



### ROLE OF HEALTH INDICATORS IN MAKING CHOICES FOR HEALTH TOURISM

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**Abstract:** This paper explores the potential value of health indicators in making choices for health tourism among leading countries. Unfortunately, health indicators regarding to clinical and service quality indicators and factors which may play role in patient choice of country/hospital. e.g. safety, use of clinical protocols are very scarce and are not available for majority of the leading health tourism countries. Instead, we use proxy measures to assess the specific health indicators to evaluate these countries. In conclusion the costs of treatment combined with certain indicators can be the influencers of choice for health tourism.

**Keywords:** health tourism, service quality, making choice, influencer, indicator

## 1.Introduction

Health Tourism is a growing industry which caught attention of many countries who offer their medical and tourism services to potential patients across their borders. There are more than a dozen countries which are leaders in medical tourism. According to Patients Beyond Borders (PBB), a source of consumer information about international medical and health travel<sup>1</sup>, there are 17 such countries or regions including: Brazil, Caribbean, Costa Rica, Czech Republic, Hungary, India, Israel, Malaysia, Mexico, Singapore, South Africa, South Korea, Taiwan, Thailand, Turkey, United Arab Emirates, and the United States.

## 2.Literature Search “Why Health Tourism?”

It begs the question “why health tourism?” is becoming so popular especially among western hemisphere countries, as well as in Latin America and far East. Although there are many factors influencing patient’s decision to seek healthcare elsewhere, the main reason might be attributed to cost savings for specific healthcare procedures. Again, according to PBB, cost savings can range at low-end Brazil: 20-30%, Singapore: 25-40%, South Korea: 30-45%; at mid-range Costa Rica: 45-65%, Mexico: 40-65%, Taiwan: 40-55%; to high-end India: 65-90%, Thailand: 50-75%, Turkey: 50-65%<sup>1</sup>.

While these cost savings play an important role in seeking healthcare elsewhere, the availability of the services, insurance coverage for certain healthcare procedures definitely play into the equation. Beyond these proven international accreditation, quality assurance, and transparency of outcomes, tourism infrastructure, clinical excellence and best practices and state-of-the-art medical technology as well internationally-trained, experienced medical staff are the part of the healthcare tourism equation<sup>1</sup>.

Additionally, clinical and service quality indicators and factors which may play role in patient choice of hospital and country, such as safety, use of clinical protocols are important considerations.<sup>-2-7</sup> More specifically, both service and clinical quality indicators such as hospital infection rate, post-operative complications, 28 days readmission/mortality are considered as key factors for those who seek healthcare in United States.<sup>2-7</sup> Along these lines, for example, Roman et. al., (2018) aimed to investigate whether preoperative weight loss results in improved clinical outcomes in surgical patients with clinically significant obesity.<sup>2</sup> Similarly, Usoro et. al., (2018)

provided a systematic review and meta-analysis of the clinical outcomes for certain fractures and fixing them with SIGN nails.<sup>3</sup> Arnold and associates examined hospital readmissions as potential target for reducing unnecessary health care expenditures for dermatology hospitalizations by using the 2014 Nationwide Readmissions.<sup>4</sup> A similar study was conducted by Jiang et. al.,(2018) with 2009 to 2014 Florida data in examining chronic obstructive pulmonary disease (COPD), which is a leading and costly cause of readmissions to the hospitals. COPD-related 30-day hospital admission rates, in-hospital mortality associated with COPD, patient-level risk factors associated with 30-day readmissions were also target of this study.<sup>5</sup> Use of clinical protocols were studied by various researchers. Pearsall and McLeod study documented the effectiveness of Enhanced Recovery after Surgery (ERAS) pathways in improving recovery and decreasing morbidity and length of stay when protocols are used and when guidelines tailored through an implementation strategy to increase adherence to protocols.<sup>6</sup> Rodrigues-Sato and Almeida (2018) study on the other hand provided a comprehensive literature review to collect the procedures required for developing clinical protocols in healthcare services and the process of fitting hearing aids.<sup>7</sup>

Unfortunately, data regarding to clinical and service quality indicators and factors which may play significant role in patient choice of hospital and country are very scarce and are not available. More specifically, both service and clinical quality indicators such as hospital infection rate, post-operative complications, 28 days readmission/mortality, clinical outcome data not systematically either collected or reported by leading health tourism countries examined in this research, except United States. To compensate such data gap, we use proxy measures to assess the specific health indicators to evaluate these countries.

