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A nexus between foreign students, foreign medical students, international tourism and health tourism - global trends and the case of Turkey

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Abstract
This study investigates the interrelations within the international tourism field related to education and medical sectors by analysing the connections between foreign students, foreign medical students, international tourism and international health tourism, globally and in the case of Turkey. Descriptive and comparative analyses show that these tourism niches grow internationally based on the significant role of globalization and technological development. In Turkey, the numbers of foreign students and foreign medical students are on a highly increasing trend followed by the increasing size of health tourism. Moreover, the analysis of official statistics data for all 81 provinces of Turkey during the period 2013-2021 indicates that foreign students may have a great impact on international tourism. These findings offer new perspectives on developing upcoming strategies for tourism niches, such as educational and health tourism internationally.

Keywords: international tourism, health tourism, foreign students, Turkey

Introduction

The tourism industry provides a growing diversity of offers in many areas of life, from leisure to extreme sports, from business to nature and from education to health. Along with their economic importance, educational tourism and health tourism are two types of tourism with a great social impact, which have more recently started to develop, providing opportunities to students and patients from all over the world. As more and more students travel to study in different countries, their presence and influence may represent an opportunity for host countries to develop new strategies and niches of tourism, such as health tourism. Although health tourism is becoming a target in the strategic plans of many countries, this perspective has been hardly mentioned in the literature so far. This study aims to address this literature gap and to investigate the interrelations between international tourism, foreign students and

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the development of health tourism internationally and, particularly, in the case of Turkey, as a popular destination for multi-purpose travel anytime during the year.

Globalization made it possible for people all over the world to travel easily and benefit from high quality services at affordable prices, studying abroad and getting cross border medical procedures being two important examples in this matter. The descriptive analysis of global trends regarding foreign students, health tourism and international tourism illustrate the significant role of technology and the enhanced social and economic implications of these tourism niches. Additionally, the empirical analysis on the provinces of Turkey for the period 2013-2021 highlights the influence of foreign students and, particularly, foreign medical students on international tourism trends in Turkey and their potential role in the development of health tourism.

As education and health are two of the main aspects of our lives, the importance of the study goes further than economic advantages. This research contributes to the understanding of how interdisciplinary approaches may lead to valuable connections between different fields and is original in its comparative analysis of the educational, health and international tourism tendencies with the case of Turkey as an example of successfully combining different tourism types, offering a new development path among global trends. Moreover, the study is original due to its interdisciplinary dimension and unique context, indicating the current development and the nexus between educational services, health tourism, and international tourism. To the best of our knowledge, this is one of the few studies to analyse the role of education and health sectors as contributing factors to the tourism market. The evidence provided on the case of Turkey offers significant examples for other countries and may serve to develop new tourism niches internationally.

The following parts of the paper include: literature insights and hypotheses development, descriptive analysis of global trends and country-level data, empirical study per provinces of Turkey, interpretation of results and concluding remarks.

1. Foreign students and international tourism

We live in a world where information and ideas can travel around the globe within seconds and the tourism field is a great exponent of the current times, getting constantly updated to the worldwide demands. Educational tourism represents one of the newly exploited niches of tourism, valuing a country's infrastructure, institutions and intellectual capital, and contributing to intercultural, personal and professional exchanges which lead to strong networking and further multi-level development for both host and sending countries (De Wit & Altbach, 2021).

Education is a fundamental human right, a catalyst for growth, and one of the most effective means of eradicating poverty, improving health, peace, and stability. Education can increase social skills and labour productivity (Mankiw et al., 1992), boost the economy's capacity for innovation and technologies, and enhance

economic progress (Hanushek & Woessmann, 2021). Getting high quality education is the aim of more and more people around the world and foreign students are among the most important and visible elements of internationalization in the education field. The most frequently cited reasons for choosing particular universities abroad are the quality of education offered and the attractiveness of the destination (Aminu et al., 2022; Tomasi et al., 2020).

