



## Morphological Analysis of the Key Factors and Uncertainties Affecting Medical Tourism in Yazd, Iran

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### Abstract

**Introduction:** Based on predictions by the World Tourism Organization, the future of the world economy and international trade market will be dominated by the tourism industry, especially between 2020 and 2030. Medical tourism, as a fast-growing and accelerating industry, will be a major contribution to the future of the tourism industry. This study was conducted with the aim of morphological analysis of the factors and key uncertainties affecting medical tourism in Yazd, Iran.

**Methods:** The present study identified the key factors and uncertainties of medical tourism in Yazd using a mixture of qualitative and quantitative methods. The research sample included 24 experts selected using purposive sampling method. The data collection instruments were interview and a questionnaire. Qualitative content analysis and morphological analysis were used to analyze the data through SPSS21.

**Results:** After analyzing the interviews, 19 themes for capacities and 23 themes for obstacles were extracted. Then, 41 factors, prioritized based on two criteria of importance and uncertainty, were identified using Likert scale. In the second stage, 9 out of 41 factors that had more uncertainty and served as drivers were determined by experts.

**Conclusion:** According to the results, it is recommended that a comprehensive medical tourism Plan should be prepared for Yazd province based on the drivers identified in this study and introduce the medical tourism capacities in Yazd to the target countries.

**Keywords:** Medical tourism, morphology, Yazd.

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### Introduction

Based on the declaration of the World Trade Organization, the tourism industry ranked third in international trade in 2000 after oil and automobile industries (1, 2). In general, tourism is classified into three major categories: cultural tourism, ancient tourism, and health tourism (3, 4). Today, medical tourism has been subdivided into three separate branches: medical, medical curative, and wellness tourism (5-8). Among the different areas of tourism, health tourism has received a lot of attention due to its competitive advantages, showing rapid growth among all types of tourism (5). The development of health tourism can be considered as an arm of national security and a national strategy to increase the income of the country in addition to the optimal use of domestic capital (6). Currently, due to the low cost and high income of this industry, many countries interested in tourism development focus their attention on this part of the tourism industry

and plan for it (7). In the horizon of 2021, Iran will become one of the main hubs of health tourism in the region. This will not only prevent the outflow of currency, but also provide our country with significant foreign currency income (8).

Globalization and liberalization of trade in health services, increased ease of international travel, easy access to the Internet, increased cost of providing medical services in developed countries, relatively low cost of these services in developing countries, technological advances, and improved situation of standards of care in most countries have led to the development of medical tourism category in developing countries (9). This branch of tourism has developed significantly during the last few decades. Many Asian countries including Thailand, Singapore, South Korea, India, and Malaysia are among the leading countries in this industry, so that every year they attract approximately 1.3 million medical tourists from different parts of the world.

These figures have shown an ascending course (10, 11), so that the value of the Asian medical tourism market in 2012 has been about US\$4 billion (12, 13). Given the advantages it has in medical tourism, such as convenient geographical location, low service costs, suitable equipment, and qualified doctors, our country is trying to use the opportunities in the international market of health services (14-16).

In addition, despite capabilities of Iran in terms of medicine, such as achieving modern medical science in the treatment of patients using stem cells, treatment of spinal cord injuries, cardiovascular surgeries, etc., it has not been able to gain a rank in attracting medical tourism among Asian countries. Yazd is also one of the powerful cities in the field of medicine in the country and also in the Middle East, which compared to small countries like Singapore, which is one of the leading countries in the field of medical tourism, is at a much higher level in terms of natural and historical attractions and medical capabilities. Yet, the real scene shows that despite the advantages given to Yazd, the officials have not been able to take advantage of these abilities for the development of medical tourism. This is the case while the medical tourism infrastructure and its bed have been built with the construction of some hospitals, but no acceptable practical step has been taken in this regard. Although various studies have been conducted in this field, those conducted in Iran and Yazd province have only descriptively examined the requirements, prerequisites, and cultural and social factors, so that few studies have been able to identify the key uncertainties affecting medical tourism. Based on the above-mentioned issues, the present study aimed at morphological analysis of the key factors and uncertainties affecting medical tourism in Yazd.

