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Article

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Amfiteatru Economic Journal

Provided in Cooperation with:

The Bucharest University of Economic Studies

Suggested Citation: Andrei, Catalina Liliana; Tigu, Gabriela; Dragoescu, Raluca Mariana; Sinescu, Crina Julieta (2014) : Analysis of Medical Tourism for Cardiovascular Diseases, Amfiteatru Economic Journal, ISSN 2247-9104, The Bucharest University of Economic Studies, Bucharest, Vol. 16, Iss. Special No. 8, pp. 1136-1150

This Version is available at:

<https://hdl.handle.net/10419/168882>

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ANALYSIS OF MEDICAL TOURISM FOR CARDIOVASCULAR DISEASES

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Abstract

Increasing costs of treatments have led to the apparition of the medical tourism. Patients in high-income countries seek to solve their health problems in developing countries where the cost of medical treatment is much lower. This cost difference has led to the medical tourism industry that is currently estimated with an annual growth rate of about 20%. Cardiovascular diseases are a leading cause of death worldwide. The high cost of treating these diseases cause many patients to seek treatment options abroad. This paper presents an analysis of the medical tourism industry highlighting the factors that led to its development, barriers to medical tourism, and the economic impact of this industry. Although Romania has highly appreciated doctors it hasn't achieved yet the high level of other developing countries where medical tourism is more intense. Spa tourism is still far from Romania's potential in this area due to the very small investments and the lack of necessary infrastructure. Using statistical and econometric techniques we examined key health indicators in Romania showing the lack of correlation between the prevalence of cardiovascular diseases, the development of the endowment of the health system in Romania, expenditures on health care and evolution of the number of foreign tourists coming to Romania to treat these diseases. We used statistical data series provided by N.S.I. that were processed using Eviews. We also tested whether there is a causal relationship in the Granger sense between the percentage of GDP allocated to the health care system and the number of nights spent by foreign tourists in resorts in Romania or the number of arrivals of foreign tourists.

Keywords: Medical tourism, spa tourism, cardiovascular diseases, health care, health expenditure.

JEL Classification: I11, L83

Introduction

Free movement of goods and services stipulated in the GATS agreement of the World Trade Organization (Smith, 2009) and the increasing economic integration and global interdependence among states have led to a very sharp increase in the international market of health services during the last decade. Although the mobility of people in search of better

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or cheaper health services is not new, medical tourism is a new tourism niche with an impressive growth rate (Horowitz et. al., 2007). It is estimated that in 2010 the global medical tourism market was more than \$78.5 billion with an annual growth rate of 20%-30% (KPMG, 2011). Factors such as rising healthcare costs, population ageing, and the existence of waiting lists of impressive dimensions for certain types of medical services have contributed to patient's mobility from higher income countries seeking treatment facilities abroad (Forgione, 2007). Developing countries provide such services at a much lower cost due to the low cost of labor, to lower administrative expenditures, the existence of new treatment centers, thus attracting a large number of people from developed countries. We must emphasize that medical tourism has some drawbacks - critics bring the argument that treatment centers in developing countries are often enclaves that offer services only to the external demand while the local population has access to lower quality medical services creating in this way a two-tier health system: a high quality system for foreign tourist and a parallel but lower quality system for the local population.

There are several definitions of the concept of medical tourism in the literature. The most comprehensive definition (Lunt, et. al., 2012) describes the term of medical tourism as that kind of tourism when people decide to seek healthcare outside their country of residence by his own will, including a wide range of health services: dental, cosmetic surgery, cardiovascular surgery, fertility treatments, etc. Although agencies promoting medical tourism include in their packages a leisure part, this aspect of the trip is less important for patients with serious health problems (Gan, 2011).

This paper presents an analysis of the medical tourism and is structured as follows: the next section presents an analysis of the global market of the medical tourism, then the implications of this type of tourism on health systems and on the economy of the two countries, the one where the patient is treated and the home country of the patient are presented. Then, we emphasize the most important issues and barriers faced by this type of tourism and finally we examine a number of statistical indicators for healthcare system and medical tourism in Romania.