### **3.Scope of Health Tourism**

It is approximated that between 14-16 million patients are crossing borders annually around the world and drop \$45.5-72 billion in revenues to the host countries, where each patient spending an average of \$3,800-\$6,000 per visit, including medically-related costs, cross-border and local transport, inpatient stay and accommodations. The growth rate is estimated around 15-25%, with inbound patient flows highest in Mexico, Southeast and South Asia<sup>1</sup>.

According to Medical Tourism Association (MTA)<sup>2</sup> survey statistics, 64% of patients who used medical tourism did not have health insurance, and about 83% of patients traveled with a companion. While 33% of patients traveled abroad for cosmetic surgery, 90% of the patients or their companions engaged in tourism activities. Nearly 80% of the demand for medical travel is driven by cost savings. The repeat business in medical tourism is another positive outcome, where 48% of survey respondents are interested in engaging in medical tourism again at some point in the future<sup>2</sup>.

Latin America and Asia are the two leading regions for medical travel, while Mexico and India showed the highest demand for medical tourism. Even Australia received over 10,000 patients leaving about \$26 million into the economy in 2013. Other anecdotes of reports indicate that, 18,000 Nigerians visited Indian hospitals spending about \$260 million. Similarly, 2,530,000 international patients traveled to Thailand for treatment from Japan, U.S., UK, and Australia spending \$4 Billion<sup>2</sup>. Other statistics for specific leading countries can be found on MTA website<sup>2</sup>.

#### **4. Leading Countries Health Indicators**

A question that deserves an answer is whether medical tourism patients would check the health statistics or health indicators of the countries they are traveling to. More specifically, whether the health indicators of the country they are seeking treatment would influence their medical tourism decision.

The country specific health indicator statistics can be easily obtained from either from Organization for Economic Co-Operation and Development (OECD) or World Health Organization (WHO) sources. Unfortunately, these statistics are not reported for every leading medical tourism country in a consistent manner. In the following sections most up to date available information are presented.

Figure 1 depicts the 17 leading countries on right side. The general and health indicators are available for those countries in this list based on the latest OECD statistics. For general indicators, Czech Republic, Hungary, Israel, South Korea, Mexico, Turkey, and United States are those OECD countries with available data; additionally, non-OECD countries Brazil, Costa Rica, India, and South Africa contain similar data in OECD data base. Unfortunately, for health

indicators, the list of countries shrinks for both OECD and non-OECD countries. South Korea and Turkey did not report the health indicators among OECD, and India for non-OECD countries.

