', Alexandrovsky, Tegul'det, Verkhneketsky regions. Mineral waters of the hydrogen carbonate type with average mineralization are widely spread. The mineral springs in Tomsk region (Zavarzino) are well known, and include low mineralized alkaline-earth waters. The main remedial element is radon dissolved in water and other substances, providing a positive therapeutic effect for many diseases.

The Kolpashevo region and Kolpashevo itself are rich in natural nitrogen-methane sodium-chloride low sulfide concentration thermal mineral water. The Alexandrovsky region has sources of sodium-chloride iodine-bromine thermal water, and in Strezhevoi there are chloride-hydrocarbonate-sodium bromine waters. Moreover, the region is endowed with lakes of turf and sapropelic therapeutic mud (Karasevo, Kirek, Svetlyi). The chemical composition is highly effective for musculoskeletal system treatment.

The trends of medical tourism on the territory are closely linked with the local residents, who are the main consumers of the service. It must be noted that the resorts lying in the same climatic zone as the residence of resort visitors have the best conditions for citizens' restoration of health because the adaptation period is minimal. Nowadays medical tourism is based on therapeutic institutions, of which there are more than 20 in the region. The most popular are the sanatoria "Chazhemto", "Sinij Utyos", "Zapovednoe", "Kosmonavt" and preventive sanatorium "Prometej", "Energetic", "Stroitel'", "Uchitel'", and others. They were established as year-round institutions with a treatment cycle from 21 to 24 days because a shorter period is not effective.

The sanatorium specificity depends on the diseases to be treated. In Tomsk region, these are for the respiratory organs, nervous system, circulatory system, cardiovascular system, musculoskeletal system and conjunctive tissue, urogenital system, female breeding organs.

The sanatoria have a heavily developed resource base and as a rule a large amount of territory. The infrastructure represents a range of hospital buildings, centers and recreation grounds. Inside the buildings there are dining rooms and winter gardens and the surroundings are rich in parks.

The sanatorium "Chazhemto" is located in the western part of Tomsk region, 250 km from the town of Kolpashevo. It has at its disposal comfortable buildings for 200 places, a balneary, physiotherapy department, and a hall for therapeutic physical training. In 2018 the sanatorium is scheduled to open a new dental room not only for holiday-makers but for the local residents as well. The climate-recreational potential of the region makes it possible to carry out treatment activity of different types, recreational activity, and tourism.

As therapeutic resources three natural formations are used: thermal hydrogen sulfide water for bathing, mineral drinking water and treatment sapropel deposits from Lake Karasevoe. The water of the spring is similar to that of Matsesta in its properties, and mineral drinking water in its microelement composition does not differ from the better known "Naftusi", which is famous as the Ukrainian resort "Truskavets".

The geographical origins of holiday-makers are rather wide – from Murmansk to the Far East; but 60% customers are still from Tomsk. Nevertheless, the sanatorium is visited by foreign tourists, for example, groups from Slovenia, Italy, Germany, France, and elsewhere. They are offered a broad excursion program, such as visiting the sights of the northern part of Tomsk region: Narym, Mogochino monastery, the museums of Parabel' and Kargasok.

The complex research conducted in the surroundings of "Chazhemto" makes it possible to extend the therapeutic base, equip the necessary facilities of the territory taking into account a modern level of recreation, and further to show the unique area for a resort-recreational zone establishment in Tomsk region [3]. In 2004 in the regional exhibition "the North supplies" the sanatorium "Chazhemto" received the diploma for "New

Developments and Technologies” for sapropel mud deposits and a gold medal for the natural mineral water “Sanatorium of Chazhemto”. It has been producing it since 2002. The level of treatment services is quite high and the sanatorium is considered to be one of the best in Siberia. Most sanatoria and preventive centers of the region are located in the immediate vicinity of Tomsk. For instance, the sanatorium “Sinij Utes” is situated 10 km from the town. Due to its location, on the picturesque cliffy bank of the river Tom’ in a pine and cedar forest, it possesses a wide range of natural healing factors, in particular pure air, which is rich in volatile production, artesian water, sapropel mud from Lake Kirek, which is famous for its wide range of therapeutic properties. The territory of the sanatorium is distinguished by its unique park ensemble: a winter garden and a beach zone. It lies within a specially protected area that provides vacationers with interesting excursion tours. The main natural attraction is a geologic nature memorial: the Blue Cliff (in Russian ‘Sinij Utes’), the name of which is associated with the dark-blue and grey color of the rocks standing out against a background of the surrounding landscape. It is true that vacationers are attracted by the historic and cultural heritage of the village Kolarovo (formerly Spasskoe), which is located in the immediate vicinity of the sanatorium, and its Spasskoe church (the first mention of it relates to 1644). An interesting fact is that in the XVII-XVIII centuries there was a reinforced Cossack outpost in the village and there a caravan track from Moscow to Mongolia and China was established; that is why a tumulus burial ground, ancient settlement and age-old constructions typical for a Siberian village were preserved.