## Methods

This study was completed in two qualitative and quantitative phases.

### *First Phase: Identifying the Capacities and Obstacles of Medical Tourism in Yazd*

In the first phase, the capacities and barriers of medical tourism in Yazd were identified by conducting a qualitative study by knowledgeable experts and analysed using the framework analysis approach. The study population in this phase consisted of experts and specialists in tourism and medical tourism in related organizations including the Ministry of Health, Treatment and Medical Education, Cultural Heritage and Tourism Organization, Yazd University

of Medical Sciences, Foreign Affairs Unit in Yazd Governorate, hospitals, schools and research centers, owners of clinics and medical offices, owners of hotels, and tourism facilitation companies in Yazd. The purposive sampling method was used for sampling and the study was continued on the studied population until data saturation was achieved. In this step, an interview form including the topic guide was used as the data collection tool. To prepare the topics, we used relevant studies and opinions of several expert professors in this field. The prepared guide was used tentatively in two interviews and the interview guide was revised. Given the purpose of the research in this step, i.e., obtaining the opinions and experiences of experts in the field of medical tourism and capacities, a semi-structured face-to-face interview was used. The research goals were explained for the interviewees, the interview schedule was determined and prepared. An effort was made to conduct the interviews in an informal atmosphere, without prejudice and bias to avoid commenting on whether the answers are correct or incorrect. To avoid possible problems, the topics of the interview sessions were recorded by an electronic voice recorder. During the interviews, the important statements of the interviewees were also written down by the interviewer. Immediately on the same day, the recorded content was transcribed verbatim. The noted content as well as important key topics extracted from each interview were briefly recorded in a special form. In this form, in addition to the basic characteristics of the interviewee, the date and time of the interview and other necessary information were also recorded. The framework analysis method was used to analyze the data. The analysis process included open codes, categories, and subcategories. Then, to extract the codes, meaningful words and short sentences were specified, and coding was done by taking notes in the margin of the text. Semantic units were extracted from the statements of the participants that expressed their experiences. The codes were subsequently merged and placed in categories based on semantic affinity. The main categories emerged after organizing the subcategories based on the relationship between them.

### *Second Phase: Determination of the Key Factors and Uncertainties Affecting Medical Tourism in Yazd*

In this phase, morphological analysis was used, i.e., a method of structuring and solving problems for those technical and social problems that have a non-quantitative nature. Methods such as causal modeling or simulation cannot be used to investigate and solve these problems. Morphological analysis begins with

the identification and definition of the components (dimensions or parameters) of the problem under investigation. In the next step, the different states that can be manifested by each of these components are determined. At the end, the possible combinations of the states of the components are identified. The research population in this phase included experts and specialists in the field of medical tourism and ordinary tourism as in the qualitative phase. The research sample included 15 people who were selected by judgmental purposive sampling method. At this stage, a 41-factor questionnaire was sent to the participants, wherein the two factors of importance and uncertainty were graded on a 5-point Likert scale from very high to very low. The questionnaire was developed by the researcher from the results of the previous phase. The average scores given to the criteria of importance and uncertainty by the experts were used as the basis for the analysis in this step.

The article's proposal was approved by the ethics committee of Yazd University of Medical Sciences with the code of IR.SSU.REC.1399.020.

## Results

In the qualitative phase, 21 of the 24 experts studied

were men. The majority held a PhD degree and had a work experience between 21 and 30 years. Besides, the majority had management experience and were not faculty members. To use the opinions of the people and patients, we consulted some experts who represented the people. After analysis of the interviews, 19 themes were extracted for capabilities and 23 for obstacles (Tables 1 and 2).

