LOOK ACADEMIC PUBLISHERS
OPEN ACCESS

INTERNATIONAL JOURNAL OF ENVIRONMENTAL & SCIENCE EDUCATION
2016, VOL. 11, NO. 15,8447-8469

Recreational Potential of Kazakhstan and Prospects of Medical Health Tourism in This Country

Aiman Yessengabylova[a], Assem Bekbulatova[a], Sairan Suraganova[a], Alken Bissekov[a] and Bekarshyn Zhumanova[b]

[a] L.N.Gumilev Eurasian National University, Astana, KAZAKHSTAN; [b] Kazakh University of Economics, Finance and International Trade, Astana, KAZAKHSTAN

ABSTRACT

The present article analyzes the comparative characteristics of the recreational potential of hydro areas of the Republic of Kazakhstan. 20 hydro areas were marked out for comparative assessment of their attractiveness and recreational possibilities of the development of medical health tourism on the basis of balneological resources. The aim of the study is to identify the areas with the high natural recreational potential, but with a low level of exploration, thus identifying the most promising areas for the development of medical health tourism. The article gives comparative characteristics of areas with health-improving resources and the level of their development to achieve this goal. The outline maps of natural and socio-economic and recreational resources of Kazakhstan and zoning were made for the purpose of comparison of the recreational potential areas on the basis on the performed analyses. As a result, the hydro mineral regions of Kazakhstan were classified into 4 groups with very high, high, medium and low-recreational potential. The presented results of the study will help to formulate proposals for the development of specific areas with a high medical-health potential.

KEYWORDS
medical health tourism, mineral resources, therapeutic mud, mineral water, recreation, Kazakhstan.

ARTICLE HISTORY
Received 23 August 2016
Revised 13 September 2016
Accepted 13 September 2016

Introduction

Medical health tourism is a type of tourism that includes, primarily, therapeutic and wellness segment, which is associated with the movement of tourists on their own initiative in a special resort area that has all the necessary resources, the main purpose of the trip at the same time is any form of health improvement combined with recreation and entertainment (Vetitnev & Kuskov,

CORRESPONDENCE Sairan Suraganova Email:suraganovas@mail.ru

2010). Also, medical health tourism is defined as active associated with the movement of the individual beyond the permanent place of residence and having an impact on the strengthening of his health and physical development (Vetitnev, 2011). According to the definition of the famous German scientist W. Nahrstedt (2004), medical health tourism includes a visit of local and foreign tourists to the balneological resorts and others by changing their permanent residence and provides them with health programs under their personal responsibility and as a rule by paying privately. Dr. Aris Ikkos (2002) believes that medical health tourism is associated mainly with thermal tourism and visits to the mineral springs for medicinal purposes. This kind of tourism is characterized by the strong natural-resource orientability. The natural resources of medical health tourism include mineral water, therapeutic mud, climatic resources, etc. On the basis of these resources, the most popular spa resorts work in the world.

France offers thermal and seaside resorts; water and mud, thalassotherapy, and even wine therapy is used there. The thalassotherapy center Thermes Marins Biarritz that offers a lot of wellness and therapeutic programs is considered to be the resort number one in France and Europe. Experts all over the world appreciate the healing properties of the famous mineral water resort of Vichy. Mineral waters and thermal springs in Switzerland are deservedly popular. Thus, the healing waters of Leukerbad resort brought this health resort more fame than the ski slopes. There are 50 climatic health resorts in Germany. The resort of Baden-Baden is in the biggest demand. The European most modern thermal center Caracalla-thermae and the hottest source Helkvelle ("Infernal source") with a water temperature up to 69°C are situated there. Friedrichsbad thermae are known thanks to original treatment combining thalassotherapy with thermal baths. A strong demand has formed for "therapeutic" Austria recently. In many respects it is caused by the fact that there are a lot of thermal springs in the country. Speleotherapy is conducted on the Gastein resorts, resort Baden near Vienna is famous for its urban thermae, Bad Ischl uses the beneficial properties of salt solutions. Thermal waters are one of the numerous national treasures of Italy. The most well-known Italian resort of world importance is situated on the island of Ischia. People do not drink mineral water in the resorts, but use, as well as mud, for special baths. There are a lot of world-known resorts in Czech Republic. Healing traditions of Carlsbad source-geyser go off in 600-year history. Its hyperthermal water is highly effective in the treatment of various diseases. 40 mineral springs of Marienbad have been called as water that "returns health" since 1528. In the open reserves of thermal waters Hungary takes the second place in the world. Mineral springs are situated in all regions of the country; they are year-round and have unique healing properties. By uniqueness and abundance of thalassotherapeutic and other health resources, Bulgaria takes one of the leading places in Europe. There are a lot of other spas that use mineral springs, mud and other natural resources for spa treatment in the world.

623 underground water deposits were studied on the territory of the Republic of Kazakhstan, their total stock amounts to 43,383,500 m3 per day. From that part, mineral water reserves are used for balneological purposes of 29800 m3 per day, they make up 0.5% of all groundwater. Nowadays in Kazakhstan there are 89 known sources with mineralized water treatment and drinking, balneological and dining purpose, and 47 deposits of therapeutic muds.

There are 120 sanatoriums on the basis of these mineral resources in the country. Most of them are balneological ones, although generally there are mixed types of resorts: mud-bath, balneoclimateric etc. (Veselov, 1999).

In Kazakhstan, ground mineral water is widespread for balneological different indicators of mineralization and chemical composition, temperature, hydrogen ion concentration, as well as various gases, organic and microelement composition. At beginning of 1970, the Kazakh scientist Zh. Sydykov (1972) marked out 6 balneological groups of underground mineral waters on the territory of Kazakhstan and gave a description of each group. Most balneological groups of mineral waters are found in different areas of Kazakhstan in different volumes. The country has used mineral waters for healing and relaxation for a long time. Thermal ground water began to be used only recently, despite the fact that it is widespread throughout Kazakhstan. Thermal waters can be regarded as worth developing because of their human health implications and, if thermal tourism is promoted, their importance to the local economy (Gonzalez-Barreiro et al., 2009).

Hydrotherapy use of plain water for therapy, through the external application of water and health benefiting from water physical properties such as temperature, hydrostatic pressure, viscosity and electric conductivity; bathing, showers, water jets, underwater exercises, and body wraps are some methods of water application. Hydrotherapy has wide acceptance in the rehabilitation program in recent decades. By this method taking advantage two of the most basic properties of the water, the thermal and the mechanical stimuli (Terzis et al., 2014**).** Hydrotherapy is commonly used along with pelotherapy. Pelotherapy or peloid therapy is the external application of all or part of peloids, it being a therapeutic modality that, despite having defined mechanisms of action, route and site of different application, is still under the umbrella of balneotherapy, hydrotherapy and spa treatment (Bender et al., 2005).