The sanatorium “Zapovednoe” with 176 places is situated in the village of Vershinino, 30 km from Tomsk. Its surroundings constitute a pure picturesque cedar forest with specific volatile production features for remedial air. Not far from the sanatorium there are two springs of mineral water for tourists. Here the main treatment procedures are for the respiratory system, nervous and cardiovascular system, muscular-skeletal apparatus and connective-tissue diseases. The sanatorium is equipped with a hydropathic establishment; here balneal procedures, mud-thermal therapy, physiotherapy, laser-therapy, electrotherapy, aerosol-therapy, phytotherapy, aromatherapy, and kinesitherapy are provided. The sanatorium consists of a hospital building and a dormitory, 6 cottages, a dining room, a conference hall, a winter garden, a sports ground, an open swimming pool, a sauna, and a fitness room. Additional services are at the disposal of holiday-makers: a billiard hall, a table-tennis hall, a library, a small cinema hall, and horse riding.

In the cedar forest near the village of Nekrasovo in Tomsk district, the sanatorium “Kosmonavt” is located, which provided for the treatment of the cardiovascular system, urinogenital system, muscular-skeletal system, the system of connective tissue, the system of blood circulation, and gynecological disorders. The sanatorium has a hydropathic establishment providing balneal therapy, phytotherapy, physiotherapy, massage, and heliotherapy. There is a hospital building, three dormitories for 150 places, a hotel, a museum complex with a chapel, basketball and volleyball grounds, a football field, a bar, a sauna with a pool, a conference hall, a banquet room, and a dining room. An open historical and ethnographical museum is distinguished by its architectural complex, which includes the replica of a railway station that was formerly the station Bogashevo. Inside the museum there are mini-museums, such as a museum of the history of Tomsk, history of the railway and history of the sanatorium itself.

In Tomsk region, the following sanatoriums are active: “Prometei”, “Energetik”, “Stroitel”, “Uchitel” and the National Research Tomsk Polytechnic University. A characteristic feature of the sanatoria and preventive centers is their proximity to plants and institutions, since they aim to maintain the health of the staff in the morning and evening times off. That was the reason for their location in this vicinity. As a rule, green territories were chosen for their development. The territory of preventive centers and their capacity are smaller than those of sanatoria. However, their funding is similar to that of the sanatorium and sometimes is even greater higher.

The preventive sanatorium “Stroitel”, which specialized in the treatment of the blood circulation system, respiratory system, nervous and muscular-skeletal systems, is situated in the village of Bogashevo in Tomsk region, and can accommodate up to 160 people simultaneously in four dormitories. The main therapeutic methods are mud cure, balneal therapy, massage, therapeutic physical training, diet therapy, acupuncture, speleotherapy, monitor cleansing of bowels, manual therapy, and phytotherapy. There are hydropathic rooms, a physiotherapeutic department, inhalatorium, and treatment rooms.

In “Stroitel” the hydrocarbon-calcium-sodium mineral thermal waters are used as natural treatment factors. The Tomsk Research Institute of Balneology has carried out examinations of microflora and valuable physicochemical and organic properties of the water composition that proved the high balneology value of the latter. It is used as general and local baths, showers, irrigations, and inhalations. The turf healing mud is used as well in the form of application, the therapeutic effect of which is related to the antiphlogistic and resolve effect. A winter garden, a bar, a library, a billiard hall are at the disposal of holiday-makers.

In the course of the whole year, the sanatorium “Energetic” is visited by customers who are located in the

village of Anikino in Tomsk region. Its main therapeutic base is hydro-carbonate-calcium-sodium mineral thermal waters, which have an extremely high therapeutic effect due to their nitrifying, denitrifying and nitrogen bacteria active groups. The prevailing treatments are for blood circulation and the nervous and musculoskeletal systems. The total capacity of the preventive center is for 100 people.