To determine the key factors in this phase, we determined the findings of the qualitative phase, and 41 main factors were identified and listed. Thus, two questionnaires were prepared electronically to estimate the importance and uncertainty indicators of key factors. The first electronic questionnaire included the key factors to be scored by the experts in terms of importance from 1 to 5 (very low=1, low=2, moderate=3, high=4, very high=5). After completing the link of the first questionnaire by the experts, the second electronic questionnaire was sent to the experts. It included the key factors to be scored by the experts from 1 to 5 in terms of uncertainty, so that the higher the certainty of a factor, the lower the score. After completing the electronic questionnaires, the scores of each factor for importance and uncertainty indices were obtained. The results are displayed in Table 3.

**Table 1:** Identified capacities in terms of theme

Themes	Sub-theme
Historical value	Ethics of the treatment staff
Development of Yazd province	Hospitality
Capacities of Yazd province	Urban security
Experienced doctors in various specialties	Providing various specialized services in hospitals
Prominence of Iranian doctors in some special fields	The first providers in the field of infertility
Building trust in the medical and treatment staff	Welfare facilities
Capacities of desert ecotourism	Mental relaxation
The price of services compared to other provinces	Globalization of Yazd
Service quality compared to other provinces	Religious conditions
	Variety of private and public hospitals

**Table 2:** Obstacles identified by theme

Themes	Items
Low supervision of the private sector	The lack of transparency of prices and the absence of specific tariffs
Dispersion of service centers	Inappropriate urban environment
Lack of planning	Difficulty in issuing permits
Lack of health tourism document	Lack of organization of processes in the field of health tourism
The weakness of health tourism facilitator companies	Weak supervision in various areas of tourism
Health tourism brokers	Lack of spirit of cooperation and outsourcing
Attitude of provincial officials	Poor access
Lack of specialized medical tourism training for doctors and nurses	Failure to pay attention to international standards
Weak participation of the private sector	Sanctions
People's negative attitude	Poor facilities
Poor advertising	Non-implementation of laws and regulations
Lack of international flights for health tourists	

**Table 3:** The level of certainty and importance of the factors based on the experts' opinions

Factors	Certainty level	Importance level
International flights	2.09	4.71
Low costs of medical services	1.54	4.57
Urban security	2.18	4.5
Dietary nutrition according to diseases in the city	2.125	2.6
Persistence and presence of Yazdi doctors in the province for consecutive years	1.9	4.07
Ethics and professional commitment of doctors	1.9	4.5
Advertisement of provincial doctors	2.54	4.07
Globalization of Yazd	1.875	3.8
Historical context and tourist attractions of the province	2.125	3.1
Use of Yazd desert in health tourism	2.625	3.6
Providing specialized services and variety of private and public hospitals in the province	2	4.42
Religious conditions (peaceful relations between people of different religions in the province)	2.375	3.1
Using the income from health tourism to develop this industry in the province	2.625	3.3
International students	2.125	2.9
Focus only on the field of treatment	2.75	3.1
Marginalization	2.375	2.7
Applying new strategies	2.72	4
Conflict of interest	3.125	3.8
Having skills in international languages	2.625	3.3
Transparency of prices in treatment and tourism	2.72	4
Respecting health tourists	2.45	4.42
Iran's relations with its neighbors and countries in the region	3.09	4.42
Iran's relations with industrialized and developed countries	3.54	4.14
Exclusive international advertising plan in medical tourism	3.27	4.21
Internal and external marketing research and identification of the target market and its needs	2.81	4.35
Inter-sectorial coordination in different sectors effective in medical tourism	2.9	4
The development of superior technologies and new safe and effective methods in medical tourism	2.54	4
Oil sales and its impact on domestic investment in Iran's medical tourism	2.375	3.5
Foreign investment in medical tourism	2.25	3.6
Establishing a multinational medical care center in the province	2.75	3.2
Clarifying the custodian of medical tourism in the province	3.27	4.21
Compiling a comprehensive medical tourism document and specifying the duties of institutions, people and contracts	2.75	3.4
Political sanctions	3.54	4
Global and domestic economy	2.125	3.3
Health system reforms in Iran	2.375	3.7
The ease of establishing electronic communications, telecommunications and electronic banking for medical tourists, such as setting up an international credit card system	2.45	4.07
Establishing a representative office and consulting clinics for medical services that can be provided before visiting Iran in other countries and cooperating with the cultural advisors of the Iranian Embassy	3.09	4
The image of Iran in the world	2.5	3.4
Political stability inside the country	2.875	3.3
Creating efficient international insurances in the field of medical tourism	2.25	3.2
An outbreak of an infectious disease such as Covid-19	2	3.2

