

Current state and development of the sanatoriums-health resorts potential of the Republic of Tatarstan

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Abstract

Aim. To analyze the current state of the sanatoriums-health resorts system of the Republic of Tatarstan and identify the demand by the population of sanatoriums-health resorts services for recreation and health promotion at the regional level.

Methods. To analyze the functioning of the sanatoriums-health resorts of the republic, we used data from the official website of the Federal State Statistics Service (2002–2018). We calculated the long-term mean values, standard deviation, growth rate, linear regression, the approximation coefficient in comparing the Republic of Tatarstan, Volga Federal District and the Russian Federation. The population proportion, which used the sanatoriums-health resorts services, bed provision per 10,000 population and bed turnover were calculated to assess the provision of the population with sanatorium-resort services. The study of the demand for sanatorium services by the population was carried out using a sociological survey.

Results. In the comparative analysis, it was found that the Republic of Tatarstan is the region with a developed, relatively stable sanatoriums-health resorts system. The increase in the number of beds in sanatoriums (from 23.86 beds per 10,000 population in 2002 to 24.94 in 2018) and bed turnover rate (from 12.84 in 2002 to 16.59 in 2018) during the studied period indicated the continuity between curative and restorative-rehabilitation medicine. An increase in the proportion (from 3.07% in 2002 to 4.15% in 2018) with an overall increase in the number of stayed people (1.39 times) indicated the interest of the population in rehabilitation treatment and recreation in regional sanatoriums-health resorts. As a result of the survey, a “portrait” of the modern consumer of sanatoriums-health resorts was drawn up, and priorities in sanatorium choosing were determined.

Conclusion. The Republic of Tatarstan belongs to the regions with a developed system of sanatoriums-health resorts and significant potential to its development, which is confirmed by the presence of natural healing factors, improved provision of sanatoriums-health resorts care and increasing demand of the population for services for rehabilitation treatment and recreation in regional sanatoriums.

Keywords: system of sanatoriums - health resorts, rehabilitation and recreation of the population.

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Background

Sanatorium and health resort areas are traditionally considered an important part of state policy—the health care system and the economy—as measures to create conditions for restorative treatment of patients. Preventive rehabilitation and recreation in sanatorium-type institutions can lead to a decrease in the incidence of diseases and an increase in the working abilities of citizens and, consequently, significantly save the patients’ financial resources.

Numerous scientific studies provide convincing evidence of the effectiveness of patient rehabilitation conducted in health resort institutions [1,2]. For example, A.N. Razumov states that “Patients who have passed the sanatorium stage of rehabilitation, in most cases return to work, their temporary and permanent disability is reduced by 2.5 times. The need for hospitalization is reduced by 2.4 times, the cost of treatment in polyclinics and hospitals is reduced by 3 times, and the damage to

production due to the incidence of workers and employees is reduced by 2.5 times. Payments for temporary disability are reduced by 2.2 times" [3].

Therefore, one of the areas identified in the "Strategy of the development of a sanatorium complex of the Russian Federation" approved by the Decree of the Russian Federation (RF) Government dated 26.11.2018 No. 2581-R is the increase of investment attractiveness of the sanatorium-resort complex (SCC) of the RF for the more active involvement of the population to rest and rehabilitate (if necessary) in local conditions [2]. This determines the background of this study.

The study aims to analyze the current state of the SCC of the Republic of Tatarstan (RT) and identify the demand for health resort services for rest and recreation at the regional level. To achieve this goal, we analyzed the indicators that characterize the state of the SCC to identify the most problematic factors and make management decisions that contribute to its development.

Material and methods

Data presented on the official website of the Federal state statistics service from 2002 to 2018 were used to analyze the functioning of the SCC of the Republic of Tatarstan (RT).

We analyzed data from the Volga Federal district (VFD) and RF for comparison. This was calculated from mean annual values, such as the error average value during the study period (17 years). Consequently, the rate of increase or decrease of each indicator was determined and a linear regression model was built by determining a coefficient of approximation.

We separately analyzed the distribution of health resort organizations bordering the RT. The following indicators were calculated to assess the availability of health resort services to the population:

- Percentage of the population who used health resort services;
- Provision of beds for 10,000 people;
- Turnover of the health resort bed.

