



VALUES OF THE MEDICINAL BATH PLACE ENVIRONMENT: THE IMPORTANCE OF MEDICINAL BATH PLACE CHARACTERISTICS AMONG HUNGARIANS

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Key words: attitude, consumer, environment, medicinal bath place, value offer.

Abstract

The main topic of our research is the examination of the environmental values of Hungarian medicinal bath place from the demand side, which can significantly contribute to the preservation of people's health and the improvement of their quality of life. The actuality of our research is due to the fact that in our society, people pay more and more attention to health preservation and their personal well-being. The water usually attracts people, so the medicinal bath place environment appears as a defining element of the offer among tourists.

The main goal of our research is to map out, with the help of consumer attitudes and preferences, the expectations of tourists regarding the characteristics of medicinal bath place. To achieve the goal of our research, we conducted primary research and a questionnaire survey. Data collected among the Hungarian middle-aged middle class ($n = 200$) were processed with univariate descriptive statistics and bivariate analyses.

In the course of our research, we came to the results that the Hungarian middle-aged middle class clearly detects the medicinal bath place characteristics, and that the main medicinal bath place characteristics can be divided into characteristically different ways of thinking. In the opinion of the respondents, among the features of the spa, the silence and tranquility, the quality of the accommodation, the beautiful environment, the wide range of treatments, as well as the quality of the gastronomy and medicinal care significantly contribute to a successful stay in a medicinal bath place. We also determined the three main ways of thinking of spa visitors: environment-oriented way of thinking, medicinal-oriented way of thinking, culture-oriented way of thinking, which is most characteristic of a satisfied guests.

Introduction

Nowadays, the issue of health-related consumption is topical, because the appreciation of health can be seen worldwide, as a result of which the prevailing megatrend has become health awareness. The development of health-related tourism offers is characterized by the combination of nature conservation and sustainable tourism development (SZÉCHY and SZERÉNYI 2023, BUJDOSÓ et al. 2019, STOJANOVIĆ et al. 2018). Can be experienced the transformation of the health market, the expansion and dynamic growth of health tourism (KOŠIĆ et al. 2011).

In the case of Hungary, a special service within health tourism is medicinal bath tourism based on internationally unique medicinal water (PRINTZ-MARKÓ et al. 2020). The basis for this was created in Hungary by the reputation gained in medicinal bath tourism based on centuries-old traditions, the availability of natural resources in quantity and quality, and the services related to them (SZABÓ and HOJCSKA 2020). Hungary is a country of water, as almost 4/5 of it is covered with water. Most of the water is not visible, because unlike surface water, it is located below the earth's surface. In Hungary, the temperature of the rocks inside the earth and the incoming water gradually rises as it goes down, which is why the country has favorable thermal water resources. This temperature change is expressed by the geothermal gradient. In Hungary, waters with a water temperature above 30°C can be called thermal water, in contrast to surface water in other areas of Europe, where this value is 20°C. In the case of medicinal waters, the chemical (macroelement content) and physical properties (buoyancy, hydrostatic pressure, temperature) of water are utilized during their use in healing. There are 1370 thermal wells and 238 thermal water deposits in Hungary, the largest number of which are used for bathing, and to a lesser extent for agricultural, waterworks, communal and industrial use. In Hungary, there are 270 qualified medicinal waters, of which a large number are found in individual medicinal bath place (HOJCSKA and SZABÓ 2021). In Hungary, primarily based on thermal waters, numerous health tourism developments, including medicinal tourism, were realized with state contributions (SZABÓ et al. 2013), which were supplemented by local and regional infrastructure developments, such as regional railway development in Western Hungary (BALI 2014). During spa development, the construction or renovation of a medicinal bath means attraction and service development at the same time (STARCZEWSKI et al. 2018). Thanks to the developments, the new and renovated medicinal baths have become the most important tourist attractions of the medicinal bath places (MILORADOV and EIDLINA 2018).