Peloid is amaturated mud or muddy suspension/dispersion with healing and/or cosmetic properties, composed of a complex mixture of finegrained materials of geologic and/or biologic origins, mineral water or sea water, and commonly organic compounds from a biological metabolic activity. When the maturation takes place in the natural environment it is called natural peloid and can be considered a healing mud, and in other cases it is named peloid (Gomes et al., 2013).

Peloids are peat, sapropelic, silt, sulfite, freshwater clayey silts, and knoll hydrothermal silts composed of the mineral and organic matters, which underwent complicated transformations as a result of physicochemical, chemical, biochemical processes and represent homogeneous fine-particle plastic mass, which is used in a heated state to perform mud cure (Nekipelova, Vlasov & Luneva, 2013). Peloids are divided into several types according to the natural structure. There are types of peloids according to the international classification:

1. Inorganic mud. Their organic substances consist of very small substances mixed with water.

2. The organic sapropel mud and gyttja, they are mainly composed of organic matter, formed from the remains of plants and insects from the soil and sand, as well as other substances.

3. Peat mud is generated mainly from plant residues and organic matter that was converted into humus, and as part of inorganic substances are found mixed in varying amounts.

4. Mixed types of peloids.

5. The substances made under the influence of from wind exposure – kaolin, soil.

6. Synthetic peloids (paraffin).

Kazakhstan has an inexhaustible supply of mineral mud with healing properties. According to the above classification, Kazakhstan muds are divided into the following types:

1. Inorganic mud (mud of salt lakes, springs).

2. The organic mud is very rare in Kazakhstan (Ortaderesen deposit in the north of Lake Balkhash).

Most of the existing stocks of medical resources are not currently used; the proportion of operating medical resources is a smaller part of the balneological potential.

Tourism requires and uses a geographical space. This space has a physical substrate, the natural environment, consisting of physical and biological elements (its climate, geology, topography, flora and fauna, etc.) and also has elements created by human activities. This geographical space (and its constituent elements, including climate) can act simultaneously as a factor influencing the location of tourism, as a resource supporting a wide range of activities, and as an attraction in its own right. Climate is an important criterion for locating tourism centers, helping to determine how an area is to be used. However, climate is only important for locating tourism centers when the territorial scale of the phenomenon or the analysis is small (Martin, 2005).

Determination of the prospects of medical health tourism development is based on a comprehensive analysis of the medical and health subsystem of the recreational potential. Estimation of recreational resources health tourism is a necessary prerequisite for the rationalization of natural resources and development of the resort and tourist complex. A complex evaluation of medical health tourism potential elements is advantageously carried out in the framework of geo-environmental analysis, interdisciplinary nature which on the one hand allows evaluating the natural components of the territory; on the other hand it provides the social and economic rationale for the development of medical health tourism industry.

The development of medical health tourism in Kazakhstan is relevant because of the high degree of morbidity and lower life expectancy of citizens, as well as a lower standard of living compared with the developed countries. In order to improve the national health system it is necessary to develop a sanatorium industry along with medical. The relevance of the research topic is determined by the need of theoretically substantiated development, allowing identifying the most promising territory for the development of medical health tourism, as well as giving practical suggestions for significant improvement of the industry in Kazakhstan.

Aim of the Study

The purpose of the study is to estimate the suitability of mineral resources of Kazakhstan for the development of medical health tourism, as well as to

determine hydro mineral areas with high natural recreational potential, but with a low level of exploration, thus identifying the most promising areas for the development of medical health tourism. In order to achieve this goal, first of all, one must make the zoning of Kazakhstan on the location of hydro mineral resources, and then group by areas of quantitative and qualitative characteristics. The same grouping should be held on the degree of development of hydro mineral areas, that is, by the presence of spa facilities in these areas. Next, one needs to make a comparative analysis and identify the most promising areas for the development of medical health tourism.

Methods and Materials

Theoretical and methodological basis of scientific research is formed by the works of domestic and foreign experts in the field of medical health tourism, as well as the existing statistical reporting and legislative, regulatory and legal framework governing the activity of sanatorium establishments of Kazakhstan in modern conditions. The study used the methods of analysis of scientific literature, statistical methods, as well as applied logic integrated approaches to the study of issues of medical and health industry. The objects of research are natural recreational resources, as well as sanatorium-and-spa institutions in Kazakhstan. This paper presents the results of a study on the evaluation of natural recreational resources of the country for the development of medical health tourism. Suggestions for the development of the most promising areas for hydro medical health tourism in Kazakhstan are made on the basis of the identified results.

For a comprehensive evaluation 20 hydro areas (Mangystau-Ustyurt, Zhaiyk-Aralsor, Inder-Emba, Elek-Shalkar, Tobol, Ishim, Shortandy-Yereimentau, Karkaraly-Bayanauyl, Ulytau-Atasu, Yertys-Kulyndy, Altai, Sauyr Tarbagatai, Balkhash-Alakol, Zhetysu Alatau, Ile, Northern Tien Shan, Talas-Ogem, Shu-Sarysu, Keles-Shardara, Syr Darya-Aral) were identified.

The authors of this work also used the scoring assessment methodology based on defining and limiting parameters, taking into account the relationship of certain natural elements. The distribution on points was made in accordance with the criteria that are shown in Table 1.

Table 1. Criteria for the point assessment of recreational resources

Points	Mineral healing resources	Climatic resources	The overall average score on the	Infrastructure

	The number of mineral water deposit	The total supply of mineral water, m3 / day	The number of field of therapeutic muds	The duration of the period when the average daily temperature exceeds 10^0C, day	**assessment of natural resources**		The number of beds in sanatoria and dispensaries
0	–	< 700	–	< 140	0 – 1,1	low	< 500
1	1-3	700-2000	1-3	140-179	1,2 – 1,5	medium	500-999
2	4-6	2000-6000	4-6	180-200	1,6 – 1,9	high	1000-3000
3	> 6	>6000	> 6	> 200	2 – 3	Very high	>3000
Note: Made by the author							

World Trends in Medical Health Tourism

Modern medical health tourism is dynamically developing in almost all countries around the world with the recreational conditions available for it. According to the results of research consulting firm McKinsey & Company (2013), the annual turnover of funds in this area in 2012 grew to $ 100 billion, and the total number of customers amounted to approximately 800 million people.