To study the demand for health resort services by the population, an online survey was conducted using a specially developed questionnaire placed in the Google forms app <https://forms.gle/rnZck9oK Gdj6b51Q8>. The survey included 1,347 people (524 men and 823 women with an average age of 47.54 ± 8.32 years) living in the RT.

Results and discussion

RT is a part of VFD and borders with the Kirov, Ulyanovsk, Samara and Orenburg regions, Bashkortostan, Mari El, Udmurt Republic, and Chuvashia. The official website of the Federal Agency

for tourism of the Ministry of economic development of the RF indicates that RT is part of the territories with favorable climatic conditions to organize sanatorium-resort activities. The climatic conditions are continental, very dry, and with warm summers and not particularly cold winters; the average January temperature is -16°C and $+25^{\circ}\text{C}$ in July. The average precipitation ranges from 460 to 520 mm and 65%–75% of the annual precipitation occurs during the warm period ($> 0^{\circ}\text{C}$). Maximum precipitation falls in July (51–65 mm) and the minimum in February (21–27 mm) [4].

The variety of natural healing resources occurring in the region can be explained by the presence of balneological factors in the Republic (therapeutic mud and mineral waters) and a mild temperate continental climate [5,6]. According to the Ministry of ecology and natural resources of the RT, nowadays, 33 deposits of mineral drinks and medicinal waters have been explored on the territory with a total of 2734 m³/day of available reserves [7]. Several studies show that there are potential opportunities to provide mineral water reserves for medical, drinking, and balneological purposes in almost the entire Republic. This means that it is possible to organize medical and health facilities in new territories [6,8,9].

After analyzing the data from the official website of the Federal state statistics service, it can be argued that the RT belongs to the regions with a sufficiently developed SCC (Table 1).

The data presented in table 1 show a significant reduction in the number of health resorts both in the VFD and RF as a whole, with a 1.34 times decrease over the course of the study period. The reduction of health resorts in the RT is less expressed than in the VFD and RF. This can be regarded as a favorable trend and indicate the relative stability of the SCC in the RT over the studied period. In general, when assessing the dynamics of the number of places of health resorts, a negative trend was revealed, but over the past 5–6 years, there has been an increase in the number of places (Table 2).

According to the order of the Ministry of Health of the RF dated May 5th, 2016 No. 279n, the calculation of the norms of a resource provision of the population are recommended to take into account the standards of the volume of medical care per resident, established by the territorial program of state guarantees of free medical care to citizens [11]. Furthermore, regions can independently determine the possibility of applying standards depending on the characteristics of the gender and age composition of the population, the level and structure of morbidity (mortality) of the population, climatic and geographical features of the region, and transport accessibility, among others.

Table 1. Comparative assessment of the number of health resort organizations in the RT, VFD, and RF in 2002 and 2018 (average annual number) [10]

Region	Number of health resort organizations, average annual number			Rate of change (reduction; T_i) 2002/2018; equation of a regression
	Year 2002	Year 2018	$M \pm m$	
RT	57	47	50±4.69	$T_i=-17.54$ $y=-0.9162x+57.975$ $R^2=0.8334$
VFD	540	388	456.94±48.41	$T_i=-28.15$ $y=-9.45x+541.55$ $R^2=0.94$
RF	2347	1755	2014.71±179.14	$T_i=-33.73$ $y=-34.96x+2328.1$ $R^2=0.94$

Table 2. Comparative assessment of the number of places of health resort organizations of the RT, VFD, and RF in 2002 and 2018 (average annual number) [10]

Region	Number of places of health resort organizations, average annual number			Rate of change (reduction; T_i) 2002/2018; equation of a regression
	Year 2002	Year 2018	$M \pm m$	
RT	9019	9713	9347.88±25.70	$T_i=7.69$ $y=-27.887x+9598.9$ $R^2=0.1039$
VFD	80 211	73 228	77 780.12±196.35	$T_i=-8.71$ $y=-494.57x+82231$ $R^2=0.56$
RF	427 059	434 089	432 678.12±624.08	$T_i=1.65$ $y=-979.47x+416513$ $R^2=0.0022$

Based on existing data, the indicator of the provision of health resort beds in the RT, VFD, and RF was used (Fig. 1). Data analysis revealed that in 17 years the rate at which beds were provided increased by 4.53% in sanatorium resort organizations, while it increased by only 0.44 % in Russia and decreased by 3.73% in the VFD.