Nevertheless, foreign students can play a very important role for a society in a variety of ways. They may bring a diversity of perspectives and views that lead to intercultural awareness at local levels, as well as appreciation and cultural tolerance. In addition, foreign students significantly contribute to the local economy not only by being a source of foreign capital, but also through all the living expenses, which can provide an economic boost to the host country or, at least, educational hub cities. Besides the economic effects, foreign students may also bring academic excellence, unique ideas and new intellectual paths and intercultural curiosity, which can drive innovation and create new opportunities for growth and development.

Along with the positive impacts that foreign students may make, the brain drain is one of the debatable effects of studying abroad, a lot of students preferring to work in the country of study, which impacts the workforce dynamics, working conditions and level of salaries in the host countries (Borjas, 2006). Moreover, as education has also entered the private sector (thus prioritizing the revenue from foreign students in some cases), admission procedures got simplified, a fact that has also made way for intense and sometimes illegal migrations (through fake documents and registrations).

Absolutely, foreign students are intercultural ambassadors and marketers of local brands and habits. Moreover, foreign students become both explorers and promoters of host-country products, services, customs, language, tastes, places and therefore, have potential implications on diplomatic relations (Webster & Ivanov, 2013) and international tourism (Menini, 2017; Tashlai & Ivanov, 2014) by exposing their experience to their communities. Consequently, by word of mouth, facilitated by the easy access to smart technology and transportation (Seyitoglu & Ivanov, 2022), family members, friends and others may be curious and encouraged to visit the host country for leisure, shopping, business, sightseeing, health issues or particular services, thus enhancing tourism activities.

According to the literature, the choice of country and institution is mostly related to the cost of education, the cost of living and the quality of education. Nowadays, the number of foreign students is increasing and destinations are diversifying. Once the higher education system got standardized, the number of international students started to be visible in most Western countries and it constantly increased until 2020, when the COVID-19 pandemic disrupted all the mobilities.

Given the above-mentioned arguments, foreign students may impact host countries in many aspects, including the tourism sector. At the same time, numerous factors contribute to the decision on where to study abroad (Tashlai & Ivanov, 2014),

including prior travel experience and international tourism popularity. In this line of thought, a reverse influence is assumed as stated in the following hypothesis:

H1: There is a significant relation between foreign students and development of international tourism.

2. Health tourism and foreign medical students

Just like in the case of education mobilities, international tourism and its particular niche, health tourism, could not exist if it were not for globalization, as it is directly associated with the liberalization of commercial services, cooperation for development between the private sector and the public sector, easy access to information at a global level and interdisciplinarity. By enhancing awareness of and access to healthcare services around the world, globalization has facilitated the growth of health tourism. It provided a possibility for patients to explore medical treatment options beyond their home countries and consider destinations specialized in specific fields, advanced technologies, or cost advantages. Regardless of the different procedures and sub-categories under the general term of 'health tourism', Connell (2013) defines it as "travel for medical care". Health tourism may be a significant source of income for host countries, but also a boost for healthcare infrastructure investments aimed to raise its attractivity and compete with world leaders (Boguszewicz-Kreft et al., 2021).

Health tourism is a complex, global level system, which implies a variety of actors cooperating for the same purpose. Accredited hospitals and clinics, up-to-date medical equipment, highly trained physicians, health staff and best-quality healthcare services, luxurious hotels, first-class flights, transportation facilities, infrastructure and leisure activities, private agencies, government institutions, insurance companies, regulation boards are all contributing to the well function of this so-called "industry" (Beladi et al., 2019) and customization of services (Buhalis & Amaranggana, 2015). With its special business understanding, highly organized structure, complex relations and promotional activities, health tourism has been one of the fastest growing and dynamic sectors of tourism in recent times. In recent years, Turkey, Greece, South Korea, Thailand have already competed with traditional medical tourism destinations such as Germany and Israel (Medical Tourism Association, 2022).