1. Methodology

In the first part of the article we will examine a number of issues that characterize the global medical tourism. We will analyze factors affecting the supply and demand in the field of the medical tourism, the effects that the development of medical tourism has on the economy and the problems facing the medical tourism today.

The demand is influenced mainly by economic factors: increasing income of the population in the developed countries and low cost medical services in developing countries. Other factors influencing demand are: the population ageing, confidentiality of health services, health insurance issues. The supply of medical tourism is driven by investment in the development of health centers and the necessary infrastructure, subsidies granted by some governments to health centers providing medical services to foreign tourists. Regarding the problems that hinder the development of medical tourism one can include: quality of health services, the lack of international standards for medical records, difficulties in obtaining visas for travel, cultural or language differences.

The last part of the article is devoted to a statistical analysis of the medical tourism in Romania. For this analysis we used the following data sets: the total number of physicians,

the number of hospital beds, the number of hospital discharges, the number of beds in the resorts (spa), the number of overnight stays in health resorts, the number of arrivals of tourists in resorts for the period 1990 – 2012. All these data sets were extracted from the Tempo database provided by the N.S.I. To test whether there is a link between changes in the percentage of GDP allocated to health care system and medical tourism development in Romania we applied a Granger test on the following data sets: the number of nights spent by foreign tourists in resorts, the number of arrivals of foreign tourists and the percentage of GDP allocated to the health care system for the period 1995-2011. In order to apply the Granger causality test we first studied the stationarity of the data series using the ADF test. Data processing was performed using Eviews.

2. The medical tourism market

Medical tourism industry has developed a lot especially in the last decade. (Deloitte, 2008) estimates that the global market for medical tourism in 2008 was about 60 billion dollars and (KPMG, 2011) estimates that in 2010 the medical tourism industry revenue reached \$78.5 billion. Most commonly sought medical treatments are plastic surgery, dentistry, cardiology, orthopedic surgery, gastric surgery, organ transplants, ophthalmology, IVF (Lunt, et. Al., 2012, Cheung, 2007).

The determinants of the demand for medical tourism are economic, social and cultural, and they are interconnected.

Increasing costs of the health care services in industrialized countries on the one hand and the availability of high quality treatment facilities at much lower prices in developing countries on the other hand is one of the drivers of medical tourism market demand. Table 1 shows the costs of treatment of some cardiovascular diseases in several countries (Lunt, et. al., 2012).

Table no. 1: The cost of treatment of some cardiovascular diseases in different countries (in US dollars)

Treatment	USA	UK	India	Thailand	Singapore	Malaysia	Mexico	Poland
Cardiac Bypass	113000	13921	10000	13000	20000	9000	3250	7410
Heart valve replacement	150000	-	9500	11000	13000	9000	18000	9520
Angioplasty	47000	8000	11000	10000	13000	11000	15000	7300

Source: Lunt, et al., 2012. Medical tourism: treatments, markets and health system implications: a scoping review. OECD, Directorate for Employment, Labor and Social Affairs, p. 12.

The costs of medical treatment in countries such as India, Thailand and Singapore are about 10% of their cost in the U.S. Other studies (Herrick, 2008) indicate the same price differences. For example, surgical treatments may be up to 80% cheaper in India, Brazil, Costa Rica, Mexico, Singapore or Thailand than in the U.S. (Lee, 2010).

Although the economic factor is of paramount importance in determining the demand of the medical tourism industry, there are other important factors that influence this demand (Gan, 2011). Often health insurance in the country of origin of the patient does not adequately cover a range of medical conditions or treatments (Connel, 2006) which leads patients seeking services in other countries. For example, after the U.S. Census Bureau estimates

(2011), there were approximately 48.6 million uninsured people in the U.S., which is 15.7% of the total population.

Even in countries with well-developed health insurances, the existence of very long waiting lists for certain treatments cause patients to travel in other countries that provide necessary treatment very quickly.

Increasing incomes in developing countries is another factor leading to increased demand in medical tourism (Caballero-Danell, 2007). The existence of a higher income make possible that some people can pay out-of-pocket for health services in other countries, services not covered by health insurance in the home country, thus fuelling the demand for medical tourism.

