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Article

The Impact of Health-Related and Economic Factors on Tourism: A Research on the Leading Countries in Medical Tourism

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Abstract: Accessibility of quality and affordable healthcare services is a fundamental need for everyone globally and medical tourism helps facilitate it. Therefore, medical tourism is very important for all individuals and countries; and the factors that effect medical tourism are just as important. Healthcare services are naturally at the center of medical tourism. Moreover, it is known that economic factors affect every sector. Hence, we used several health-related and economic factors as explanatory variables. On the other hand, as there is not enough global, systematic and regularly updated medical tourism specific data yet, we used tourism data which naturally encompass medical tourism data as separate dependent variables. We conducted multivariate regression analyses and found that the increases in health expenditure and decreases in infant mortality rate significantly increase tourist arrivals and tourism receipts in the leading countries in medical tourism. Our findings thus suggest that medical tourists indeed do pay attention to health-related factors when choosing a medical tourism destination and that improving the healthcare services provided in a country may significantly increase the competitiveness of the country in medical tourism.

Keywords: medical tourism; healthcare services; health outcomes; health economics; health finance

1. Introduction

Accessibility of quality and affordable healthcare services is extremely important for the well-being of all individuals globally, and hence for all countries around the world [1–4]. Inasmuch that, one of the Sustainable Development Goals (SDGs) of the United Nations (UN) is “*Good health and well-being*” (SDG 3) and its aim is officially summarized as to “*ensure healthy lives and promote well-being for all at all ages*” [5]. Achieving this goal, as with all the other SDGs, requires a joint global effort by all countries.

With the help of globalization, countries are continually getting more interconnected [6]. This makes it easier to improve the accessibility of quality and affordable healthcare services. Because in some cases, the optimal healthcare service provider for a specific service may be located in a different country; providing the required service with more quality and less overall expense, even with the transportation and accommodation expenses, than the local healthcare service providers. In such a case, the individual who receives the healthcare service in another country becomes a medical tourist who received the service through medical tourism [7–10].

Before choosing a destination country, and a healthcare service provider in that country, and a physician in that healthcare service provider in that country; individuals first need to learn about their options comprehensively, as they will need to compare their options thoroughly. Therefore, intermediary institutions play a very crucial role within the medical tourism sector, because they help individuals to know about their global options in the first place, and they also help individuals to

contact the relevant healthcare service providers. However, it is also very important to note that, it is essential to prefer well-established intermediary institutions, or official ones where there is one, in order to minimize the risk of encountering unethical issues [7–10].

By being a destination for medical tourism, a country not only contributes to the global well-being and takes part in achieving SDG 3, it also contributes to the well-being of its own population with increased medical expertise and it also may potentially increase its tourism revenues [11–14]. Consequently, medical tourism offers great opportunities to all countries; and thus, many countries are aiming to become an attractive and preferred destination for medical tourism.

This brings up another indirect benefit of medical tourism. As the healthcare services are at the very core of medical tourism, countries need to constantly improve the quality and affordability of the healthcare services they provide in order to be and remain competitive in the global medical tourism sector [15–17]. The competition among countries thus helps improve the accessibility of quality and affordable healthcare services throughout the world.

Medical tourism is therefore of vital importance for everyone globally, as it benefits everyone. Because of this, examining the factors that affect medical tourism is just as important. There are several studies in the literature that investigate various factors that may affect medical tourism. Afthanorhan et al. [18] report that medical price and staff skill have a positive effect on patient loyalty in medical tourism. Moreover, Abubakar and Ilkan [19] find that online word of mouth (WOM) have a positive impact on intention to travel and medical tourism destination trust. Furthermore, Han and Hyun [20] find that perceived quality and price reasonableness are positively associated with customer retention in medical tourism. Similarly, Yalghouzaghaj et al. [21] report that perceived quality has a significant impact on the behavioral intention of medical tourists.

Within this context, we aimed to investigate the impact of health-related and economic factors on the tourism sector in the leading countries in medical tourism. As healthcare services are at the core of medical tourism, health-related factors are expected to have an impact on medical tourism. On the other hand, it is known that economic factors affect every sector in a country, without any exceptions [22–24]; in fact, every firm and even every individual in a country is affected by economic factors as well.

Unfortunately, as medical tourism is still a rather new sector even though it is growing rapidly; there is still not enough global and routinely updated data about medical tourism. However, the data about general tourism naturally encompass the information about medical tourism. Therefore, the impact of health-related factors on tourism can be interpreted to partly represent their impact on medical tourism; because the portion of tourism data that is affected by health-related factors can be considered as mainly related to medical tourism.

Analyzing the factors that affect medical tourism may be beneficial for managers and policymakers in the healthcare sector who are trying to increase the competitiveness of some of the healthcare service providers in a country or the entire health system of a country in medical tourism. Such efforts are also expected to be beneficial for all individuals globally in the long run, because any and all improvement in the accessibility of quality and affordable healthcare services benefits everyone.