Along with the general tourism activity based on geographical position, climate, lack of seasonality and rich heritage, medical travel is empowered by lower costs, quality of medical services, general affordability and professionalism (Kilavuz, 2018). One way that countries can support their healthcare system development at the international level is by encouraging the participation of foreign medical staff and students in their healthcare workforce (Reddy & Valerie, 2021).

Firstly, international medical students may provide the healthcare sector with a varied range of abilities and knowledge, quite uncommon in that country before.

They may bring out a variety of viewpoints and experiences that can improve the standard of treatment and give patients a more customized experience. Foreign medical students can also help bridge cultural and linguistic barriers between medical tourists and healthcare providers, by understanding the needs and preferences of patients from different cultural backgrounds, thus being able to provide more culturally sensitive healthcare services (Egenes, 2012). For instance, medical students from other nations can offer language assistance and cultural sensitivity to make patients feel at ease and ensure that the care they receive meets their needs. Additionally, international medical students can serve as ambassadors for their nations by urging medical travel within their networks at home. Healthcare workers are in low supply in many countries, even in those which are well-known medical tourism hotspots. By attracting foreign medical students, countries can benefit from a larger pool of healthcare professionals to provide high-quality medical services to their international patients.

A new viewpoint on the growth of health tourism has recently come into the spotlight thanks to the presence of foreign students studying medicine abroad, especially in the famous destinations of health tourism. As more and more students from around the world travel to study medicine in different countries, their impact may be consistent, both on sending and on the host country. Although educational and health tourism are two distinct travel categories, they share some common aspects and they may cooperate for development purposes. Both types of tourism involve travellers seeking knowledge, skills, and experiences related to a particular field, and both can have significant impacts on economy and society.

In the past, people from underdeveloped countries used to go to developed countries to seek better medical care. Contrary to the past trends, people in developed countries nowadays travel to developing countries for more affordable medical services (Lunt et al., 2015). On the other hand, it has always been observed that students move in search of high-quality educational institutions from underdeveloped to developed nations, from East to West, or for general locations like Europe and the USA (Williams & Brook, 1975).

The quality of services and especially, the staff's attitude and characteristics, the level of service and process are essential aspects from the perspective of patients, which sometimes overcome price, facilities and advertisement-related factors (Azimi et al., 2018; Di Wong et al., 2022). Therefore, the experiences lived in a country for education (or other purposes) may encourage people to return and to recommend that place for multiple other purposes, including medical tourism. It should not be forgotten that applying for medical services abroad also implies challenges for patients, such as lack of information, differences in terms of national health systems, organisational and administrative burdens (Androutsou & Metaxas, 2019), which hosting actors should constantly address and try to simplify.

The assumption of the article suggests that foreign students and, especially, foreign medical students may have a significant influence on the development and

growth of health tourism, undergraduate and graduate medical education for foreign students being one of the first steps into tackling with the diversity of the healthcare system, afterwards. This diversity raises the standard of care given to patients and satisfies the growing demand from medical tourists for customized, culturally competent healthcare services.

H2: Foreign (medical) students may contribute to the development of health tourism.

3. Global perspectives on the development of international, educational and health tourism

The travel and tourism industries promote socio-economic development by providing unique opportunities for minorities, women, youth or any other category of people with limited possibilities. This is how educational tourism has been developed, i.e., in order to provide students across the globe with the opportunity to reach the highest education standards; moreover, health tourism makes it possible for international patients to benefit from the best quality, and yet affordable medical services. Global trends in the tourism industry provide valuable data to businesses, governments and other stakeholders, helping them adapt to changing market conditions, meet travellers' changing expectations, make informed investment decisions, and run efficient policies and marketing strategies. The academic literature and industry reports show us some global trends, coming from a large number of case studies, international statistics and general directions, summed up in Table 1.