For determining the status of the factors in the morphological matrix in terms of importance, the factors with an average score of 4 and above were placed in level A. As to the level of uncertainty, the factors with an average score of 3+ were selected as A+. Accordingly, the factors that were placed in the area with high importance and high uncertainty were selected. Finally, importance and certainty were

re-weighted, such that importance was given a weight of 0.6 and uncertainty a weight of 0.4. Subsequently, the numbers were summed up and then the factors were ranked. The results of this step are presented in Table 4. In fact, morphological analysis was used at this stage. Accordingly, 20 factors were selected, and, finally, by calculating the range of changes, 9 finalized factors were selected for the scenario writing stage.

**Table 4:** Morphological analysis of factors

Factors	Importance	Uncertainty	Total	Priority
International flights	4.71	2.09	3.65	7
	2.82	83/0		
Low costs of medical services	4.57	1.54	3.35	19
	2.74	0.61		
Urban security	4.5	2.18	3.57	10
	2.7	0.87		
Persistence and presence of Yazdi doctors in the province for consecutive years	4.07	1.9	3.2	20
	2.44	76/0		
Ethics and professional commitment of doctors	4.5	1.9	3.43	16
	2.67	0.76		
Advertisement of provincial doctors	4.07	2.54	3.45	15
	2.44	1.01		
Providing specialized services and variety of private and public hospitals in the province	4.42	2	3.45	14
	2.65	0.8		
Applying new strategies	4	2.72	3.48	12
	2.4	1.08		
Transparency of prices in treatment and tourism	4	2.72	3.48	13
	2.4	1.08		
Respecting health tourists	4.42	2.45	3.63	9
	2.65	0/98		
Iran's relations with its neighbors and countries in the region	4.42	3.09	3.88	2
	2.65	1.23		
Iran's relations with industrialized and developed countries	4.14	3.54	3.89	1
	2.48	1.41		
Exclusive international advertising plan in medical tourism	4.21	3.27	3.82	3
	2.52	1.3		
Internal and external marketing research and identification of the target market and its needs	4.35	2.81	3.73	6
	2.61	1.12		
Inter-sectorial coordination in different sectors effective in medical tourism	4	2.9	3.56	11
	2.4	1.16		
The development of superior technologies and new safe and effective methods in medical tourism	4	2.54	3.41	18
	2.4	1.01		
Clarifying the custodian of medical tourism in the province	4.21	3.27	3.82	4
	2.52	1.3		
Political sanctions	4	3.54	3.81	5
	2.4	1.41		
The ease of establishing electronic communications, telecommunications and electronic banking for medical tourists, such as setting up an international credit card system	4.07	2.45	3.42	17
	2.44	0/98		
Establishing a representative office and consulting clinics for medical services that can be provided before visiting Iran in other countries and cooperating with the cultural advisors of the Iranian Embassy	4	3.09	3.63	8
	2.4	1.23		