2. Methodology

The leading countries in medical tourism and their relevant medical specialties [25,26] are presented in Table 1 in which the countries are listed alphabetically.

Table 1. The leading countries in medical tourism and their medical specialties.

Medical Specialties	Country
cosmetic and reconstructive surgery, dentistry, orthopedics, ophthalmology, fertility treatments	Costa Rica
cardiac surgery, orthopedics, organ transplants, oncology, fertility treatments	India

cardiac surgeries, fertility treatments, cosmetic and plastic surgery, dentistry, orthopedics	Malaysia
bariatric surgery, cosmetic surgery, dental procedures, fertility treatments, orthopedics	Mexico
cardiology, oncology, neurology, ophthalmology, organ transplantation	Singapore
plastic and cosmetic surgery, dermatology, ophthalmology, dental procedures, stem cell therapy	South Korea
oncology, cardiovascular procedures, joint replacement surgeries, traditional Chinese medicine, preventive healthcare	Taiwan
cosmetic and plastic surgery, fertility treatments, cardiac procedures, orthopedics, wellness retreats	Thailand
hair transplantation, cosmetic surgery, dental procedures, organ transplantation, eye surgeries	Türkiye
cancer treatment, cardiac surgery, neurology, organ transplantation, advanced diagnostics	United States

It can be seen in Table 1 that there are many different medical specialties that the leading countries offer to medical tourists. Some of the same or similar medical specialties are offered by several countries. For example, cardiac surgery and procedures are offered by India, Malaysia, Singapore, Taiwan, Thailand and United States; cosmetic and plastic surgery are offered by Costa Rica, Malaysia, Mexico, South Korea, Thailand and Türkiye; dentistry and dental procedures are offered by Costa Rica, Malaysia, Mexico, South Korea, Türkiye; fertility treatments are offered by Costa Rica, India, Malaysia, Mexico, Thailand; and organ transplantation is offered by India, Singapore, Türkiye and United States.

On the other hand, according to Table 1, some of the medical specialties are relatively specific to some countries among the leading countries in medical tourism. For example, stem cell therapy is relatively specific to South Korea; traditional Chinese medicine is relatively specific to Taiwan; wellness retreats are relatively specific to Thailand; and hair transplantation is relatively specific to Türkiye.

Accordingly, it can be stated that the level of competition among the leading countries in medical tourism is already very high. Furthermore, it is understood that the medical tourism sector is already a major and highly active sector; and it is expected to only keep growing, with the existing competition rising and also other countries continually joining in.

As mentioned before, health-related factors and economic factors are expected to have an impact on tourism and medical tourism. Therefore, we collected data about health-related factors, economics factors and tourism. The variables of the research are collectively presented in Table 2.

Table 2. The variables of the research.

Symbol	Variable	
HEC	Current health expenditure per capita (current US\$)	Health-Related Factors
LEX	Life expectancy at birth, total (years)	
IMR	Mortality rate, infant (per 1,000 live births)	
GDPC	GDP per capita (current US\$)	
EFI	Economic Freedom Index	Explanatory
TA	International tourism, number of arrivals	
TRP	International tourism, receipts (current US\$)	

**Dependent
(Separate)**

Tourism

HEC, LEX and IMR symbols were used respectively for “Current health expenditure per capita (current US\$)”, “Life expectancy at birth, total (years)” and “Mortality rate, infant (per 1,000 live births)” which were determined as the variables for Health-Related Factors. GDPC and EFI symbols were used respectively for “GDP per capita (current US\$)” and “Economic Freedom Index” which were determined as the variables for Economic Factors. TA and TRP symbols were used respectively for “International tourism, number of arrivals” and “International tourism, receipts (current US\$)” which were determined as the variables for Tourism.

The data for EFI were collected from the Fraser Institute. The data for HEC were collected from the Ministry of Health and Welfare (Taiwan) for Taiwan and from the World Bank for the other countries. The remaining data were collected from the National Statistics (Taiwan) for Taiwan and from the World Bank for the other countries [27–30].

The first available data for HEC for Taiwan were from the year 2014; and the last available data for TRP for Singapore were from the year 2018. Therefore, the scope of the study was determined as 2014–2018. The health-related and economic factors were taken as explanatory variables and tourism data were taken as separate dependent variables; then, multivariate regression analyses [31–33] were conducted. Before conducting the multivariate regression analyses, the collinearity statistics were examined to determine if there was a multi collinearity problem. The analyses were conducted by using SPSS statistical software.

3. Results

We firstly examined the collinearity statistics to investigate potential multi collinearity problems. The collinearity statistics for the explanatory variables are shown in Table 3.

Table 3. The collinearity statistics for the explanatory variables.

After GDPC is excluded		Variance Inflation Factor	Tolerance	Explanatory Variable
Variance Inflation Factor	Tolerance			
1,881	0,532	3,871	0,258	HEC
6,284	0,159	7,516	0,133	LEX
4,668	0,214	5,905	0,169	IMR
	Excluded	12,342	0,081	GDPC
4,391	0,228	9,288	0,108	EFI

According to the Variance Inflation Factor (VIF) values, there was a multi collinearity problem among the explanatory variables, meaning that the variables were highly correlated [31–33]. Therefore, the variable with the highest VIF value (GDPC: 12,342) was excluded from the analysis. The new VIF values after the GDPC is excluded indicated that the multi collinearity problem was resolved, as none of the new VIF values were higher than 10.