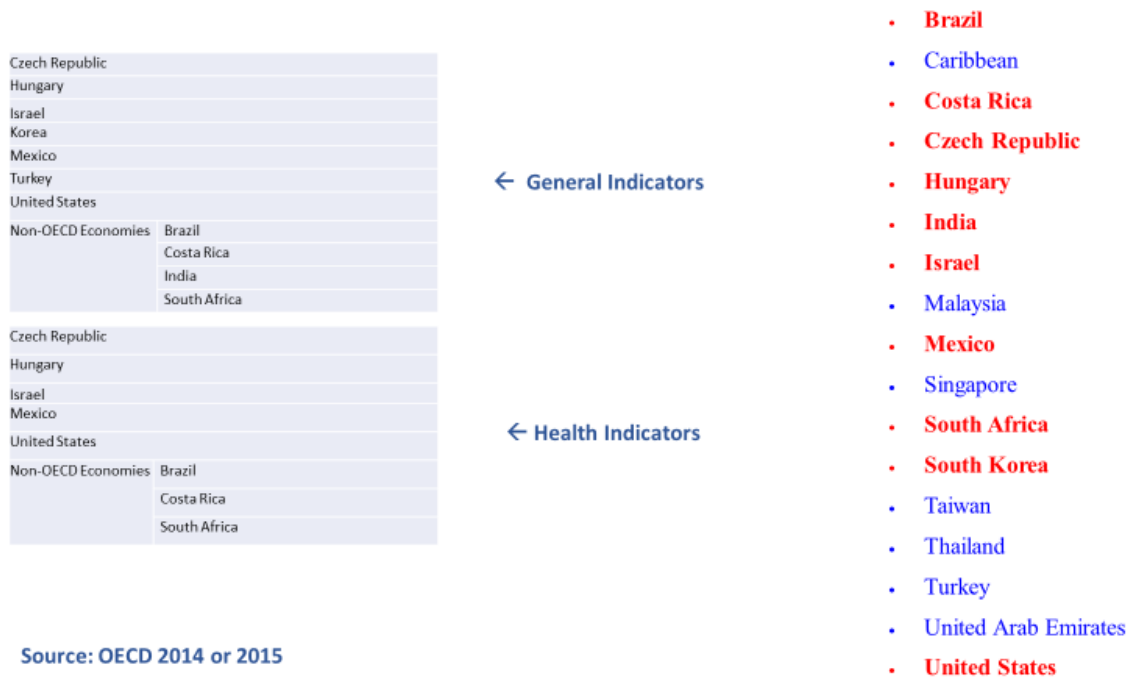


Figure 1. Indicators for Leading Countries

Among the general indicators, one can observe life expectancy by gender, or overall, as well as injuries in road accidents, which may be important to traveling healthcare tourism patients and their companions. Figure 2, displays the aforementioned statistics, and among the OECD countries, Israel and South Korea are leading countries in terms of life expectancy. The United States and Turkey stay in the middle pack along with other countries, however the South Africa followed by India has the lowest life expectancy of all listed countries. For road injuries, the leading countries (in a negative way) are South Korea and Turkey, although South Korea has twice more road injuries. Surprisingly, Mexico has the lowest road injury statistics.

		Life expectancy			Injuries in road traffic accidents
		Females at birth	Males at birth	Total population	Injured per million population
Czech Republic		81.6	75.7	78.7	--
Hungary		79	72.3	75.7	1659
Israel		84.1	80.1	82.1	2606
Korea		85.2	79	82.1	6869
Mexico		77.7	72.3	75	1012
Turkey		80.7	75.3	78	3866
United States		81.2	76.3	78.8	--
Non-OECD Economies	Brazil	78.5	71	74.7	
	Costa Rica	82.1	77.2	79.6	
	India	69.9	66.9	68.3	
	South Africa	59.5	55.5	57.4	

Source: OECD 2014 or 2015

Figure 2. Life Expectancy & Road Injuries

Other general indicators which healthcare tourism patients and companions may be interested are mortality, accidents, and assaults in the countries they travel. Figure 3, depicts such statistics. Hungary has the worst deaths per 100,000 population values followed by Czech Republic, while Costa Rica presents the best values of mortality statistics. Concerning the accidents Israel is the safest both for overall accidents and car accidents. South Africa is the leading country for accidents and Brazil is the leading country for car accidents among the reporting countries. Brazil also has the worst statistics for assaults, and Czech Republic is shown as the safest country followed by Hungary and Israel in terms of assaults.

		Deaths per 100 000					
		Female	Male	Overall	Accidents	Car Accidents	Assults
Czech Republic		1029.7	1079.5	1054.2	37.9	7.7	0.8
Hungary		1259.7	1319.1	1288	37	8	1.3
Israel		510.1	516.5	513.3	12.2	4	1.6
Mexico		450.1	589	517.9	28.6	13.5	15.9
United States		802.4	847.2	824.5	42.7	11.9	4.9
Non-OECD Economies	Brazil	518.8	692.8	604.8	36.9	22.2	29.4
	Costa Rica	372.1	477	425.1	28.8	13.7	9.3
	South Africa	776.5	893.6	833.7	58.6	10.9	9.7