The year-round preventive sanatorium “Prometei” is in the village of Kaltai. It is located on a hill of the Tom river bank 27 km south of Tomsk in an ecologically pure forest zone, where a coniferous forest (pine and fir) with a touch of deciduous prevails. The medical scope of the sanatorium is rather wide – from blood circulation system treatment to musculoskeletal. The sanatorium capacity is for up to 250 people. The territory includes sports grounds, a football field, ski track, billiard room, table tennis room, a library, and a dance pavilion.

The preventive sanatorium “Uchitel” located within Tomsk is a multifunctional sanitary institution, which is intended for medical and therapeutic work among students, teaching staff and other personnel of special teaching institutions and other residents, and accommodates 50 people. It specializes in the treatment of the cardiovascular system, musculoskeletal apparatus, nervous system, digestive apparatus, respiratory system, dermatopathy, and gynecological disorders. The courses of treatments are from 5 to 10 days with a part-time regime, which accounts for the lack of any recreational infrastructure.

Thermal mineral iodine-bromine water is used in the institutions “Prometei” and “Uchitel” as a natural therapeutic factor that improves the cardiac muscles, circulation of blood, vascular tone, venous drainage, and livens up lipid exchange during metabolic process disorders.

Tomsk Polytechnic University sanatorium, as well as “Uchitel”, is a preventive center of sanatorium type intended to carry out treatment and therapeutic work in accordance with the study, labor and domestic life of the staff and students, which is why it is situated within the town. The medical department provides treatment with the help of physiotherapy, laser-therapy, heating therapy, massage, hirudotherapy, therapeutic physical training, reflex therapy, and dental treatment. The main areas of focus are cardiovascular, respiratory, nervous system diseases, internals, and musculoskeletal apparatus injuries. The capacity is for 100 people.

In the structure of the medical and therapeutic system of Tomsk region there are also rehabilitation centers: “Klyuchi”, “Nadezhda” and “Shag vpered”. As usual, they provide a lower medical base in comparison with sanatoria but offer a broad range of additional services. The infrastructure of rehabilitation centers includes management buildings, dormitories, hospital buildings, dining rooms, bars, medical complexes. In many centers the buildings are connected to heated passages. Also, there are swimming pools, saunas, sports grounds, cosmetology rooms, drugstores, tennis courts, billiard halls, cinema halls, libraries. Sports equipment can be hired additionally for leisure.

The year-round rehabilitation center “Klyuchi” is quite substantial and very popular in the region. It is situated in the picturesque village of the same name. Here there are springs with mineral water which possesses unique healing properties. The main medical profile of the institution consists in the treatment of the respiratory system, musculoskeletal apparatus, and blood circulation system. The center is important for people who have had myocardial infarction and a myocardial ischemia operation or orthopedic operations. It is equipped with a therapeutic mud bath, balneal baths, a physiotherapy department, inhalatorium, and a treatment room. The sanatorium has the necessary infrastructure and hosts simultaneously up to 250 people.

The rehabilitation centers “Nadezhda” and “Shag vpered” are aimed at children with disabilities, and thus the treatment courses, rehabilitation programs, and infrastructure depend on the needs of those children. The center “Nadezhda” is located in a picturesque and ecologically pure pine forest near the village of Kaltai that is 25 km from Tomsk. The objective of the institution is to render qualified medical, social, psychological and pedagogical help to children and teenagers with special needs, and their families as well. The center has sports grounds, a sandbox for providing sand therapy, an assembly hall, a dance hall and a hall for therapeutic physical training. The rehabilitation center “Shag vpered” is within the precincts of the town and targets the treatment of children with musculoskeletal apparatus disorders, physical and mental retardations, disorders of the autistic spectrum and other concomitant diagnoses. The center has no accommodation services.

The recreation centers and children’s summer sanitary camps are also institutions within the medical tourism spectrum; hence they provide therapeutic treatment without medical procedures.

Today Tomsk region does not have many institutions of this type, as we can see from the analysis of the research.

Medical tourism in Tomsk region has developmental trends. First of all, the material and technical resources of current institutions need to be upgraded, and the infrastructure and refurbishment of old buildings also need to be improved. Secondly, it is advisable to use in full measure the natural medicinal resources (mineral waters, muds, treatment material) of the territories examined and additionally use the little-known



springs which are not included in medical practice.