The healing effects of Hungarian thermal waters have been known for centuries and have been widely used in the treatment of various diseases. Due to their composition, i.e. their dissolved components and their quantity, each water is meant to treat different diseases. Those thermal and/or mineral waters with medically proven medicinal effects are registered as medicinal waters in Hungary. The chemical composition of medicinal waters plays an important role in shaping the physiological effects on the body during medicinal treatments (HOJCSKA et al. 2022, MAYER and HOJCSKA 2018). Based on the latest research, value-creating people are becoming more and more important in knowledge-based societies (FARKAS 2021), for whom health is more and more valued, and for an increasing number of them, its preservation appears as one of the most important value. It is everyone's own responsibility to shape the state of health, because health behavior (harmful or beneficial) can contribute to the development respectively prevention of many diseases (MAGYAR 2017). The probability of occurrence of diseases that can be treated with medicinal services increases as the number of years of life increases, it is 6.8% in the young age group, while it is already 48.6% among the middle-aged. Therefore, the consumers of medicinal bath tourism are primarily the middle-age group in the broad sense (SZABÓ 2021). From the point of view of the family life cycle, the consumers of medicinal baths are adults living without children, with their own income, and pensioners. Most of this segment is characterized by a traditional way of life, a conservative outlook on life, a moderate sense of status and price sensitivity. Based on these, the demand for medicinal bath tourism is generally influenced by several factors. One of them is an aging population with increasing health problems and discretionary income and leisure time. The other is health behavior changes, which emphasize the prevention of diseases. It is also influenced by the search for the experience of health on the part of tourists through the assumed positive change of the expected environmental change. The medicinal bath tourism demand is also influenced by medicinal baths places with their active marketing activities (POLISCHCHUK and BUJDOSÓ 2022, MUHI and ĐURKOVIĆ 2021). Nowadays, platforms and applications optimized for smartphones are increasingly used by potential consumers when making travel decisions (MORABI et al. 2023). According to prognoses, an ever-increasing proportion of the Hungarian population recognizes that good health is the basis of work productivity, emotional, intellectual and physical development.

In Hungarian medicinal bath tourism, the basic condition for the sustainable use of opportunities and the achievement of international competitiveness is the predictability and security of the domestic market

(*NAVARRO et al. 2020, BRAMWELL et al. 2017*). Within tourism, medicinal bath tourism is one of the fastest growing market segments, yet researchers still pay little attention to it. In the globalized offer of tourism, the Hungarian medicinal bath places can be an increasingly important player in the spa tourism market due to the appreciation of health and the utilization of the spa water resources (*KELLER et al. 2021*). This possibility can only be used if the characteristics that contribute to the successful stay of medicinal bath tourists in a medicinal bath are known. To explore this important issue, we defined two research goals. Our first goal is to establish whether the Hungarian middle-aged middle class, who mostly visit medicinal baths, clearly perceive the medicinal bath place's characteristics. Our second goal is to explore, whether the main features of medicinal bath places, among Hungarians, can be divided from each other into characteristically different ways of thinking. Getting to know these basic issues can help the medicinal bath places's planners and decision-makers to better satisfy guest needs.

Materials and Methods

In order to achieve our research goals, we used the questionnaire survey among the quantitative research methods (*TAKÁCS 2016*). The assertions of the questionnaire measured the importance of Hungarian medicinal bath place characteristics among the Hungarian adult population, the other questions related to the socio-demographic characteristics of the respondents. The assertions of the questionnaire were selected based on relevant international and domestic literature. As a means of data collection, we used a paper-based questionnaire, which was delivered to the interviewees through intermediaries. The respondents were selected randomly (*BABBIE 2017*) in different settlements in Hungary. The requirements for respondents was adulthood and Hungarian citizenship. Data collection took place until the planned 200 evaluably completed questionnaires were reached. The socio-demographic characteristics of the 200 people who in an evaluable manner completed the questionnaires, taking into account distribution ratios it was possible to reach the middle-aged Hungarian middle class in the broad sense (Table 1).