Source: OECD 2014 or 2015

Figure 3. Deaths, Accidents and Assaults

Infectious diseases and neoplasms can be another concern for the healthcare tourists. Figure 4, shows deaths from infectious and parasitic diseases including tuberculosis and HIV. South Africa has the worst performance in this category while Costa Rica has the lowest incidence values. In terms of neoplasms, Hungary owns the worst statistics, while South Africa, surprisingly, has the better performance in this category. However, one might challenge the reporting accuracy of certain diseases. Figure 5 depicts the mortality from diabetes and nervous system disorders and cardio vascular diseases. Mexico is a leading country in deaths for Diabetes Mellitus, and Costa Rica has the best performance keeping their population away from this disease. The United States has the worst death rates from nervous system disorders, while Mexico has the lowest. Hungary and Czech Republic are the leading countries for cardio and cerebrovascular disease deaths. Israel has the lowest death rates for circulatory system; South Africa has the lowest death rates for Ischemic hearth and myocardial infractions. Mexico has the lowest deaths from cerebrovascular diseases. Figure 6 completes the remaining mortality statistics with respect to respiratory and digestive system disorders. Mortality from respiratory diseases is worst in South Africa followed by United States, while Costa Rica displays the best performance. Leading influenza mortality countries are United States and Czech Republic

followed by South Africa. The worst pneumonia mortality rates are owned by South Africa, while Hungary has the lowest pneumonia deaths. Lastly, mortality rates from digestive disorders and liver/cirrhosis are worst in Hungary and best in South Africa.

		Deaths per 100 000						
		Infectious & Parasitic i.e, Tuberculosis & HIV	Neoplasms	Malignant Neoplasms	Colon	Breast	Prostate	Leukemia
Czech Republic		18.8	259.9	254.6	34	9.9	7.8	7.9
Hungary		9.2	338	332.7	51.9	16.4	8.5	9.2
Israel		28.5	136.2	133.1	15.2	5.7	4.2	6.2
Mexico		13.8	68.1	63.4	4.5	4.8	5	3.6
United States		22.1	190.8	185.7	16.4	3.6	7.8	7.4
Non-OECD Economies	Brazil	25.7	99.6	97.8	8	6.9	4.5	3.2
	Costa Rica	8.2	100.4	95.2	10.1	12.8	5.5	4
	South Africa	181.7	72.2	69.7	4.4	2	2.9	1.9

Source: OECD 2014 or 2015

Figure 4. Infectious Diseases & Neoplasms



		Deaths per 100 000					
		Diabetes Mellitus	Nervous System	Circulatory System	Ischemic heart	Acute myocardial infarction	Cerebrovascular
Czech Republic		35.3	28.7	483.3	252.8	39.4	90.9
Hungary		26.3	17.7	639.8	326.2	56	130.3
Israel		28.9	19.9	122.8	47.1	13.6	28.7
Mexico		77.1	8.9	129.6	67.2	52.2	27.1
United States		24	52	253.6	114.4	30.2	41.8
Non-OECD Economies	Brazil	28.5	16	167.8	53.2	35	49
	Costa Rica	14.9	11.6	125	62.2	25.1	28.5
	South Africa	42	19	144.3	20.1	12.9	42.6

Source: OECD 2014 or 2015

Figure 5. Diabetes, Nervous & Circulatory Systems

		Deaths per 100 000				
		Respiratory	Influenza	Pneumonia	Digestive	Liver/ Cirrhosis
Czech Republic		70.9	1.2	25.3	44.2	17.9
Hungary		71.2	0.1	8.1	64.9	31.7
Israel		41.5	0.2	12.3	17.1	2.9
Mexico		45.7	0.2	16.2	48.5	21.3
United States		81.1	1.2	15.9	31.7	12
Non-OECD Economies	Brazil	68.5	0.1	35	31	9.8
	Costa Rica	38.7	0.1	12.3	30.7	6.5
	South Africa	83.5	0.9	39.7	22	2.4

Source: OECD 2014 or 2015

Figure 6. Respiratory & Digestive Systems

The other reliable source of data for health indicators is available from World Health Organization (WHO). WHO published sustainable development goals (SDGs) of which there are six SDG Targets relevant to our discussion including: Target #3.3 Communicable diseases; Target #3.4 Noncommunicable diseases and mental health; Target #3.5 Substance abuse; Target #3.6 Road traffic injuries; Target #3.9 Mortality from environmental pollution; and Target #3.b Development assistance and vaccine coverage. With the exception of Caribbean region and Taiwan SDG data is available for most leading countries. The latest data for each SDG indicator may be available depending upon when it is collected, and this can change between 2012 to 2016.