The demand of the medical tourism is also influenced by the fact that some people who use health services want to keep their privacy, especially in plastic surgery, and they can easily obtain such health services in foreign countries.

The population ageing is a phenomenon faced by all countries and especially the developed countries. On one hand, the average age of the population increases due to increasing life expectancy at birth and on the other hand due to lower birth rates. Fertility decline is considered as the main factor of ageing. In the last 50 years the fertility fell from 5.0 to 2.7 children per woman while life expectancy at birth increased from 46.5 years in 1950-1955 to 66 years in 2000-2005 (United Nations, 2001). More elderly people can translate into more people with chronic diseases such as hypertension, diabetes and so on who need care.

The development of medical tourism is not only due to the growing demand, but also due to the supply of more high-quality healthcare services at low prices (Lunt, 2010).

Investments in the development of health centers and infrastructure increased the supply of medical services (Deloitte, 2008). Asia has become an important destination in medical tourism industry due to their low cost, modern hospitals, the existence of well-trained specialists (Whittaker, 2008). India, Singapore and Thailand are the market leaders in medical tourism in Asia with a market share of 90% in 2008 (NaRanong, 2011) and a composite annual growth rate of approximately 26.5% from 2013 to 2015 (RNCOS, 2013).

The main destinations in the medical tourism industry are (United Nations, 2010):

- Asia: countries such as India, Thailand, Singapore, Malaysia, the Philippines and China annually attracts a large number of patients from the developed countries due to the existence of medical centers comparable in terms of quality to the medical services provided by the largest hospitals in the developed countries, the existence of a highly trained medical staff that speak English.
- Middle East and Africa. Tunisia, Jordan, United Arab Emirates, Kingdom of Saudi Arabia, Israel are countries where medical tourism industry brings significant revenues. For example, in Tunisia, about 0.43 % of GDP comes from medical tourism (Lautier, 2008).
- Latin America and the Caribbean is a serious competitor of the Asian medical tourism market. The strengths of the countries in this area consist of the geographical proximity to the U.S. which is a major attraction pool of patients, low cost medical services, English speaking medical staff, cultural climate close to U.S. and Europe. Some countries in the region with an important activity in medical tourism are: Brazil (especially for cosmetic surgery), Chile that mainly attracts patients from neighboring countries, Columbia offering particularly cardiology and ophthalmology services, Costa Rica

recognized for treatment in the dental field, Cuba being a major medical tourism destination from the beginning of 80's with outstanding cardiology, ophthalmology, organ transplants services, Dominican Republic that attract mostly Dominican citizens living in the U.S., Mexico providing medical services in cardiology, dentistry, ophthalmology, organ transplant particularly to U.S. citizens, Panama which has health care costs about 40-70% cheaper than the U.S., attracting mainly American patients, Bahamas, Barbados, Jamaica, providing spa services and treatment facilities.

Another important factor leading to the increase of the medical tourism is the development of the electronic communications technologies and the spread of Internet (Bookman, 2007), (Caballero-Danell, 2007). Using the Internet patients can search the today treatment facilities in other countries, they can compare prices, they can make trip plans, they can participate in video conferences with doctors from other countries.

Although medical tourism is growing worldwide, there is no systematic statistical data yet that can be used in comparative analyzes. Lautier (2008) and Caballero-Danell (2007) show that the statistical data collected about medical tourism are still heterogeneous to be successfully used in international comparisons.

3. The implications of medical tourism on the economy and health systems

Recognizing the potential that medical tourism can have on economic growth, many governments have developed coherent strategies to promote this industry. Bookman (2007) show that countries such as Chile, Cuba, India, Thailand, Malaysia, Philippines, Jordan have national policies to promote medical tourism. In the Philippines there is a plan for promoting medical tourism included the Medium Term Development Plan (Carabello, Danell, 2007). Cuban government supports medical tourism by introducing bank card payment facilities or payment made in any convertible currency to encourage the development of this industry and to attract patients from developed countries. Promotion and development of medical tourism creates resources for infrastructure development and investment in Cuba's national health system.