We believe it is necessary to note that the observed increase in RT in the number of places may be associated with increasing demand for SCC services (including the opportunity of providing health resort services exclusively for accommodation, recreation, and leisure). Most likely, the local administration decided to increase the number of beds based on the remaining organizations (206.66 beds per health resort in 2018 compared to 158.23 beds in 2002).

It is necessary to analyze the increase in the staff size of doctors and nurses, along with changes in the structure and volume of medical-diagnostic and rehabilitation work. However, such data is not presented on the official website [10] and we therefore plan to conduct further studies on this issue.

We also analyzed the distribution of the number of places of health resort organizations in the VFD with the allocation of regions bordering the RT (Fig.2) following the statistical accounting metho-

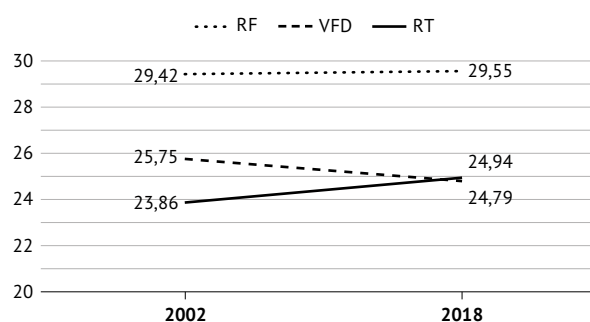


Fig. 1. Availability of beds in health resort organizations of the Republic of Tatarstan (RT), the Volga Federal district (VFD), and the Russian Federation (RF) (per 10,000 individuals; comparative assessment: data from 2002 and 2018)

dology proposed by M.M. Iliya (2018) [12]: the share was determined not by the number of SCC (since they differ significantly depending on the region and its natural-climatic and socio-economic conditions), but by the number of beds in them.

This distribution showed that along with the Republic of Bashkortostan and Samara oblast, the RT is a leader in the availability of places in health resorts, and if necessary (if there is a demand from the local population), these health resorts can accommodate everyone.

Table 3. Comparative assessment of the number of people placed in health resort organizations of the Republic of Tatarstan (RT), the Volga Federal district (VFD), and the Russian Federation (RF) in 2002 and 2018. (average annual number) [10]

Region	Number of people placed in health resort organizations, n			Rate of change (reduction; T_i) 2002/2018; equation of a regression
	Year 2002	Year 2018	$M \pm m$	
RT	115 847	161 424	149 246.12±925.97	$T_i=39.34$ $y=1509.7x+135659$ $R^2=0.2346$
VFD	960 157	1 158 090	1 184 074.65±7110.29	$T_i=20.61$ $y=6741.7x+1E+06$ $R^2=0.08$
RF	4 953 271	6 415 018	5 850 491.29±25 439.76	$T_i=29.51$ $y=56065x+5E+06$ $R^2=0.43$

Another indicator that can be used to judge the degree of development of health resort activities and the interest of the population in this type of service is the number of people placed in health resorts per year (Table 3).

An average increase by 1.53 times in the number of rested people in all the studied subjects also serves as additional indirect evidence of the population's demand for this type of recreation. Therefore, the share of rested people in Republican health resorts increased over the studied period and amounted to 4.15% in 2018 (Fig. 3). However, we believe that it is important to note that these values reflect not only the number of people who used health resort institutions for treatment but (to a greater extent) also for recreation, especially on weekends and holidays. According to domestic research, this ratio is 1:4 with significant fluctuations in different regions of the Russian Federation and different years [13, 14].

Additionally, the studies conducted and published in 2014 show an actual annual reduction in the time spent by vacationers at resorts: the average duration of one trip was 12.5 days in 2002, 10.4 days in 2006, and 9.8 days in 2013 [15]. It is obvious that with 10 days, full-fledged rehabilitation and treatment cannot be provided at the necessary level.

According to the order of the Ministry of Health [11], the recommended duration of stay in health resort conditions varies from 14 to 21 days depending on the existing (transferred) disease and following approved clinical recommendations. However, the data on the average length of stay of patients in health resorts is not provided on the website [10], making it difficult to compare the availability of health resort care in the regions using traditional indicators. Furthermore, assessing the medical effectiveness of the SCC is difficult and requires additional research.