In 2012, the part of medical health tourism was 1.8% from global GDP. According to a report presented at the Global Wellness Tourism Congress, the tourism sector will grow on average by 9.9% per year, which is almost two times higher than the tourism industry as a whole, and will reach $ 678.5 billion by 2017 that is 16% of the total income from tourism. Nowadays the global medical health tourism centers are situated in the Asia-Pacific Region (58 countries and territories). According to data presented at the Global Spa & Wellness Summit, by 2017, 50% of the medical health tourism market will be in the Middle East, Asia and Latin America. Such countries as India, Hungary, Mexico, Singapore, Thailand, Barbados, Brazil, Israel, South Korea and Turkey are among the ten countries that are leading in the number of tourists from medical and health sector. European and North American residents are the main consumers of medical tourism services. Japan, USA, Germany, France and Austria take 63% of the world market in this segment (Medical Travel Today, 2013).

Czech Republic tops the list of European countries that has the largest number of tourist arrivals in the spa treatment. According to the National Tourism Administration of Czech Republic, each year about 50 thousand people from more than 70 countries visit this country for treatment and about 2 million visit it for excursions. Karlovy Vary is the largest and the most famous Czech health resort. The resort tourists are not only treated there, but also get

acquainted with the rich history and culture of the city. The famous resorts of Franzensbad and Marienbad are situated not far from Karlovy Vary.

Recently Hungary has become a strong competitor of the Czech Republic in the European market of medical health tourism. It is called the country of thermal baths. 22 towns and 62 villages have been officially recognized medical sources. Tourist flows mainly flock in two directions: in Budapest and the Lake Balaton.

Besides the Czech Republic, Hungary and Slovakia, medical health tourism is increasingly developing in Bulgaria, Romania, the former Yugoslav Republics. These countries have access to the warm seas and offer wellness programs at the seaside resorts of climate types. Slovenia is also widely known in the world for its therapeutic spas.

There are more than 300 resorts in Germany. There are about 50 resorts only in Bavaria. The Baden-Württemberg Land has more than 60 resorts with mineral springs and microclimate. The most famous resort is Baden-Baden with 20 hot springs. There are 32 resorts in Hesse and there are 26 thermal springs in the world famous Wiesbaden, which make up its wealth. There are a lot of climatic health resorts in Germany, which are dominated by mountain and forest: Quedlinburg, Oberhof, Fussen, as well as the seaside, located in the North Sea or in the German Baltic States: Wangerooge, Lady, Travemünde and others. Every year, more than 1 million people visit German resorts. Prevention and rehabilitation programs offered by German climatic and balneological resorts are popular among residents of Austria, France, Belgium, Luxembourg, the United States and Canada.

Switzerland is slightly inferior to Germany and Austria by the number of resorts, but the direction of medical health tourism is not less popular here. However, the spa care in this country is only available for wealthy clients. Balneological health resort of Baden, Bad Ragan and mountain climate resort of Arosa, Davos, St. Moritz, and Zermatt enjoy deserved fame. Switzerland was among the first to practice herbal medicine. There is situated the large Phytotherapy center of Crans Montana.

Southern Europe is represented mainly by Italy in the medical health tourism market. Its balneological resorts mainly concentrate in the north-east of the country and the island of Ischia that is not only rich in thermal waters, but curative mud. The best known are: Cervia, Punta Marina Terme, Rimini and Riccione that are located on the Adriatic coast. The resorts near Venice, especially Abano Terme, enjoy a big fame.

Spain, Portugal, Greece attract tourists with climatic seaside resorts, which are better known as the recreation and entertainment areas. Specialized spa resorts in these countries are few and they are only a few percent of their total number.

In the Northern Europe medical health tourism is underdeveloped. There are seaside climatic health resorts of Denmark and the Netherlands and lakeside resorts in Norway, Finland and Sweden, but they have predominantly an internal value (Aleksandrova, 2002).

The market leader of medical health tourism in the Americas is the United States of America. The achievements of this country in the field of health are known worldwide. Clinical, medical and health centers are equipped with the latest science and technology, and it should be noted the high level of medical personnel. However, due to the fact that in the USA medical services

are expensive, more and more Americans who are paying attention to their health and prevention of various diseases prefer rehabilitation at health resorts. Most North American resorts are balneological, which are situated in many states: Mammoth Springs, Hot Springs, Heber Springs. Mostly Americans visit them. Vacation in the coastal climatic resorts is in a great demand: Miami Beach, Long Beach, a suburb of New York City, San Diego and Santa Cruz in California, Hatteras in North Carolina and Miami Beach, Florida. There are lakeside resorts, but Americans prefer to relax and be treated at the Central American resorts, Barbados, Cuba and the Bahamas (Medical tourism association, 2016).

In the Middle East, flows of tourists to the health-improving goals arrive to Israel to the Dead Sea. The resorts of Ein Bukek, Ein Bokek, Neve Zohar, Ein Gedi are situated on the coast. Besides the Dead Sea, the healing resorts of Israel are located in the mountains. A lot of foreigners also visit Israel for treatment at the world-renowned cardiology, oncology and andrology clinics, which are situated mostly in Tel Aviv and Jerusalem. The level of medicine is not worse than in Germany and the USA. However, treatment is much cheaper.

The volume of the Asian medical health tourism market in 2013 amounted to $ 8.5 billion. In the last 10 years this trend is developing rapidly in India and Southeast Asia. Thailand, India and Singapore control 80% market share in this segment. India is a leader in medical health tourism and also offers the cheapest services in this area, but with a high level of training, quality equipment, and a variety of treatments. India's market share in the medical health tourism in Asia is 25%. Singapore takes the first place among the countries in Asia and the sixth place in the global rankings of quality facilities, providing medical and health services. Medical health tourism in Thailand attracts medical infrastructure that focuses on cosmetic surgery. The course of treatment in these countries is several times cheaper than in Europe and the USA (Efimenko, 2012).

Australia has all the natural resources which are necessary for medical health tourism. Large spa resorts Daylesford, Mork, Springwood are concentrated in the south-east of the continent. Maritime climatic resorts of Gold Coast, Daydream Island, Cairns are considered an ideal place for rest and treatment. However, the remoteness of Australia from Europe and the United States prevents an increase in inbound tourism flows. Therefore, the Australian resorts, as well as the USA, focus mainly on the reception of domestic tourists.

Medical health tourism begins to gain strength in Africa. There are seaside climatic health resorts on the north coast: Hurghada, Sharm el-Sheikh in Egypt and Nuweiba, Dahab and Taba; Tangier, Agadir, Al Hoceima, Mohammedia in Morocco and others. There are seaside resorts of Kenya on the coast of the Indian Ocean: Malindi, Mombasa, Kilifi, Kipin, Shimoni. There are several resorts in South Africa. The rest of the African countries are not rich in natural resources for the creation of therapeutic resorts, and have no means to do so (Aleksandrova, 2002).