The governments of some countries provide incentives (Arunanondchai, 2006) such as reduced taxes on imports for medical devices (Philippines, India) or direct subsidies to hospitals that treat foreign patients (Malaysia) to develop the medical tourism.

In addition to these incentives, medical tourism is promoted at the governmental level in some countries by developing the necessary infrastructure: investing in the modernization of roads, transport, communications, construction of hotels, hospitals, etc. (Caballero-Danell, 2007). In India there is even a close collaboration between the Ministry of Health and the Ministry of Tourism for developing programs furthering the medical tourism. In Cuba there is also a very effective cooperation between various ministries, institutions of Tourism, Trade and Industry, under the Ministry of Health in order to develop a medical tourism strategy.

In many countries, medical tourism involves mostly private health care. Government subsidies or incentives to encourage investment in the private medical sector contribute to sustainable development of medical tourism.

Public investment in private health sector should however not affect the public health system. A strategy to avoid such problems is suggested by Chanda (2002) - cross-subsidies:

some revenue from foreign tourists who use medical treatments has to be redirected to the public health system. Other forms of cross-subsidies suggested in the literature include hospital beds offered for free or partially free to the local population by private health facilities (Bookman, 2007).

Tourism development also brings, however, less desirable effects. One of these effects is the creation of two parallel health systems: one for foreign patients that pay for medical services and offering high quality services and one for the local population where only basic services are provided. In some countries like India there is a public perception of this dual system of medical services due primarily to well-equipped hospitals for foreign patients (Chanda, 2002). Another undesirable effect of medical tourism development is the drain of the best doctors from the public health system toward private clinics that offer higher wages and where the local population cannot receive healthcare due to high costs, thus affecting the quality of the public health system (York, 2008).

Using public funds to develop medical facilities for foreign patients to encourage medical tourism represents a social cost, especially where public health is less developed. Therefore, to ensure benefits for both exporting and importing country of the medical services it is necessary that the public health objectives and health services offered to the local population to be taken into account when developing a strategy to promote medical tourism.

Treatments performed abroad may incur additional costs to the health system in the home country of the patient if complications arise after returning home and they should be treated locally.

4. Problems faced by the medical tourism

Medical tourism is facing a number of problems. The most important of these are discussed in the following.

Quality of the health care is a fundamental problem in accessing medical services in another country. Usually, the quality of health care is seen in connection with the accreditation of medical units by unanimously recognized international bodies such as the Joint Commission International (JCI), Society for Quality in Health Care, The European Society for Quality in Healthcare or International Standards Organization. Table 2 presents the number of JCI accredited hospitals in each country. Trust in health services is determined largely by the existence of international accreditation of the hospital concerned. However, accreditation is not achieved without a cost: in addition to the actual fees paid to evaluation, hospitals must organize some administrative data management.

The lack of portability of health insurance is another issue faced by the medical tourism. In most cases, health insurance is valid only in the home country of the patient. If he/she wants to be treated in another country he/she must bear the full cost of this treatment and the cost of travel, hotel, etc.

Non-recognition of the medical profession in the destination country by the patient's home country authorities is an obstacle for many people who want to be treated abroad. Therefore, many hospitals in countries receiving foreign patients employed doctors who study or have work stages in developed countries like the U.S. and the U.K. (Caballero-Danell, 2007).

Table no. 2: The number of JCI accredited healthcare

Country	Number of medical units	Country	Number of medical units
Argentina	1	Kenya	1
Austria	6	Kuwait	2
Bahamas	1	Lebanon	3
Bahrain	1	Malaysia	10
Bangladesh	1	Mauritius	1
Barbados	1	Mexico	9
Belgium	1	Moldova	1
Bermuda	1	Nederland	2
Brazil	53	Nicaragua	1
Chile	2	Nigeria	1
China	30	Oman	2
Colombia	3	Pakistan	1
Costa Rica	3	Panama	2
Czech Republic	4	Peru	1
Denmark	15	Philippine	5
Ecuador	1	Portugal	12
Egypt	4	Qatar	11
Ethiopia	1	Russia	1
Germany	3	Kingdom of Saudi Arabia	63
Greece	1	Singapore	22
India	23	South Korea	39
Indonesia	9	Spain	21
Ireland	24	Taiwan	24
Israel	13	Thailand	48
Italy	24	Turkey	50
Japan	7	United Arab Emirates	78
Jordan	12	Vietnam	1
Kazakhstan	2	Yemen	1

Source: <http://www.jointcommissioninternational.org/JCI-Accredited-Organizations>.