Table 1

Socio-demographic characteristics of the respondents ($N = 200$)

Specification	Level	Count	Proportion	p
Gender	female	116	0.580	0.028
	male	84	0.420	0.028
Age	18–39 years	46	0.230	<.001
	40–59 years	98	0.490	0.832
	60+ years	56	0.280	<.001
Economic activity	worker, entrepreneur	131	0.655	<.001
	pensioner	55	0.275	<.001
	inactive (student, unemployed, other)	14	0.070	<.001
Educational attainment	elementary	16	0.080	<.001
	secondary education	141	0.705	<.001
	higher education	43	0.215	<.001
Residence	city	111	0.555	0.137
	village	89	0.445	0.137
Family status	living alone	74	0.370	<.001
	living in a relationship	126	0.630	<.001
Income level	below average	13	0.065	<.001
	average	165	0.825	<.001
	above average	22	0.110	<.001
Note. H_a is proportion $\neq 0.5$				

Source: Own calculation and editing

Based on the age of those who completed the questionnaire (42% male, 58% female), 23% were 18–39 years old, 49% were between 40–59 years old, and 28% were older than 60 years. In terms of highest education, 8% had primary education, 70.5% had secondary education, and 21.5% had higher education, in terms of their economic activity, 65.5% were employed, 27.5% were pensioner and 7% were unemployed. According to their marital status, 37% live alone, 63% in a relationship, 55.5% live in a city, and 44.5% live in a village. Based on their perception of income, 6.5% have below average income, 82.5% have average income, and 11.0% have above average income.

To measure the characteristics of medicinal bath place features, we used a sophisticated five-point Likert scale, where 1 means „not at all”, 2 means „to a small extent”, 3 means „to a moderate extent” 4 means „to

a great extent” and 5 meant “completely” agree. The obtained data were processed using the statistical analysis program Jamovi version 2.3.21 of the Windows 10 program package. Among the data processing methods, we used univariate descriptive statistical analyzes (mean, median, mode, standard deviation, minimum, maximum) and multivariate analysis (TAKÁCS 2017). Among the multivariate methods, principal component analysis and factor analysis were used in order to explore Hungarians’ ways of thinking about medicinal bath place characteristics.

Results

Our investigation concerned how important the respondents consider the values of the medicinal bath place environment to be. In this part of our investigations, we looked for the answer to how the Hungarian population evaluates the importance of the characteristics of the medicinal bath places. A significant proportion of those interviewed had a favorable opinion of the characteristics of the medicinal bath place. Among them, a significant degree (4.02) of acceptance of a medicinal bath place environment. The standard deviation of the responses to the statements is below 1 with one exception. It follows that the respondents perceive the factors of the values of the medicinal bath place environment (Table 2).

Table 2

Average order of importance of the medicinal bath place features (N = 200)

Specification	N	Mean	95% confidence interval		Mode	SD	Mini- mum	Maxi- mum
			lower	upper				
1	2	3	4	5	6	7	8	9
Silence and calme	200	4.56	4.44	4.68	5.00	0.860	1	5
Quality of accomodation	200	4.28	3.87	4.11	4.00	0.715	2	5
Beautiful environment	200	4.21	4.03	4.25	4.00	0.708	2	5
Wide range of treatments	200	4.20	4.03	4.26	4.00	0.831	1	5
Gastronomy quality	200	4.14	3.90	4.14	4.00	0.757	2	5
Quality of medicinal service and treatment	200	4.14	3.97	4.21	4.00	0.817	1	5
The cleanliness and charm of the medicinal bath park	200	4.09	4.12	4.31	4.00	0.828	1	5
Favorable cost of accomodation	200	4.07	3.76	4.02	4.00	0.802	2	5

cont. Table 2

1	2	3	4	5	6	7	8	9
Transportation (accessibility, parking)	200	4.07	4.08	4.31	4.00	0.830	1	5
Medicinal bath and the safety of the settlement (low crime rate)	200	4.02	3.95	4.19	4.00	0.839	1	5
Cleanliness of streets	200	4.00	3.36	3.67	4.00	0.833	2	5
A wide selection of cultural attractions in the spa settlement	200	3.99	3.95	4.18	4.00	0.880	2	5
Wide selection of tourist attractions in the settlement	200	3.92	4.18	4.37	4.00	0.878	1	5
Treatment cost are low	200	3.89	3.44	3.71	3.00	0.939	1	5
Mass events, concert, festivals, etc.	200	3.63	3.79	4.04	4.00	0.931	1	5
Entertainment (cinema, dance, etc.)	200	3.58	3.51	3.76	4.00	0.974	1	5
Opportunity to get to know other medicinal bath visitors	200	3.52	3.88	4.12	4.00	1.103	1	5

Source: Own calculation and editing

For the respondents, the silence and calme (4.56), the quality of the accommodation (4.28), the beautiful environment (4.21), the wide range of treatments (4.20) and the quality of the gastronomy (4.14) the most important. The most important characteristics also received the lowest standard deviation values, which proves the significant agreement. We have to emphasize all of this because it draws attention to the increased importance of the medicinal bath place milieu.