In Kazakhstan medical and health tourism is in its infancy, despite the fact that the country has huge reserves of curative factors. A lot of sanatorium-and-spa institutions were built during the Soviet times. Borovoye, Saryagash and Almaty are the most famous resorts. However, the demand for wellness holidays in the Republic of Kazakhstan is at a low level, and this is primarily due to the fact that the culture of a healthy lifestyle is not formed, and

information about the possibilities of such a holiday is not enough. The main competitors of the Kazakh sanatorium-and-spa institutions are resorts of the near abroad and far abroad that offer consumers services at a higher level.

Results and Discussion

20 hydro areas for comparative assessment of their attractiveness and recreational possibilities of development of medical health tourism were marked out on the basis of the analysis of natural recreational resources. These areas include areas which have natural healing factors and unique landscape climatic conditions. The level of their recreational value is caused by the natural and socio-economic factors (the presence of mineral springs and therapeutic mud deposits, climatic resources, and infrastructure).

The comprehensive evaluation results are shown in Table 2.

Table 2. Evaluation of recreational potential of hydro mineral areas of Kazakhstan

№	Hydro mineral areas			Mineral curative resources			Climatic resources	Using maral and beekeeping farms for medical purposes	The overall average score on the assessment of natural resources	Infrastructure
				The amount of mineral water deposit	The total amount of mineral water	The amount of therapeutic muds deposits	The duration of the period when the average daily temperature exceeds 10⁰C			The amount of beds in sanatoria and dispensaries
I	Mangystau-Ustyurt			2	2	1	2	-	1,75	1
II	Zhaiyk-Yrgyz	II A	Zhaiyk-Aralsor	1	0	1	1	-	0,75	1
		II B	Inder-Emba	1	1	1	2	-	1,25	1
		II	El	1	1	0	1	-	0,75	1

		C	ek-Shalkar							
III	Yesil-Tobol	IIIA	Tobol	3	1	0	1	-	1,25	2
		IIIB	Yesil	2	2	3	0	-	1,75	1
IV	Saryarka	IVA	Yereimentau	3	0	3	1	2	2,25	3
		IVB	Karkaralı Bayanauls ky	2	1	1	1	-	1,25	2
		IVC	Ulytau-Atasu	2	1	0	1	-	1	0
V	Irtysh-Kulyndy			2	1	1	1	-	1,25	2
VI	Altai-Tarbagatai	VIA	Altai	2	1	0	1	3	1,75	2
		VIB	Saur Tarbagatai	1	1	1	1	-	1	1
VII	Balkhash-Alakol			2	0	3	2	-	1,75	1
VIII	Zhetysu Alatau			1	0	1	1	-	0,75	1
IX	Ile			2	3	1	2	-	2	1
X	Tianshan	XA	Nort	3	3	1	1	1	2,25	3

			hern Tien-Shan							
		X B	Talas-Ogem	1	2	0	2	-	1,25	3
X I	Shu-Sirdariya	XI A	Shu-Sarysu	0	0	1	2	-	0,75	0
		XI B	Keles-Sharda ra	3	2	1	3	-	2,25	2
		XI C	Syr Darya-Aral	1	1	1	2	-	1,25	2
Note: Made by the author based on the scoring methodology for assessing										

According to the total score, all hydro mineral areas are divided into several groups, recreational attractiveness; boundaries are defined, depending on the quantity and quality of recreational resources. As a result of the conducted analysis, hydro areas with the recreational potential of varying degrees were marked out (Figure 1).

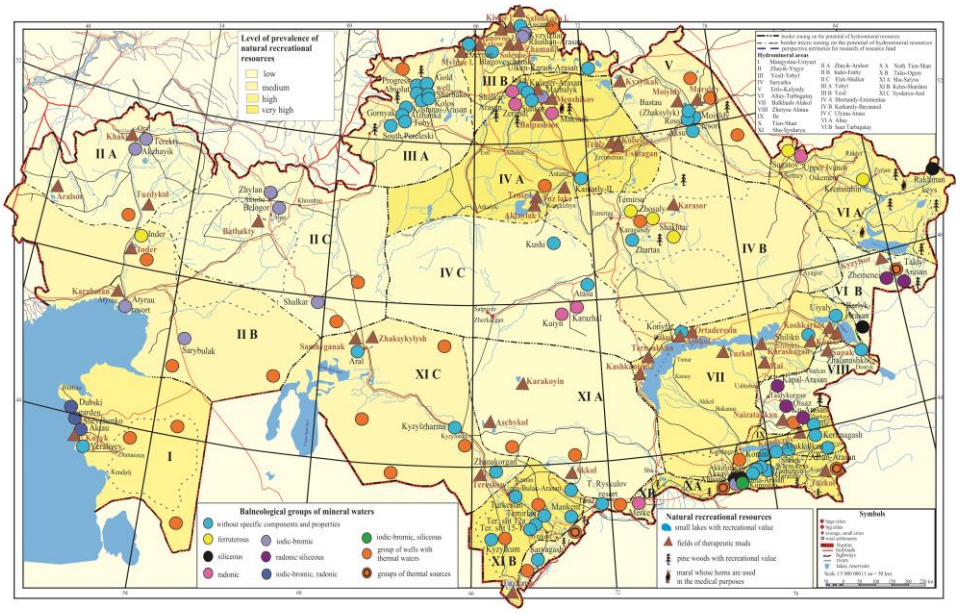

Figure 1. Schematic map of natural recreational resources of Kazakhstan. Note: Made by the author on the basis of sources (Veselov, 1999; The National Atlas of the Republic of Kazakhstan, 2010).

Hydro mineral areas with very high natural recreational potential are characterized by a wide range of medical resources and relatively favorable climatic comfort. These include the following areas: Shortandy-Yereimentau, Ile, Northern Tien Shan and Keles-Shardara. The quantitative and qualitative characteristics of these hydro mineral areas are presented in Table 3.

Table 3. Characteristics of areas with a very high natural recreational potential

№	Area	The amount of mineral deposit	The total supply of mineral water, m3 / day	Balneological groups of mineral water	The amount of field of therapeutic muds	The duration of the period when the average daily temperature exceeds 10^0C, day
IV A	Shortandy-Yereimentau	8	496	without specific components and properties, and radon iodide-bromine	9	140
IX	Ile	6	8130	without specific components and properties	1	185

X A	Northern Tien Shan	8	6552	without specific components and properties and siliceous iodide-bromine	1	160
XI B	Keles-Shardara	7	4616	without specific components and properties	1	205
Note: made by the author on the basis of sources (Veselov, 1999; The National Atlas of the Republic of Kazakhstan, 2010).						

The group that determines high levels of natural recreational potential consists of Mangystau-Ustyurt, Esil, Altai and Balkhash-Alakol areas. Quantitative and qualitative characteristics of these hydro areas are presented in Table 4.