Another obstacle that medical tourism faces is the lack of universally accepted standards regarding patients' medical files. Destination country' doctor would usually assess patients before they actually get to the medical unit and this can be achieved today via electronic means of communication. The existence of standards for patient medical records stored in databases can help to the development of the medical tourism.

Problems obtaining visas for travel in some countries also contribute to restricting access to the medical services in countries other than the patient's home country (Bookman, 2007). These problems can be solved by the existence of international treaties governing this issue. For example India has introduced a special visa for patients to be treated in this country (Chinai, 2007).

Professional liability in cases of medical error is an issue highlighted in Deloitte (2008) and Caballero-Danell (2007). The limited liability makes efforts to promote medical tourism not

to have the expected effect. Solving professional liability issues in case of medical error must be resolved through regional or international agreements.

Cultural or language differences can be a problem in the development of medical tourism. This was foreseen by many health facilities that have not only English speaking medical personnel but also offers related services.

5. Cardiovascular diseases and medical tourism in Romania

Cardiovascular diseases are the leading cause of death worldwide. In 2008 there were 17.3 million deaths due to these diseases and for 2030 it is expected a number of 23.6 million deaths (Mendis, 2011).

In Western and Central European countries in the past 20 years, mortality decreased, reaching a few years ago 3 deaths per 1,000 inhabitants. In Romania, however, there has been an increase in cardiovascular disease mortality. Among cardiovascular diseases, the highest mortality rate was recorded for ischemic heart disease (Andrei, 2010). Romania ranks 3rd at European level in terms of deaths caused by cardiovascular diseases, after Bulgaria and Ukraine.

In the following we present some indicators that characterize the evolution of the health system in Romania in the last 23 years.

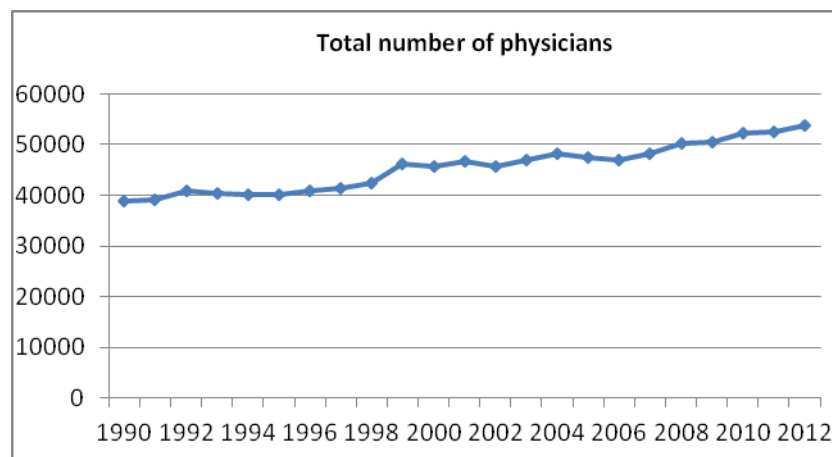


Figure no. 1: Evolution of the number of physicians between 1990 and 2012

Source: NSI

In Figure 1 we can observe the evolution of the total number of physicians (excluding dentists) in Romania. In 1990 there were 38,997 physicians and in 2012 their number increased to 53,681. Figure 2 shows the number of hospital discharges for both total and cardiovascular diseases. In 1993 there were 3.842 million hospital discharges and in this number 2011 was 4.525 million. 11.11% out of these (427,000) were for cardiovascular diseases in 1993 and 643,000 in 2011 (14.2%). Although the number of physicians has been rising, health system capacity expressed in number of hospital beds has been steadily

declining: in 1993, there were 207,001 hospital beds in Romania, but in 2011 this number was only 128,501, which is 62.07% of the number registered in 1993.