Figure 7 depicts eight specific measures of the mentioned SDGs for 15 leading countries. Also depicted is the median value for each measure, so that each countries position can be positioned based on this value. It is interesting to note that indicator measures hover consistently around median or better for Turkey. The worst and the best values for each SDG varies, however, South Africa have the worst three listed indicators out of eight, while India has two worst of these eight indicators. Czech Republic, South Korea and Thailand each have one worst indicator among the eight. Since the values are all over the map without consistent direction to one country or other, with the exceptions discussed above, there is no need to discuss the statistics in detail for each country.

Country	Incidence of Tuberculosis per 100K	Probability (%) of dying between age 30-70	Crude suicide rates per 100K	Alcohol consumption per capita (15+)	Estimated road traffic death/100K per 100K	Mortality due to air pollution per 100K	Mortality due to poisoning per 100K	DTP3* immunization 1-year-olds (%)
		cardiovascular, cancer diabetes, or chronic respiratory disease						
Year→	2016	2015	2015	2015	2013	2012	2015	2016
Brazil	42	16.9	6.3	9.1	23.4	15.8	0.2	86
Costa Rica	9.5	11.1	7.7	5.1	13.9	16.9	0.4	97
Czechia	5	15.6	13.7	14.1	6.1	58	0.5	96
Hungary	8.8	22.9	21.6	12.4	7.7	122.8	0.4	99
India	211	23.3	15.7	4.6	16.6	133.7	1.9	88
Israel	3.5	9.5	5.5	3.1	3.6	15.8	0.2	94
Malaysia	92	17.1	5.8	1.7	24	21.6	0.6	98
Mexico	22	15.2	5	6.8	12.3	23.5	0.5	97
Republic of Korea	77	8.3	28.3	10.9	12	23.2	0.6	98
Singapore	51	10.1	9.9	2.9	3.6	20.7	0.1	97
South Africa	781	26.5	10.7	11.5	25.1	51.6	1.2	66
Thailand	172	16.2	16	8.3	36.2	64	0.5	99
Turkey	18	16.8	8.7	2.4	8.9	51	0.5	98
United Arab Emirates	0.79	17.4	2.9	4.3	10.9	7.3	0.3	99
United States of America	3.1	13.6	14.3	9	10.6	12.1	1.2	95
Median	22	16.2	9.9	6.8	12	23.2	0.5	97

\*Diphtheria tetanus toxoid and pertussis (DTP3)

Source: WHO 2012 to 2016

Figure 7. WHO Sustainable Development Goals (SDGs)

## 5. Discussion

The work presented above identified leading healthcare tourism countries, and plausible reasons why the healthcare tourist and companions seek treatment in other countries rather than in their own. The frank question is how health tourism patients decide where to seek their healthcare? Are they really checking the available data on various indicators to check the countries healthcare indicators to make their treatment decisions, or their concern is cost savings?

As we mentioned above, clinical and service quality indicators such as hospital infection rate, post-operative complications, 28 days readmission/mortality, as well as safety and use of clinical protocols may play role in patient choice of hospital and country. However, currently such data has not been organized by two major international health data carriers, namely OECD and WHO. Nevertheless, we have analyzed and shown the available proxy indicators from OECD and WHO.

Quite frankly it is difficult to pinpoint a best country to seek treatment when cost of healthcare delivery is in the equation along with other factors. Additionally, an average patient may not have the access, interpretation, comparison analytics capability and absorption of what these

statistics tell to them, or their perception based on their healthcare need might be different. On the other hand, cost savings is more universal metric to all, since patients and their companions will not live in that country where they will be traveling for healthcare tourism.

Future research in this field should fulfill the gaps in international health data with specific variables on quality and outcomes that are organized in a meaningful way and ease of access to such data to enable decision-making for health tourism.

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