After the multi collinearity problem was resolved, we conducted multivariate regression analyses. The results of the econometric model where TA is the dependent variable are shown in Table 4.

Table 4. The results of the econometric model where TA is the dependent variable.

p-value (t)	t-statistic	β coefficient	
0,000	7,165	970.666.854,683	constant
0,000	12,857	18.488,077	HEC
0,000	-5,271	-10.173.360,150	LEX
0,000	-4,905	-3.321.598,181	IMR
0,036	-2,165	-18.295.423,834	EFI
	67,194		F-statistic

0,000	p-value (F)
0,844	Adjusted R²

The results indicated that the econometric model was statistically significant (F: 67,194; $p < 0,05$) and the explanatory power (Adj. R²: 0,844) of the explanatory variables was high. The findings suggested that the leading countries in medical tourism benefit from better HEC and IMR, which improve their TA. Accordingly, HEC had a positive (β : 18.488,077; t: 12,857; $p < 0,05$) and IMR had a negative (β : -3.321.598,181; t: -4,905; $p < 0,05$) association with TA. This means that when the health expenditure increases and the infant mortality rate decreases, the number of tourist arrivals increases. The results of the econometric model where TRP is the dependent variable are shown in Table 5.

Table 5. The results of the econometric model where TRP is the dependent variable.

p-value (t)	t-statistic	β coefficient	
0,000	5,806	540.970.087.022,188	constant
0,000	27,798	27.491.985,979	HEC
0,017	-2,482	-3.294.921.765,992	LEX
0,004	-3,077	-1.433.026.634,620	IMR
0,000	-6,316	-36.698.577.691,660	EFI
	256,123		F-statistic
	0,000		p-value (F)
	0,954		Adjusted R²

The results indicated that the econometric model was statistically significant (F: 256,123; $p < 0,05$) and the explanatory power (Adj. R²: 0,954) of the explanatory variables was high. The findings suggested that the leading countries in medical tourism benefit from better HEC and IMR, which improve their TRP as well as their TA. Accordingly, HEC had a positive (β : 27.491.985,979; t: 27,798; $p < 0,05$) and IMR had a negative (β : -1.433.026.634,620; t: -3,077; $p < 0,05$) association with TRP. This means that when the health expenditure increases and the infant mortality rate decreases, the tourism receipts increase.

4. Discussion

Good health is the most important thing and is always needed more than any other thing. Therefore, health systems and healthcare service providers operating within those systems are highly important; especially to provide quality and affordable healthcare services. Moreover, accessibility of these quality and affordable healthcare services is also vitally important; and if the optimal healthcare service provider with the optimal quality and affordability is in another country, accessibility becomes an even bigger issue.

With the help of medical tourism, individuals get the chance of knowing firstly the existence of the healthcare service providers around the world that are offering the healthcare services they need in better terms than the local counterparts, and secondly the feasible ways to contact and to reach those healthcare service providers. Therefore, medical tourism is fundamental for improving the accessibility of quality and affordable healthcare services for everyone globally.

Due to its high importance and immense benefits, medical tourism is growing rapidly and has already become a prominent sector. Many countries are aiming to become a preferred destination for medical tourism, which causes a competition among countries and the competition helps improve the health systems of countries all around the world. The importance and significance of medical tourism is expected to increase even further in the future. Therefore, the factors that may affect medical tourism are very noteworthy and they should be analyzed carefully.

Healthcare services are naturally at the very center of medical tourism, and economic factors affect every sector including tourism and medical tourism. Accordingly, we statistically analyzed the

impact of health-related and economic factors on tourism in the context of the leading countries in medical tourism.

Our findings showed that medical tourists do in fact pay close attention to the status of the health system of potential medical tourism destinations before traveling to them. Specifically, we found that increasing health expenditure and decreasing infant mortality rate which is one of the most important health outcomes that gives information about the general status of a health system, significantly increase tourist arrivals and tourism receipts. These findings are in accordance with the findings of other similar studies in the literature [18,20,21] as well as expectations.

Managers and policymakers in medical tourism may benefit from our findings; as it can be suggested that improving the healthcare services provided by the health system of a country or by some of the healthcare service providers in a country may significantly increase the attractiveness and competitiveness of the country in medical tourism.

The main limitation of the study was the absence of regularly updated global data on medical tourism. It is highly likely that there will be routinely updated medical tourism specific global data in the future and similar studies can be conducted in the future by using them. Similar studies can also be conducted by using different statistical methods and with a wider scope.

Investigating the factors that may impact medical tourism is crucial for improving the quality, affordability and also accessibility of healthcare services throughout the world, which in turn benefits all individuals and countries around the globe, promoting good health and well-being for all at all ages.

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