Table 4. Characteristic of areas with high natural recreational potential

№	District	The amount of mineral water deposits	The total stock of mineral water, m3 / day	Balneological groups of mineral waters	The amount of muds therapeutic deposits	The duration of the period when the average daily temperature is more than 10^0C, day
I	Mangystau-Ustyurt	4	3408	iodine and bromine, radon, without specific components and properties	1	195
III B	Esil	6	4045	without specific components and properties, iodine and bromine	7	135
VI A	Altai	4	1250	siliceous, ferruginous and radon	-	140
VI I	Balkhash-Alakol	4	612	without specific components and properties	10	180
Note: Compiled by the author based on sources (Veselov, 1999; The National Atlas of the Republic of Kazakhstan, 2010).						

Inder-Emba, Tobol, Karkaraly-Bayanaul, Irtysh-Kulyndy, Talas-Ogem and Syr Darya-Aral belong to the hydro mineral areas with an average natural

recreational potential level. Quantitative and qualitative characteristics of these hydro areas are presented in the table 5.

Table 5. Characteristic of areas with average natural recreational potential

№	District	The amount of mineral water deposits	The total stock of mineral water, m3 / day	Balneological groups of mineral waters	The amount of therapeutic muds deposits	The duration of the period when the average daily temperature is more than 10C per day
II Б	Inder-Emba	3	1663	bromine, ferrous	2	185
III А	Tobol	10	1679	without specific components and properties	-	150
IV В	Karkaraly-Bayanaul	4	716	ferrous, without specific components and properties	1	150
V	Irtysh-Kulyndy	4	1710	without specific components and properties	1	145
X В	Talas-Ogem	3	2420	radon, without specific components and properties	-	190
XI С	Syr Darya-Aral	3	1780	without specific components and properties	3	180
Note: Compiled by the author based on sources (Veselov, 1999; The National Atlas of the Republic of Kazakhstan, 2010).						

Zhaiyk-Aralsor, Elek-Shalkar, Ulytau-Atasu, Sauyr-Tarbagatay, Zhetysu Alatau, Shu-Sarysu belong to the hydro mineral areas with a low level of natural recreational potential. Quantitative and qualitative characteristics of these hydro areas are presented in Table 6.

Table 6. Characteristic of areas with low natural recreational potential

№	District	The amount of mineral water deposits	The total stock of mineral water, m3 / day	Balneological groups of mineral waters	The amount of therapeutic muds deposits	The duration of the period when the average daily temperature is more than 10^0C, day
II A	Zhaiyk-Aralsor	2	418	iodine and bromine	3	165
II C	Elek-Shalkar	3	1194	iodine and bromine	1	160
IV C	Ulytau-Atasu	4	950	without specific components and properties, radon	-	160
VI B	Sauyr-Tarbagatay	3	735	radon, siliceous	1	170
VII	Zhetysu Alatau	3	446	radon, siliceous	2	160
XI A	Shu-Sarysu	-	-	-	3	185
Note: Compiled by the author based on sources (Veselov, 1999; The National Atlas of the Republic of Kazakhstan, 2010).						

Marking heterogeneous objects in points is always a purely notional process, but still it allows creating an overall picture of the recreational potential in a territory and helps to provide further exploration of these territories. All hydro-mineral regions of Kazakhstan have a certain recreational value for the development of medical health tourism on the local, regional, and regional levels. Most of the existing stocks of medical resources are not currently used; the proportion of operated medical resources is a smaller part of the whole balneological potential.

Recreation development of these regions depends on features of socio-cultural and economic development of the territory, and the recreational level is determined by a variety of different factors. Point type scoring was used in assessing the socio-economic development of hydro-mineral regions. According to the total score hydro-mineral areas are divided into 4 groups according to the level of territory development and medical health tourism equipment (see Figure 2).

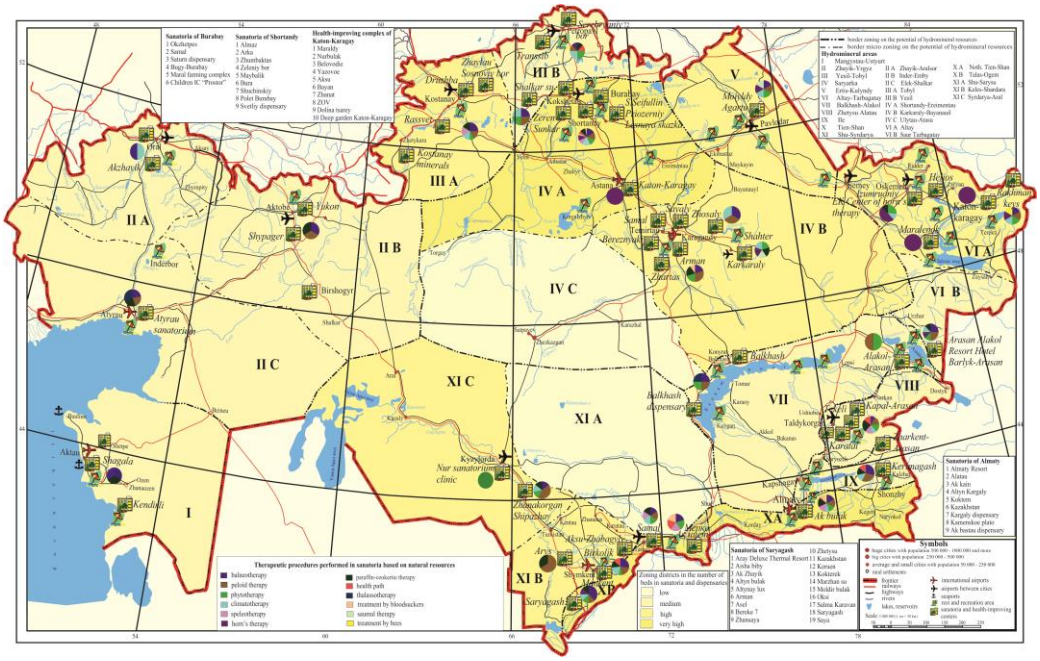

Figure 2. A schematic map of recreational social and economic resources of Kazakhstan. Note: Compiled by the author based on the source (The National Atlas of the Republic of Kazakhstan, 2010) and data from health centers sites.

The regions of Shortandy-Yereimentau, Northern Tien Shan and Talas-Ogem belong to hydro mineral areas with very high level of recreational potential according to the number of places in sanatoria and dispensaries. Quantitative and qualitative characteristics of these hydro areas are presented in Table 7.