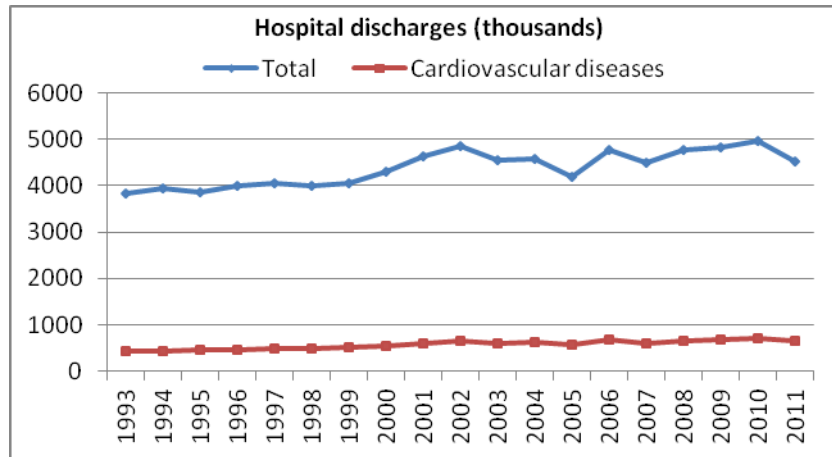


Figure no. 2: The number of hospital discharges
Source: NSI

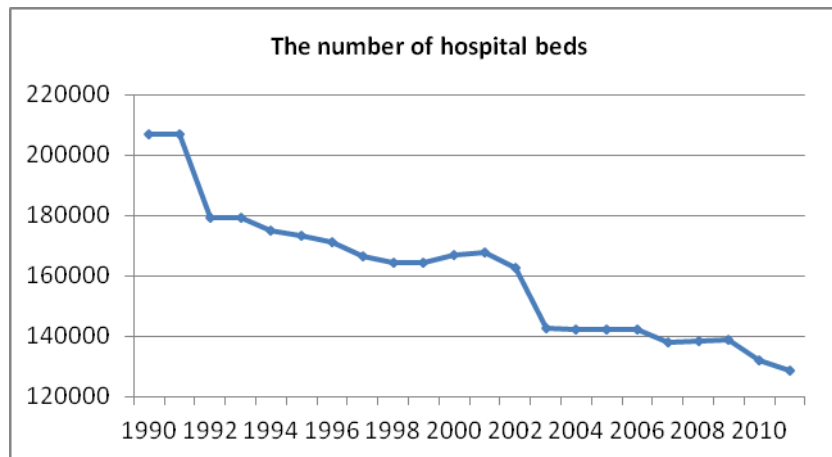


Figure no. 3: Number of hospital beds at the end of the year
Source: NSI

Natural resources for balneal treatment are one of the advantages of medical tourism in Romania. Romania has a significant network of health resorts for various diseases: cardiovascular, rheumatology, respiratory, digestive, hepatobiliary, renal. Medical services offered to tourists by the spas in Romania are various: physiotherapy, electrotherapy, aerosols, carbonated baths, and massage.

Romania has a number of resorts specialized in treatment of cardiovascular diseases: Vatra Dornei, Borsec, Băile Tușnad, Covasna, Buziaș. Although important natural resources in this area would indicate Romania as a potential destination for medical tourism, the lack of investment in spas equipped with modern equipment, and the lack of modern accommodation facilities led to poor results in attracting foreign patients. Although the number of beds in sanatoriums increased from 910 in 2002 to 1939 in 2012 (as it is shown in figure 4) the number of tourist arrivals respectively the number of overnight stays in spas has been declining. Figure 5 shows the evolution of the total number of the tourist arrivals, Romanian and foreign tourist's arrivals in spas and resorts and figure 6 shows the evolution of the number of overnight stays in spas and resorts.