For the respondents, the least important are the possibilities of using the services provided by the cultural and entertainment facilities provided by the medicinal bath place, which also received the highest standard deviation. For the respondents, it is less important to be able to get to know each other at the medicinal bath place (3.52), have fun, go to the cinema, dance (3.58), or participate in larger events, such as concerts and festivals (3.63).

The system of medicinal bath place characteristics were examined with a cluster analysis prepared and substantiated by factor analysis. During the factor analysis, the initial variables were examined using the Bartlett test. The result of the test is: $\chi^2 = 1294$; $df = 136$; $p < 0.001$, which

means that the variables are suitable for factor analysis. Using this procedure, we determined three principal components based on the professional aspects and the main values of the medicinal bath place characteristics. The selection also meets the Scree-test rule of thumb criterion, because after the third factor the value of the explained variance significantly deteriorates. At the fourth factor number that is the rule of thumb, which is relevant due to the explained variance. The break at the fourth factor number confirms the choice of the three-factor solution.

These criteria gave us the number, of principal components considered justified for the investigation. As can be seen from the presented figure, the examination of a total of three principal components became justified (Table 3).

Table 3

Explained variance of medicinal bath place characteristics

Component	SS loadings	% of variance	Cumulative [%]
1	3.49	20.5	20.5
2	2.76	16.2	36.7
3	2.48	14.6	51.3

Source: Own calculation and editing

The three principal components isolated in the examinations explain a total of about 51.3% of the variance of the tested sample, which is a good value, but does not reach the 60% threshold accepted as a rule of thumb. This also confirms that the proportion of factors that could not be taken into account even with the use of principal component analysis is relatively large. In other words, this should be seen as a warning sign from the point of view that these principal components explain, interpret, a little more than half of the variance of the examined sample. Furthermore, it also means that in the case of medicinal bath place characteristics, there is a significant difference in opinions in the sample. The medicinal bath place characteristics are explained by the first principal component in 20.5%, the second principal component in 16.2%, and the third principal component in 14.6%. In the three principal components, the principal component weights show relatively large differences, as a result of which these three principal components are suitable for revealing three well-separated ways of thinking with their help.

From the component matrix, it can be read which variable best characterizes which factor based on its largest absolute values (Table 4).

Table 4

Component-matrix system of medicinal bath place characteristics

Specification	Component			Uniqueness
	1	2	3	
The cleanliness and charm of the medicinal bath park	0.766	–	–	0.390
Transportation (accessibility, parking)	0.757	–	–	0.362
Favorable cost of accomodation	0.722	–	–	0.408
Quality of accomodation	0.663	–	–	0.544
Beautiful environment	0.594	0.311		0.538
Gastronomy quality	0.323	–	–	0.793
Quality of medicinal service and treatment	–	0.768	–	0.401
Wide range of treatments	–	0.656	–	0.499
Medicinal bath and the safety of the settlement (low crime rate)	–	0.618	–	0.544
Treatment cost are low	0.495	0.584	–	0.402
Silence and calme	–	0.532	–	0.692
A wide selection of cultural attractions in the spa settlement	–	0.498	0.450	0.544
Mass events, concert, festivals, etc.	–	–	0.836	0.274
Entertainment (cinema, dance, etc.)	–	–	0.782	0.360
Wide selection of tourist attractions in the settlement	0.474	–	0.616	0.395
Opportunity to get to know other medicinal bath visitors	–	0.371	0.509	0.538
Cleanliness of streets	0.398	–	0.421	0.593
Note. 'Varimax' rotation was used				

Source: Own calculation and editing

In order to make the component matrix easier to interpret, three factors were defined using Varimax rotation. As a result of the rotation, the variables were classified to the individual principal components and factors. Based on these, we separated the medicinal bath place characteristics according to three main dimensions and ways of thinking.