Besides, it is difficult to compare the common indicators (such as annual average bed occupan-

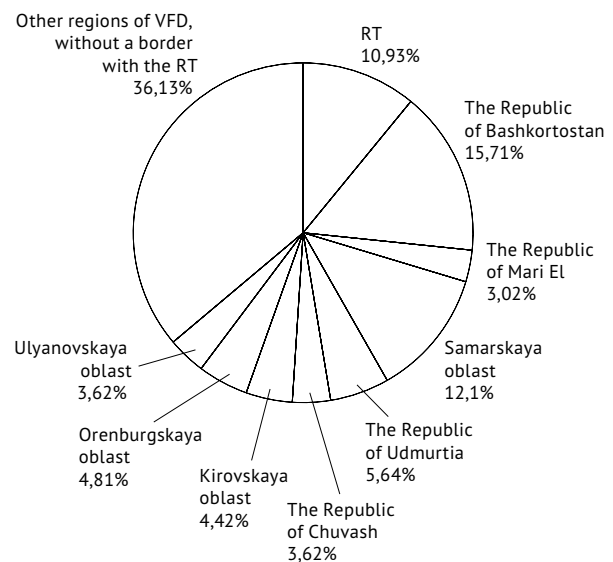


Fig. 2. The distribution of health resort organizations of the Volga Federal district (VFD) bordering the Republic of Tatarstan (RT) by the number of places of accommodation (average annual data for 2002–2018) in health resort complexes [10]

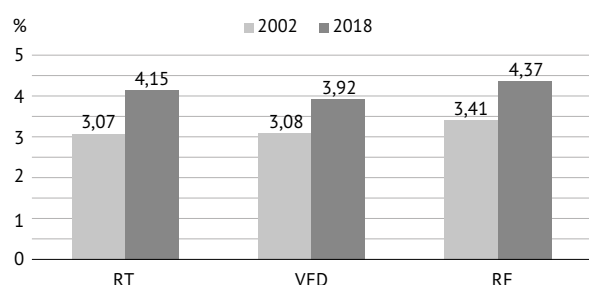
cy per year, the average length of a stay in bed, bed turnover, etc.) characterizing the activity of the resorts in the “vertical” RT—VFO—RF, as each resort depending on the orientation (respiratory organs, urogenital system, etc.) receives a different volume of the state task on the provision of a sanatorium-resort treatment.

However, we compared the dynamics “horizontally” in 2002 and 2018 (Fig. 4). A significant increase in the rate of bed turnover over the studied period was noted, which may indicate a renewed connection between therapeutic (diagnostic medicine in hospital conditions) and rehabilitation (preventive medicine, in health resort conditions) medicines.

The second stage of our research was to study the demand of the population for health resort ser-

Table 4. The distribution of respondents' preferences by type of recreation

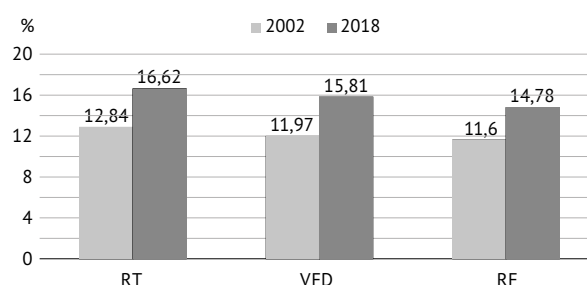
Types of a recreation	Response rate of respondents, %	
	aged 18–50 years	aged >50 years
Beach recreation (tourism)	60.17	80.40
Cultural and educational recreation (tourism)	76.91	49.88
Medical and health recreation (tourism)	34.75	82.88
Extreme sports recreation (tourism)	17.80	2.98
Business (congress) tourism	12.39	6.45
Own version	9.11	3.47

**Fig. 3.** Comparative dynamics of the share of rested people in health resorts of the Republic of Tatarstan (RT), the Volga Federal district (VFD), and the Russian Federation (RF) in 2002 and 2018.

vices for recreation and rehabilitation in a health resort of local or regional significance and their importance. The survey included 1347 people (524 men and 823 women, with an average age of 47.54 ± 8.32 years) living in the Republic of Tatarstan. One of the questions (with the possibility of a multiple-choice) was devoted to the study of patients' preferences regarding the types of recreation (Table 4). The responses of older respondents showed approximately the same priority for the “beach” recreation and a recreation in health resort conditions while the younger generation was definitely inclined to cultural and educational recreation. Younger respondents entered “mountain tourism” or “ski tourism” as their “variant” while older respondents entered “vacation in the country.”