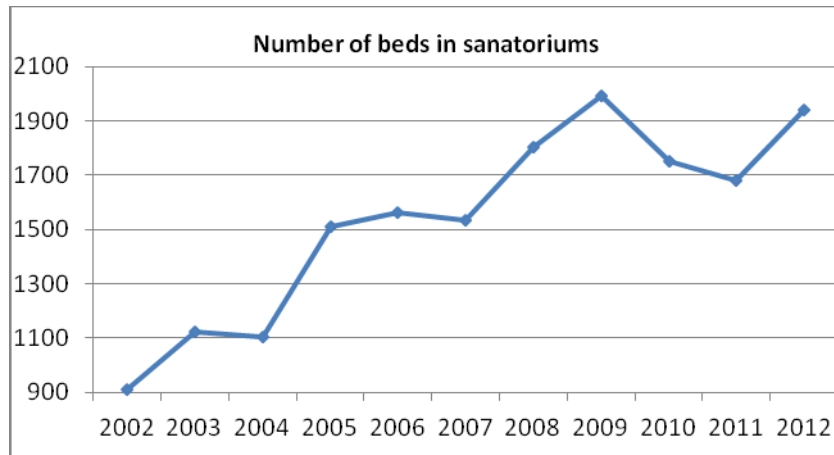


Figure no. 4: The number of beds in sanatoriums
 Source: NSI

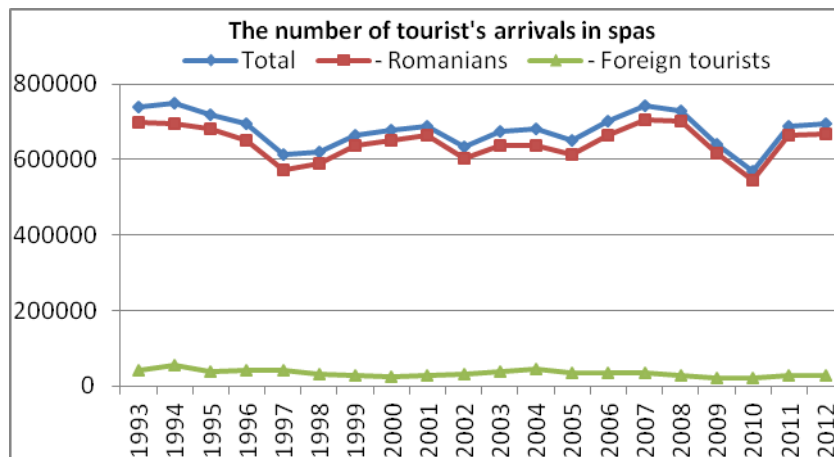


Figure no. 5: Number of arrivals in spas
 Source: NSI

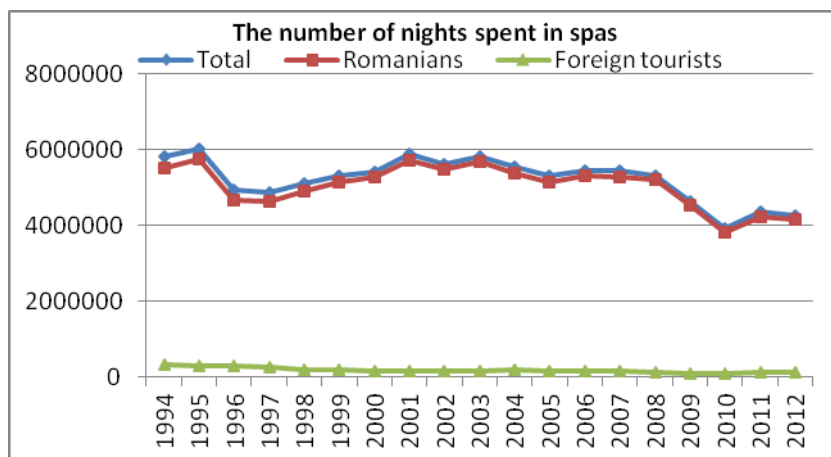


Figure no. 6: The number of nights spent in spas

Source: NSI

Analyzing these data we find out that the number of foreign tourist arrivals is just only 5.6% of total arrivals in 1993 and this indicator decreased to 4.2% in 2012. A similar pattern followed the number of nights spent by the foreign tourists in spas: in 1994 only 5.3% of the total was due to foreign tourists and this percentage decreased to 2.6% in 2012.

These figures indicate that medical tourism in Romania is an area that has been neglected in the past 20 years although the country has a significant natural potential in this area.