In the first principal component, the factors related to the spa environment, such as the cleanliness and charm of the medicinal bath park and accessibility, parking, or the beautiful environment, received high factor

loading values. The ratio of the component values also significant for those, wich are related to the other services of the medicinal bath place, such as accomodation and gastronomy. Overall, this dimension can be considered as one that includes very favorable opinions about the medicinal bath place environment.

In the second principal component, the opinions related to the quality of medicinal service and treatment, wide range of treatments and low-cost medical treatments appear with significant principal component factor loading. These factors lend a kind of „expert” character to this dimension. It is noteworthy that in this principal component, the opinion regarding the medicinal bath and the safety of the settlement, as well as the low crime rate, received a high value. Overall, this dimension can be considered as one that includes very favorable opinions about the medicine of the medicinal bath place.

The basic factors of the third main component are mass events, concerts, festivals, entertainment such as cinema, dance, and wide selection of tourist attractions in the settlement. Interestingly, the cleanliness of the streets was included in this dimension, which reflects the environmental culture of the locals. Overall, this dimension can be considered as one that includes very favorable opinions about the culture of the medicinal bath place. Based on these, we separated three main dimensions and lines of thinking from the point of view of the medicinal bath place characteristics (Table 5).

Table 5

The factor system of medicinal bath place – characteristics

Factor	Indicator	Estimate	SE	95% confidence interval		Z	p
				lower	upper		
1	2	3	4	5	6	7	8
Factor 1	the cleanliness and charm of the medicinal bath park	0.599	0.0550	0.492	0.707	10.89	<.001
	transportation (accessibility, parking)	0.618	0.0540	0.512	0.724	11.45	<.001
	favorable cost of accomodation	0.544	0.0549	0.436	0.652	9.90	<.001
	quality of accomo- dation	0.403	0.0508	0.304	0.503	7.94	<.001
	beautiful environ- ment	0.462	0.0486	0.367	0.558	9.52	<.001
	gastronomy quality	0.307	0.0557	0.198	0.416	5.51	<.001

cont. Table 5

1	2	3	4	5	6	7	8
Factor 2	quality of medicinal service and treatment	0.426	0.0609	0.307	0.545	7.00	<.001
	wide range of treatments	0.556	0.0586	0.441	0.671	9.48	<.001
	medicinal bath and the safety of the settlement (low crime rate)	0.444	0.0623	0.322	0.566	7.12	<.001
	treatment cost are low	0.738	0.0639	0.612	0.863	11.54	<.001
	silence and calme	0.392	0.0641	0.267	0.518	6.12	<.001
Factor 3	a wide selection of cultural attractions in the spa settlement	0.394	0.0662	0.264	0.524	5.95	<.001
	mass events, concert, festivals, etc.	0.618	0.0669	0.487	0.749	9.24	<.001
	entertainment (cinema, dance, etc.)	0.657	0.0697	0.520	0.793	9.42	<.001
	wide selection of tourist attractions in the settlement	0.649	0.0608	0.530	0.768	10.68	<.001
	opportunity to get to know other medicinal bath visitors	0.330	0.0878	0.158	0.502	3.76	<.001
	cleanliness of streets	0.470	0.0613	0.350	0.590	7.67	<.001

Source: Own calculation and editing

In the first dimension, the factors related to the medicinal bath place environment were given a very high factor loading value. In the second dimension, factors related to medicinal bath place medicine were given a very high factor loading value. In the third dimension, the factors related to the medicinal bath place culture were given a very high factor loading value. The three ways of thinking thus formed are the environment-oriented way of thinking, the medicine-oriented way of thinking and the culture-oriented way of thinking. On the basis of the three examined schools of thought, we were able to determine significant differences in almost every single case, which support the fact that the triple grouping, which was established during the creation of the schools of thought, is valid.

The differences are clearly visible based on the average values obtained for the degree of identification with certain statements examined in the lines of thinking. In the environment-oriented direction of thinking, as we expected, all indicators received a very high acceptance value. The highest acceptance value was the opinion that the beautiful environment is an important attribute of a medicinal bath place (4.21), and the cleanliness and charm of the medicinal bath park (4.09) as well as the accessibility of the medicinal bath place and the parking conditions (4.07) are also important. In terms of medicine-oriented thinking, the most important characteristic of a medicinal bath place is silence and calm (4.56), wide range of treatments (4.20) and the quality of medicinal service and treatment (4.14). Interestingly, the treatment costs are the least significant in the medicine-oriented way of thinking (3.89). The culture-oriented way of thinking has the lowest average indicators. In the direction of culture-oriented thinking, the cleanliness of the streets (4.00), the wide selection of cultural attractions in the spa settlement (3.99) and the wide selection of tourist attractions in the settlement (3.92) are included. In this way of thinking, the least important thing is to have the opportunity to get to know other medicinal bath visitors (3.52).