The territory of the region also includes several springs which are popular among local residents who use them in non-rational ways. Thus, the territory of the village Bely Yar, situated in Verkhneketsky region, houses a hydrogen-sulphidous thermal source (+ 40°C) saturated with microelements, the water of which is useful in musculoskeletal apparatus, dermatology, gynecology-, cardiovascular disorder treatment, as well as in respiratory disease treatment. The medicinal properties of the spring have been proven by the research work of the Tomsk Research Institute of Balneology and Physiotherapy [4]. The territory around the spring is considered to be favorable for tourist and recreational activity and can be used as a recreational zone with tourist and medical development. Nowadays, on the territory of the village a medical zone project has been developed, which includes the construction of hydrophatic and mud bath establishment, covered bathhouses, a laundry, and a pavilion at the well. Based on the hot spring, there are already municipal baths with showers, and saunas with a pool.

In the Verkhneketsky region near the village of Poludyonovka there are turf therapeutic muds (lake Yazevoe – Sapropel), which can be further used in the medical institution currently being developed in the village of Bely Yar.

In Parabel district on the left bank of the Ob' river 18 km north of the regional center, there is the hot source "Chisty Yar". According to the research of the staff of the Tomsk Research Institute of Balneology and Physiotherapy, the hot thermal mineral water is characterized as average mineralized water with sodium-chloride-calcium composition and the alkalescent reaction of the environment. The specified components of the water are sulphurated hydrogen, silicic acid, bromine, and iodine. The water contains biologically active microcomponents [4]. Hot water gushing from the ground and flooding the surroundings has been turned into therapeutic mud. People visit this place the whole year round. At present, part of the territory is hired by an undertaker for the construction of a recreational center. Now there are three guest-houses, a hydrophatic with 5 baths for easy access by the locals, and a café. The construction of an open 50-meter swimming pool with therapeutic water is planned. In the same district near the villages of Narym and Parabel' there is a well with thermal hydrogen-sulphidous mineral water (65-70°C).

In 1956 a borehole was drilled in Tegul'det district in the course of oil and gas exploration, which identified thermal mineral water (23°C). It is situated 1.5 km from the village of Tegul'det and 200 km from Tomsk. There the drinking therapeutic-table water "Omega" has been extracted since 1993. According to a balneal decision of the Tomsk Research Institute of Balneology and Physiotherapy experts [5], this mineral water can be labeled as therapeutic-table water. The analytical research showed that in the chemical composition of underground mineral waters the ions of carbonate, hydrocarbonate, and sodium prevail. The waters relate to soda hydrocarbonate sodium type with mineralization of no more than 0.3 g per liter. The environment of the waters is alkaline, pH – 9.3, very soft, hardness is 0.7 mg equi/liter. This is the only Siberian and among only a few waters in Russia which has received an international quality certificate. However, 7 t/h of healing mineral water is lost from the spring; there is no any equipment to use it for therapeutic purposes. By the same token, the turf therapeutic mud in Kozhevnikovo district is not used to this day.

One of the main factors for the successful development of the medical niche is the skilled workforce. Despite the fact that Tomsk region has a high educational potential in high-quality staff training for working in the balneology service, there is a lack of specialists because of low pay.

In recent times recreational therapeutic institutions have ceased to be places only for treatment and recreation, and have become multi-functional medical centers intended for a broad range of customers. Maintaining their medical function, the resorts create recreational activities for an increasing variety of customers. However, much work needs to be done further in this direction, together with a search for new forms of recreational services.

The removal of some constraining factors will promote the further development of medical tourism in Tomsk region. Moreover, one of the negative factors is the lack of awareness among the population about medical institutions in the region and their services and facilities. There are no advertising arrangements. Medical institutions should be linked with the advertising activity of travel agencies.

A barrier for development is the remoteness of therapeutic resources and the difficulty of transport access.

Thus, the territory's provision with mineral waters and therapeutic muds is considerable, and this makes it possible to develop medical institutions in different parts of the region, particularly in the fields of oil and gas extraction, since the wells drilled in the ground that identified the springs with mineral waters can be used in balneology with minimal costs. The main challenge is the development of the infrastructure of medical tourism (including roads) that is impossible without state and local authority support, as well as without the help of sponsors and investors.

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