Analyzing the respondents' answers to the question (were allowed multiple selections) on the factors that are a priority in vacation planning in the conditions of a health resort of local (regional) significance, our attention was drawn to the difference in the responses of the following two groups: younger and older (Table 5). For people under the age of 50, leisure activities and accommodation conditions were important while for the older generation, affordable prices and the possibility of the recovery were important.

The survey revealed that the majority of respondents of the older generation perceived the health resort as a place where they come to receive a re-

**Fig. 4.** Comparative dynamics of bed turnover in health resorts of the Republic of Tatarstan (RT), the Volga Federal district (VFD), and the Russian Federation (RF) in 2002 and 2018. (number of patients per bed)

storative or preventive treatment to improve their health. The younger part of the respondents noted that they would choose a health resort as a vacation destination only if the institution provided additional excursions (cultural, historical, and tourist excursions). At the same time, more than two-thirds of participants in the survey would go to a health resort only after a vacation abroad or if there is a free (privileged) ticket.

Concerning additional activities and interests during a health resort holiday, the older generation preferred health-improving procedures and walking trips made independently while the younger generation preferred organized excursions and SPA procedures (Table 6).

A “portrait” of the modern consumer of health resort services was compiled from the results of the survey. These are men and women, urban residents, mostly between the ages of 38 and 56, married, with higher education, employed in the industrial and economic spheres, and with medium to high income, who prefer a quiet holiday, convenience, comfort, and the absence of any organizational problems. As a priority in choosing a health resort, such respondents note the high level of services, quality of food, the professionalism of the medical staff, and the image of the institution. Secondary factors included transport accessibility and the lack of difficulties in purchasing and issuing trip tickets. The respondents also noted “negative factors” that

Table 5. Factors that influenced the choice of respondents for recreation and rehabilitation in regional (local) health resorts

Factors	Response rate of respondents, %	
	aged 18–50 years (n = 944)	aged >50 years (n = 403)
Possibility of recovery, treatment	12.71	50.37
Affordable price	44.49	79.40
Entertainment, cultural events	65.68	15.38
Natural and climatic conditions of the region	16.95	16.38
Conditions of accommodation	42.58	21.34
Advice of friends	13.14	20.84
Previous experience (completed trip)	7.20	21.34
No problems with registration of documents for border crossing, etc.	7.20	27.54
Other	11.23	8.68

Table 6. The distribution of respondents' preferences by types of extracurricular activities during a health resort rest

Types of extracurricular activities	Response rate of respondents, %	
	aged 18–50 years	aged >50 years
Walking routes (completed independently), hiking	66.21	80.40
Excursions (organized)	89.51	53.60
Attending cultural and entertainment and sports events	49.58	40.20
Wellness treatments (water treatment, mud treatment, massage, etc.)	55.72	91.32
SPA, a swimming-pool	83.90	85.36
Shopping	53.28	30.27
Fitness center, gym	17.37	16.13
Other	7.20	2.98

prevent the choice of local health resorts as an alternative to “beach holidays abroad”: insufficient infrastructure and service development, high prices for services provided, low logistics, and a narrow range of additional medical services.

Conclusion

1. Tatarstan is a region with a well-developed health resort complex. During the study period, there was a significant reduction in the number of health resorts both in the VFD and in Russia as a whole; however, the rate of decline in the RT was notably low, which indicates the relative stability of the health resort complex in Tatarstan. The analysis of the distribution of the number of places of health resort organizations, particularly of those that shared borders with the RT regions, showed that along with the Republic of Bashkortostan and Samara oblast, the RT is the leader in the availability of nursing homes and based on the demands of the local population, the resorts can provide rest and treatment.

2. The improvement of the provision of a health resort care for the population was revealed. During the studied period, the number of places in health

resorts and the turnover of health resort beds increased, which serves as indirect evidence of a restored continuity between medical and rehabilitation medicine.

3. The portrait of a modern consumer of health resort services in the RT compiled based on the results of a survey includes the following parameters: urban residents, mainly aged 38 to 56 years, married, with higher education, employed in the industrial and economic spheres, and with medium to high income, who prefer a quiet holiday, convenience, comfort, and the absence of any organizational problems. Priority parameters that contribute to the choice of recreation in a local or regional health resort are the overall comfort and level of services.

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