In order to test whether there is a causal relationship between the percentage of GDP allocated to health system and the number of nights spent by foreign tourists in resorts in Romania or the number of arrivals of foreign tourists we have applied a Granger causality test for the three data sets (for the period 1995-2011).

We first studied the stationarity of the data series using the ADF test. The processes were carried out with Eviews.

Applying ADF test with constant and trend model and the model with constant for data series representing the percentage of GDP allocated to health system indicates that the series is non-stationary and we proceeded to calculate the first order difference.

Null Hypothesis: PROCENT_DIN_GDP has a unit root
 Exogenous: Constant, Linear Trend
 Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.744275	0.2343
Test critical values:		
1% level	-4.667883	
5% level	-3.733200	
10% level	-3.310349	

Null Hypothesis: PROCENT_DIN_GDP has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.473651	0.5205
Test critical values:		
1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

Data source: N.S.I. Software used for data processing: Eviews

Applying the ADF test to the first order difference series shows that the series is stationary for all 3 levels of significance. In the same way we did for the data series representing the number of arrivals of foreign tourists in spas and the number of nights spent by foreign tourists. ADF test results show that the number of nights spent by foreign tourists in resorts is a non-stationary series, but first order difference is stationary and the number of tourist arrivals is a stationary series. The results of Granger causality test are presented below.

Pairwise Granger Causality Tests

Sample: 1995 2011

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
D_INNOPTARI does not Granger Cause D_GDP	14	0.28560	0.7581
D_GDP does not Granger Cause D_INNOPTARI		0.33329	0.7250

Pairwise Granger Causality Tests

Sample: 1995 2011

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
SOSIRI_TURISTI_STRAINI does not Granger Cause D_GDP	14	2.07531	0.1815
D_GDP does not Granger Cause SOSIRI_TURISTI_STRAINI		0.06312	0.9392

Data source: N.S.I. Software used for data processing: Eviews

These results indicate the lack of correlation between these data sets. Although spas have significant resources (about one third of the thermal and mineral waters resources of Europe are in Romania) the development of the spas in Romania lacked a clear strategy, investments in material resources, and a proper promotion of tourism medical. This led to a continuous deterioration of the health spas in Romania.

In order to bring major benefits for Romania medical tourism needs cooperation between all institutions involved in defining a strategy for the development and encouragement of this type of tourism.

Conclusions

Medical tourism is an industry with an average annual growth rate of approximately 20%. It is estimated that in 2010 the medical tourism industry revenue reached \$78.5 billion. The high cost of health care in developed countries combined with low prices of these services in some developing countries is the main factor leading to the development of medical tourism.

In addition to these two important factors our analysis revealed the existence of other factors that determine the supply and demand in medical tourism: the health insurance of the patient not adequately cover a range of conditions or treatments, the need to preserve confidentiality for some people seeking medical treatments, population ageing, investment in the development of health centers and the necessary infrastructure. The main medical tourism destinations are countries in Asia, South America and Middle East.

Although Romania has important natural resources in the spas, it failed to attract a significant number of foreign tourists for treatment due to factors such as lack of investment in this area, the lack of a clear strategy of development in medical tourism, a poor infrastructure. Although the number of beds in sanatoriums increased from 910 in 2002 to 1939 in 2012, the number of tourist arrivals and the number of overnight stays declined during this period. We also noted that the number of foreign tourist arrivals is only just 5.6% of the total arrivals in 1994 and this indicator drops to 4.2% in 2012. We noted a similar trend for the number of overnight stays of foreign tourists in resorts: 5.3% in 1994 and 2.6% in 2012. The evolution of these indicators leads us to conclude that medical tourism in Romania is an area that has been neglected since 1990 although the country has significant natural potential in this area. Testing the existence of Granger causality in respect of the percentage of GDP allocated to health care system and the number of nights spent by foreign tourists in resorts in Romania or the number of arrivals of foreign tourists we found that there is no correlation between these data sets.

Acknowledgment

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/159/1.5/S/138907” Excellence in interdisciplinary scientific research, doctoral and postdoctoral, in the field of Economic, Social and Medical science-EXCELIS”.

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