Table 7. Characteristics of socio-economic recreational resources areas with very high potential

№	District	Number of beds in sanatoria and dispensaries	Types of procedures carried out in sanatoriums and dispensaries based on natural therapeutic resources										
			balneotherap	peloidotherap	phytotherapy	climatotherap	speleotherapy	pantotheraph	saumal	apiotherapy	paraffin-ozokeritother	terrenkur	girudoterapiy
IV A	Shortandy-Yereimentau	1722	+	+	+	+	+	+	+	+	+	+	
X A	Northern Tien Shan	1706	+	+	+	+	+	+	+	+	+	+	+

X B	Talas-Ogem	3387	+	+	+	+	+	+			+	+	+
Note: Compiled by the author based on data from the sites of the Agency of Statistics of the RK and sanatoriums (Agency of Statistics of the Republic of Kazakhstan, 2015-2016).													

The regions of Tobol, Irtysh-Kulyndy, Altai, Karkaraly-Bayanaul, Keles-Shardara and Syr Darya-Aral belong to hydro mineral areas with high level of recreational potential. Quantitative and qualitative characteristics of these hydro areas are presented in Table 8.

Table 8. Characteristics of socio-economic recreational resources areas with high potential

№	District	Number of beds in sanatoria and dispensaries	Types of procedures carried out in sanatoriums and dispensaries based on natural therapeutic resources										
			balneotherapy	peloidotherapy	phytotherapy	climatotherapy	speleotherapy	pantotheraphy	saumal therapy	apiotherapy	paraffin-ozokeritotherapy	terrenkur	girudoterapiya
III A	Tobol	1119	+	+	+	+	+				+		
V	Irtysh-Kulyndy	910	+	+	+	+		+	+				
VI A	Altai	798	+	+	+	+		+		+	+		
IV B	Karkaraly-Bayanaul	1255	+	+	+	+		+	+		+		+
XI B	Keles-Shardara	720	+	+	+	+					+	+	
XI C	Syr Darya-Aral	783	+	+	+	+					+		
Note: Compiled by the author based on data from the sites of the Agency of Statistics of the RK and sanatoriums (Agency of Statistics of the Republic of Kazakhstan, 2015-2016).													

The regions of Mangystau-Ustyurt, Zhaiyk-Aralsor, Inder-Emba, Shalkar-Elek, Yesil, Sauyr-Tarbagatay, Ili, Balkhash-Alakol and Zhetysu Alatau belong to hydro mineral areas with average level of recreational potential. Quantitative and qualitative characteristics of these hydro areas are presented in Table 9.

Table 9. Characteristics of socio-economic, recreational resources areas with average potential

№	District	Number of beds in sanatoria and dispensaries	Types of procedures carried out in sanatoriums and dispensaries based on natural therapeutic resources								
			balneotherapy	peloidotherapy	phytotherapy	climatotherapy	speleotherapy	pantotheraphy	paraffin-ozokeritothera	terrenkur	girudoterapiya
I	Mangystau-Ustyurt	257	+						+		+
II A	Zhaiyk-Aralsor	474	+			+					
II B	Inder-Emba	255	+	+					+		+
II C	Shalkar-Elek	490	+	+					+		
III B	Yesil	148	+	+	+	+			+	+	
VI B	Sauyr-Tarbagatay	650	+	+	+	+		+	+		
VII	Balkhash-Alakol	475	+	+	+				+		+
IX	Ili	380	+	+		+			+	+	
VIII	Zhetysu Alatau	270	+	+	+	+	+		+	+	
Note: Compiled by the author based on data from the sites of the Agency of Statistics of the RK and sanatoriums (Agency of Statistics of the Republic of Kazakhstan, 2015-2016).											

The regions of Ulytau-Atasu (IV C) and Shu-Sarysu (XI A) belong to hydro mineral areas with low level of recreational potential.

According to this information, some hydro mineral districts do not fully use their natural high recreational potential that is why they belong to the average cultivated areas. These include the areas of Ile, Yesil, Balkhash-Alakol and Mangystau-Ustyurt. However, hydro mineral areas of Tobol, Yertys-Kulyndy, Syr Darya-Aral, Karkaraly-Bayanauyl, Talas-Ogem belong to areas with an average natural recreational potential, but they have a high cultivating level. Northern Tien Shan and Shortandy-Yereimentau belong to areas with very high natural recreational potential and level of its use. Hydro mineral areas Ulytau-Atasu and Shu-Sarysu are areas with low natural potential and level of exploration.

The state needs to develop average areas with high level of natural recreational potential because these areas have the biggest perspective. Developing of these areas will help to upgrade the sanatorium and spa industry in the country and medical health tourism in general. The biggest wealth of any country is the health of its people and developing of medical health tourism in Kazakhstan will improve the living standards of its people.

As a conclusion for all that was mentioned we can distinguish regions with the most perspective hydro mineral areas which are Ili, Balkhash-Alakol, Yesil and Mangystau-Ustyurt. These regions have an average level of usage.

The region of Ile (IX) has the biggest potential stock of mineral waters; richness of this deposit is 8130 m^3/day. A very big part of this hydro-mineral district belongs to the Karadala cluster according to a master plan for tourism development in Almaty region. As part of the master plan it is planned to survey and assess the balneological resources, creation of new hospitals and improving the quality of existing infrastructure, training of the local population. Further there is an assessment of balneological resources in Ili hydro mineral area.

Mud of Arasan Kundyzdy sor belongs to highly alkaline low-sulphide muds, which meets all the requirements of medicinal peloids used for spa procedures with their preliminary preparation. Kundyzdy muds may be used with pelotherapy in sanatoriums of Kerimagash and Zharkent-Arasan (Kan, 2015).

Weakly mineralized slightly alkaline sulfate-bicarbonate-sodium chloride hyperthermal water of the siliceous source of Kerimagash is used in the balneotherapy sanatorium of Kerimagash located in Almaty region. It is used for the treatment of diseases of the circulatory system, musculoskeletal system, skin and mouth, respiratory diseases, digestive, nervous and urinary systems, gynecological diseases (Kerimagash sanatorium, 2016).

Alban-Arasan is the largest source, the richness of this deposit is 3456 m3 / day. Water source is characterized as slightly mineralized, picker, chloride-bicarbonate-sulfate sodium composition, slightly alkaline and contains a high content of orthosilicic acid. It is recommended for use inside only with digestive diseases, chronic occupational poisoning by heavy metals, and for external use in the form of baths - for the treatment of the nervous system, the musculoskeletal system, skin and other diseases. Water of the Alban-Arasan source is close in composition to "Samarkand", "Tashkent" (Uzbekistan), "Novograd Volyn" (Ukraine), "Golden Well" (Russia), "Saryagash" and "Shymkent" (Kazakhstan) (Committee of Geology and Subsoil Use of the Republic of Kazakhstan, 2016). Because on the basis of this source there are no existing spa facilities, according to the master plan for tourism development in Almaty region, it is planned to construct a sanatorium complex “Alban-Arasan” for 150 seats by 2018 (Tourism Department of Almaty region, 2016).