Discussion

The present study deals with the significant issue of tourism management as an interdisciplinary scientific field, the significance of the characteristics of medicinal bath place in Hungary among Hungarian consumers. By preparing this study, we aimed to contribute to the understanding of the importance of medicinal bath place characteristics among the Hungarian population and to expand the limited research on the topic so far.

Based on the socio-demographic characteristics of the 200 Hungarian respondents who completed the questionnaire, we managed to reach the middle-aged middle class in the broad sense, who are currently and are expected to be visitors to the medicinal bath places in the future. 49% of those filling out the questionnaire are middle-aged, 92% have a secondary education or higher, 93.5% have an average or above-average income. So the sample is limitedly representative as the base population is not known. In the primary study, using modern mathematical and statistical methods, consumers' opinions on the features that contribute to a successful medicinal bath place stay were examined.

From the test results obtained with the help of a survey based on the objective of the research, two conclusions regarding the importance of the

characteristics of medicinal bath place follow, which can be considered as new, scientifically proven results. As a first finding, it was proven that the Hungarian middle-aged middle class perceives the characteristics of the medicinal bath place. It was proven because the interviewees perceived the importance of medicinal bath place characteristics, but the opinions differed. The standard deviation of the answers was below 1 with one exception, which is acceptable. It follows from all of this that the respondents perceive the characteristics of the medicinal bath place and believe that some of them play a significant role in a successful stay at the medicinal bath place. These are the silence and calm, the quality of the accommodation, the beautiful environment, the wide range of treatments, the quality of the gastronomy, and the quality of medicinal service and treatment. The mass events, concerts, festivals, entertainment such as cinema, dancing, and the opportunity to get to know other medicinal bath visitors play the least role in a successful medicinal bath place stay. As a second finding, it was proven that among Hungarians, the main characteristics of medicinal bath places can be divided into characteristically different ways of thinking. It was proven because we identified three groups of principal components, taking into account the test criteria, using sophisticated mathematical-statistical data processing methods. One of the principal component groups defined the indicators that clearly included a positive and favorable opinion about the medicinal bath place environment. The other is the one that favorably evaluated the characteristics related to the medicinal of the bath place and showed its importance. And the third included those indicators that mainly focused on cultural factors in the medicinal bath place area. As a result, three clearly distinguishable ways of thinking were identified, the environment-oriented way of thinking, the medicine-oriented way of thinking and the culture-oriented way of thinking, which contribute to a successful medicinal bath place stay.

Comparing our results with similar studies from other countries, we conclude that, like domestic spa guests, the availability and development of medical services is also important for the majority of Greek spa guests (PAPAGEORGIOU and BERIATOS 2011). Compared to the characteristics of spas in Vojvodina, the characteristics of Hungarian spas can be better assessed and provide users with more complex and advanced medical tourism opportunities (KOŠIĆ et al. 2011, VÖRÖS and SZABÓ 2024). According to a survey conducted in neighboring Romania (SWOT analysis), the proper use of their country's outstanding natural resources for medical tourism requires the modernization of accommodation and catering facilities, as well as the development of recreation and leisure facilities (NEACSU and PLATON 2019). The results of foreign researchers confirm our position

that for the development of a suitable medicinal bath place, a scientific assessment of the features and user needs of the given tourist region is essential, with the results of these analyzes the necessary development directions can be determined for a more effective medicinal bath place stay.

These new, scientifically proven results can help medicinal bath place planners and decision makers to better satisfy guest needs, medicinal tourism planners, tourism marketing professionals to better utilize new market opportunities, and medicinal bath managers to better meet guest needs, thereby contributing to a successful medicinal bath place stay for guests.

Translated by Ágnes Erzsébet Hojcska, Zoltán Bujdosó

Accepted for print 10.10.2024

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