## Discussion

In the current study, the important factors included the relationship of Iran with other countries, dealing with sanctions, marketing, and advertising of medical tourism. The results of other studies regarding the classification of the factors affecting medical tourism were consistent with those of the present study. As an example, Delgoshai et al. (2012) also investigated the factors affecting the development of medical tourism, such as the formulation of a written plan for medical tourism, effective support of the government for

medical tourism, basic and medical infrastructures in need of improvement, standardization of treatment costs and accreditation of hospitals, and cooperation and effective collaboration between departments at the macro level (17). Sadr Momtaz and Agha Rahimi (2010) also revealed in a study that the most important factors for the development of the health tourism industry in Iran were the public infrastructure development strategy, human resources development strategy, information and marketing system development strategy, and product

development strategy, respectively (18).

In the field of the capacity in Yazd, ancient history, medical staff's ethics, urban security, and experienced doctors in various specialties were identified. Some experts, including Prideaux (2000) (19) and Katircioglu (2009) (20) state that the level of infrastructure development (consisting of roads, water, electricity, security services, healthcare services, communication, and public transportation) is a determining factor in the arrival of tourists to any region; also, tourism infrastructure and the level of development in the destination country are among the most important factors determining the arrival of tourists. Regarding the variety and quality of services, Chee (2007) stated that the lack of infrastructural institutions to provide and improve the standard and quality of services was one of the important obstacles to the development of medical tourism (21).

Components such as the preparation of advertising plan and planning to gain their market share and marketing for joint foreign investments in the field of medical tourism were identified and approved in the field of medical tourism marketing and advertising. In this regard, Erfan Nia (2010) concluded that the use of integrated information systems could manage the process of medical tourism and all its dimensions of service delivery (22). Naude and Saayman (2005) consider political stability, tourism infrastructure, marketing and information, and the level of development in the destination as the key factors for traveling to Africa (23).

In the economic field, factors such as political sanctions, international pressures, and the sense of insecurity against Iran, the global image of Iran, and the changes and interconnectedness of the global, regional and domestic economy were identified. Aslan et al. (2008) estimated tourism demand function in Turkey and pointed out that factors such as transportation network infrastructure, accommodation capacity in the host country, and new communication networks have been neglected in the studies (24). In a qualitative research in Hong Kong, Heung et al. (2011) showed that policies and regulations, lack of government support, costs, capacity problems, and the health and treatment needs of the local community were the main obstacles to the development of medical tourism (25).

Other important factors affecting the future of medical tourism are relations with industrialized and developed countries, neighbors, and countries in the region. In this regard, Johnston et al. (2015) in their study showed that various factors played a role in the framework of medical tourism. Among

these factors are the reforms of the health sector and medical tourism, facilitation of inter-sectorial relations in organizations, and the improvement of health infrastructures (26).

Some managers and samples had limited time for the interviews, which might have lessened the collection of in-depth data. Thus, appointments were given to the managers, and they were reminded frequently to enhance the response rate and the quality of data collection. One of the advantages of the present research was the use of the morphological method for weighting the factors.

## Conclusion

Although medical tourism in Yazd has many capabilities, it must meet several requirements in this field. It should be noted that most of the studies carried out in Yazd so far on the future of tourism and medical tourism and even other fields and issues have mostly used internal and external factors to provide perspectives and strategies, while they have not processed uncertainties and possible futures. Thus, this research aimed to identify and analyze them to be used by medical tourism strategists, policy-makers, and decision-makers. Therefore, planners and policy-makers should build a desirable future for medical tourism in Yazd based on the drivers identified in this study including relations with industrialized and developed countries, neighbors, and countries in the region; clarification of the custodian and coordinator of medical tourism in the province; preparation of a comprehensive document on medical tourism, political sanctions, marketing and medical tourism advertising; international flights; establishment of representative offices and medical service consultation clinics in other countries; cooperation with cultural advisors of the Iranian embassy; respect for medical tourists and urban security; as well as focus on marketing in specific countries according to the capacities of medical field in Yazd.

**Conflict of Interest:** None declared.

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