We also propose to build spa facilities on the basis of Ayakkalkan mineral springs, and Shelek Coram, which are nitrogen, sulfate-chloride calcium-sodium with low salinity, low alkaline without specific components and properties.

Thermal waters of Zharkent artesian basin are based on the high temperature at wellhead (above 800C) and they are high-graded. The biggest interest comes from wells located in the hole of Karadala Uygur region. The bulk of the accommodation facilities in the area are recreation areas. From a large number of recreational areas it is possible to mark out just a few ones, which provided living conditions and services that can correspond to international standards. There are no medical professionals, who can competently organize the process of treatment and rehabilitation for clients in recreation areas. It is necessary to attract balneology institutes to study the composition and operation of mineral water per person. In this area there is the possibility of developing tours to Charyn Canyon, in Ash grove, horseback riding along the northern slopes of the ridge Ketmen, hunting and fishing on the coast of the Ili River, rafting on the rivers Charyn and Ili and more. The development of "Horgos" complex will make possible the development of sanatorium branch with shopping. Sanatoria which are located in this area must expand the range of

services, establish cooperation with tour operators and Almaty region, to develop specific proposals for treatment and rehabilitation. All spa facilities must be as comfortable as possible for the customer, which is why it is necessary to equip their infrastructure. This will enable customers to extend the residence time in sanatoriums and recreation areas, as well as to attract new tourists.

There are 4 sources of mineral waters and 10 therapeutic muds deposits on the territory of the hydro mineral area of Balkhash-Alakol (VII), and the coasts of Balkhash Lake and Alakol Lake occupy a large part of its territory. This is due to high natural recreational potential of the hydro mineral area. Mud deposits of Ortaderesen, Ashkol, Teris Akkan and Kashkan Teniz and a source of mineral water are used for Konyrat pelotherapy in sanatoriums and dispensaries in Balkhash. Mud of Ortaderesen is organic and by composition is similar to mud of Gab Lake in Karelia, as well as silt mud of Peter I pond in Lipetsk.

The main deposits of therapeutic mud on the territory of Almaty region are common in small lakes and salt marsh estuary on the coast of Balkhash Lake. The most promising among them is Karashagan deposit. By composition, its peloids are sulfate-sodium-calcium-magnesium silt curative mud. Physical and chemical properties comply with regulatory parameters of therapeutic mud that is used in the spas. There are also other deposits of therapeutic mud near this deposit - Ray and Tuzkol. Local scientists conducted the study of physical and chemical composition of the sludge and identified their medical properties. In this regard, we believe that it is necessary to build mud baths on the basis of therapeutic muds deposits.

Sources of mineral waters Uyaly, Zhalanashkol, Shilikty and curative mud deposits and Koshkarkol Shilikty also don't have spa facilities, people are taking treatment in nature.

The deposit of therapeutic mud and brine of Kossor was appeared as a result of evaporation of a shallow lagoon lakes located near the southern shores of Lake Alakol. Mineralization in the mud solution of sludge sulphide mud is in the range of 0.01 g/l to 400 g/l or more (Dzhetimov et al., 2014). Brine, like mud, is widely used for medicinal purposes, often in the form of external use (general and local solid and movable baths). Therapeutic mud of Kossor deposits is used in mud therapy in the treatment and wellness center Alakol-Arasan that has been working since 2014.

Some areas of hydro mineral Alakol Balkhash district are part of the Alakol-Zhetysu and the Eastern Balkhash and Kapshagai clusters. As part of the cluster it is currently being built by health institutions on the shores of Lake Alakol. In addition to medical health tourism, coastal, educational and sport tourism are also included in the most promising directions in this area.

On the territory of the hydro mineral area Yesil (III B) there are 6 mineral springs and 7 therapeutic mud deposits. Most common is the iodide-bromine mineral water and water without specific components and properties. The total debit of all sources is 4045 m3 / day. These reserves are more than enough for the functioning of the new spa facilities. Therapeutic mud of the North-Kazakhstan region is represented by fine lacustrine silt sulphide of various capacities, have balneological value, sapropel, peat mud. The deposits of sulfide mineral mud are timed to lakes Jaman, Snejinka (Krivoe), Stanovoe, Solenoe, Kisloe and Safonkovo. The district of Jaman Lake stood for long-term construction of a sanatorium for 500 places in 1976-1990. The proximity of the

deposit to the Jaman-hill requires a radon rendering in certain doses some therapeutic effect, but it requires a special study. Therapeutic mud of Solenoe Lake and Kisloe Lake which are analogues of known deposits of Medvejie Lake (Kurgan region of Russia), Mylnoe (Kostanai Region of Kazakhstan) (Fomin et al., 2012). Therapeutic mud can be used for the treatment of chronic diseases of the musculoskeletal system, peripheral and central nervous system, the peripheral blood vessels, digestive and respiratory (except tuberculosis), metabolic disorders, skin diseases, female genital organs of inflammatory and functional character (Mineral resources of the North-Kazakhstan Region, 2002). Currently, based on the mineral resources of Esil hydro district there are sanatoriums of Serebryany Bor and Transsib. We propose to build several mud baths on the basis of therapeutic muds of the lakes of the Esil hydro mineral district.

The hydro mineral region of Mangystau-Ustyurt (I) has 4 mineral springs with a total debit of 3408 m3 / day, and 1 deposit of curative mud, and in the area there are several thermal water wells. There are sources like Matsestinsky and some in Feodosia. Mangystau Peninsula opened a rich set of medical sources, up to thermal, with the temperature approaching the unique Kamchatka. Water from the wells in the field №21 Kuyulus in Soviet times was examined and it was recognized that by the chemical composition it corresponds to "Essentuki 17". Sources of Sad Dubskogo, Aktau and Shevchenko include iodine-bromine and radon mineral waters. Mineralized chloride-sodium sulfate, high thermal Yeraliyev source refers to the waters without specific components and properties. Chagall and Kendirli resort operate on the basis of these mineral springs. However, the level of development of this area is very low, in this connection we offer to build medical and health centers specializing in thalassotherapy and balneotherapy on the basis of mineral springs. Near the village of Kuryk there are thermal mineral springs and healing mud deposits. A small medical center is built there, but it does not satisfy all the needs of travelers who want to be treated and to have a rest.

The territory of this hydro area is promising for the study of natural resource fund. For the development of medical health tourism in the region it is necessary to conduct a large-scale research work, to attract investors and develop the infrastructure.

Conclusions

In conclusion we can note that some hydro mineral regions of Kazakhstan do not fully use their natural high recreational potential, which is why they belong to average cultivated areas. These include such areas as: Ili, Yesil, Balkhash-Alakol and Mangystau-Ustyurt. However, hydro mineral areas such as: Tobol, Yertys-Kulyndy, Syr Darya-Aral, Karkaraly-Bayanauyl and Talas-Ogem apply to areas with an average natural recreational potential, but the level of their usage is highest. Districts with very high natural recreational potential and level of usage include such areas as: Northern Tien Shan and Shortandy-Yereimentau. Hydromineral areas Ulytau-Atasu and Shu-Sarysu have low natural potential and low level of exploration. You can highlight some of the most promising areas of hydro mineral deposits such as Ili, Balkhash-Alakol, Yesil and Mangystau-Ustyurt which belong to average cultivating level for further development.

This research work evaluated the suitability of natural recreational resources of Kazakhstan for the development of health tourism. Results of the study can be used by investors as well as government agencies for the development of sanatorium branch in a particular region. The main problems hindering the development of the industry in Kazakhstan are the lack of investors and the governmental support for the creation of new spa facilities in promising areas and for the improvement of the existing ones. However, the concept of development of the tourism industry of the Republic of Kazakhstan until 2020 notes the importance of the development of medical health tourism, and supposes some measures on this occasion. We present our proposals for the development of specific regions with a very high, but not used on the respective level, medical and wellness potential.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Aiman Yessengabylova is a PhD of the Tourism Department in L.N.Gumilev Eurasian National University, Astana, Kazakhstan.

Assem Bekbulatova is a Master of the Tourism Department in L.N.Gumilev Eurasian National University, Astana, Kazakhstan.

Sairan Suraganova is a PhD in Economics, Professor of the Tourism Department in L.N.Gumilev Eurasian National University, Astana, Kazakhstan.

Alken Bissekov reported by is a PhD in Economics, Associate Professor of the Tourism Department in L.N.Gumilev Eurasian National University, Astana, Kazakhstan.

Bekarshyn Zhumanova is an Associate Professor of the Management Department in Kazakh University of Economics, Finance and International Trade, Astana, Kazakhstan.

References

Agency of Statistics of the Republic of Kazakhstan. (2016). Direct access: http://www.stat.gov.kz/

Aleksandrova, A.Y. (2002). International tourism. Moscow: Aspekt Press.

Bender, T., Karagülle, Z., Balint, G.P., Gutenbrunner, C., Balint, P.V. & Sukenik, S. (2005). Hidrotherapy, balneotherapy, and spa treatment in pain management. *Rheumatology International, 25*(3), 220-224.

Committee of Geology and Subsoil Use of the Republic of Kazakhstan. (2016). Direct access: http://geology.gov.kz

Dzhetimov, M.A., Mazbayev, O.B., Asubayev, B.K., Yesengabylova, A. & Tokpanov, E.A. (2014). Physical and chemical microbiological analysis of the therapeutic mud of "Kossor" deposit of Alakol lake. *Life Science Journal, 11*(5), 217-221.

Efimenko, N.V. (2012).Medical and health tourism in Russia and abroad from the point of the resort science. *FGBU PGNIIK FMBA of Russia. Pyatigors. Resort Medicine, 3*, 51.

Fomin, I.A., Nazarova, T.V., & Mazhitova, G.Z. (2012). Therapeutic muds of the North-Kazakhstan Region. *Research in the Field of Natural Sciences, 6*.

Gomes, C., Carreterob, M.I., Pozoc, M., Maraverd, F., Cantistae, P., Armijod, F., Legidof, J.L., Teixeirag, F., Rautureauh, M. & Delgadoi, R. (2013). Peloids and pelotherapy:

Historical evolution, classification and glossary. *Applied Clay Science 75–76*, 28–38.

Gonzalez-Barreiro, C., Cancho-Grande, B., Araujo-Nespereira, P., Cid-Fernandez, J.A. & Simal-Gandara, J. (2009). Occurrence of soluble organic compounds in thermal waters by ion trap mass detection. *Chemosphere, 75*(1), 34–47.

Ikkos, A. (2002). *Health tourism: new challenge in tourism*. Greece: GBR Consulting.

Kan, S.M., Kalugin, O.A., Murtazin, E.Zh., Kurmangaliyeva, Sh.G. & Rysmendeeva, G.I. (2015). Curative mud of Arasan-Kundyzdy litter and some aspects of their genesis. *News of the National academy of sciences of the Republic of Kazakhstan. Series of geology and technical sciences, 3*(411), 69-78.

Kerimagash sanatorium. (2016). Direct access: http://kerimagash.kz/ru/node/35

Martin, B.G. (2005). Weather, climate and tourism. A Geographical Perspective. *Annals of Tourism Research, 32*(3), 571–591.

McKinsey & Company. (2016). Direct access: http://www.mckinsey.com/

Medical tourism association. (2016). Direct access: http://www.medicaltourismassociation.com/en/us-initiatives.html

Mineral resources of the North-Kazakhstan Region. (2002). Kostanay.

Nahrstedt, W. (2004). Wellness: A New Perspective for Leisure Centers, Health Tourism, and Spas in Europe on the Global Health Market. In: K. Weiermair & C. Mathies (Eds.). *The Tourism and Leisure Industry: Shaping the Future*. New York: Haworth Hospitality Press.

Nekipelova, O.M., Vlasov, V.G. & Luneva, T.G. (2013). Using of low mineralized and low sulphide sludge mud in the complex therapy of patients with psoriasis vulgaris and arthropathic psoriasis. *Far East Health, 4*, 53-57.

New Study Reveals Wellness Tourism. (2013). Medical Travel Today. Direct access: http://medicaltraveltoday.com/new-study-reveals-wellness-tourism-a-439-billion-market-representing-1-in-7-tourism-dollars/

Sydykov, Zh.S. et al. (1972). *Medicinal mineral waters of Kazakhstan*. Alma-Ata.

Terzis, N., Takvorian, M., Zaharis, D., Moumtzi, E., Roussos, N. & Patatoukas, D. (2014). Rehabilitation of patient with traumatic brain injury, femoral fracture and hip dislocation. *A case report. Annals of Physical and Rehabilitation Medicine, 57*(S1), 159–162.

The National Atlas of the Republic of Kazakhstan. (2010). Almaty.

Tourism Department of Almaty region. (2016). Direct access: http://turizm-zhetysu.gov.kz/?p=317

Veselov, V.V. et al. (1999). *Groundwater deposits in Kazakhstan*. Almaty.

Vetitnev, A.M. & Kuskov, A.S. (2010). *Medical tourism*. Moscow: Forum.

Vetitnev, A.M. (2011). On the relation between the concepts of "medical tourism" and "health resort business". *Resort Organizations: Management, Marketing, Economics, Finance, 3*, 11.