Before the pandemic, the travel and tourism sector was one of the largest industries worldwide, accounting for one in four of all new jobs created in the world, representing 10.3% of all jobs (333 million) and 10.3% of global GDP ($10.5 trillion), (World Travel & Tourism Council report, 2022). During the pandemic, the sector suffered losses of almost $4.9 trillion, with its global contribution to GDP declining by 50.4%. Covid-19 has drastically changed the touristic flows, global trends and consumer behaviours, requiring a more restricted way of travelling. In this way, concepts like slow travel, sustainable travel, spiritual retreats and wellbeing have become the most popular trends worldwide, the whole industry being forced to readapt their offers and services to the new demand. Even if the industry suffered a great impact, its recovery seems faster than the overall economy (2.7% per year), with the worldwide GDP expected to grow by an average of 5.8% per year between 2022 and 2032 and return to 2019 levels by the end of 2023.

Table 1. Current trends in international, health and educational tourism

Aspects	International Tourism	Health Tourism	Foreign students
Market size (2022)	$10.5 trillion (Futuremarketinsights.com)	$439 billion (Medical Tourism Association)	$365.9 billion (Grandviewresearch.com)
Expected annual growth	CAGR[1] of 5% from 2023 to 2032 (Futuremarketinsights.com)	CAGR of 25.2% from 2023 to 2030. (Grandviewresearch.com)	CAGR of 13.0% from 2023 to 2030. (Grandviewresearch.com)
Key actors	Tourists, residents, investors, travel agencies, tour agents, destination management organizations (DMOs), governments, private and public partnerships	International patients, clinics, hospitals, wellness and medical centres, specialized travel agencies, tour agents, organizations, governments, private and public partnerships	International students, foreign students, universities, education agencies, ministries of education, private and public partnerships
Technical factors	VR, 360 tours Travel technology E-commerce	Telemedicine High-tech medical equipments	Online education infrastructure Tech-labs, modern teaching technologies
Social impact	Local culture and heritage; Commercialisation of culture and art; Preservation of heritage	Employment opportunities; Health system improvement; Treatment opportunities; Cost savings	Volunteering; Opportunities for vulnerable groups (e.g. refugees[2])
Economic impact	Employment opportunities; GDP growth	Employment opportunities; GDP growth	Employment opportunities; GDP growth
Covid-19 Pandemic	72% decline in international tourist arrivals in 2020 and 71% in 2021, compared to 2019 (Unwto.org)	33 million medical tourists reduction in Asia-Pacific region (Grandviewresearch.com)	46% decline in international student flows during pandemic (Universityworldnews.com)
Possible negative impacts	Disturbance of local communities; overcrowded hubs	Misdistribution of public resources in host countries	Brain drain phenomenon

[1] CAGR - compound annual growth rate
[2]The European Students' Union issued a joint statement that invites countries to facilitate the process of university registrations for Ukrainian students (www.epale.ec.europa.eu); the European Commission launched Erasmus+ register of education and training staff to support Ukrainian refugees (www.esu-online.org).
Source: authors' representation

One of the most important global trends in terms of health tourism development is technology. Innovation and technology have played a decisive role in the development of health tourism all over the world. Online booking and online

consultations enable medical tourists to book appointments and/or ask for medical opinions before leaving their countries. Recently, health tourism has developed its own techniques to facilitate the process for foreign patients all over the world, one of them being telemedicine. Telemedicine refers to clinical services provided remotely as a convenient and accessible way of getting treatment and consultations. The system had already been used by American hospitals (Hollander & Carr, 2020), but skyrocketed during the 2020 pandemic. It facilitates pre-and post-treatment care, follow-up consultations and it helps monitoring patients, improving convenience and accessibility. Along with the Virtual Reality (VR), which both served to respect pandemic restrictions and to familiarize tourists with a new technological world, another facility brought by technology and digitalization to the health sector and health tourism is the Electronic Health Records (EHR). The results of a 2018 survey conducted in Turkey, on people's views on the use of telemedicine shows that 57% of respondents had not used telemedicine but would be willing to (Sahin et al., 2021). Even so, it is generally considered that the positive approach to telemedicine has been consistently developed during the COVID19 pandemic as a way to prevent or even cope with the virus.

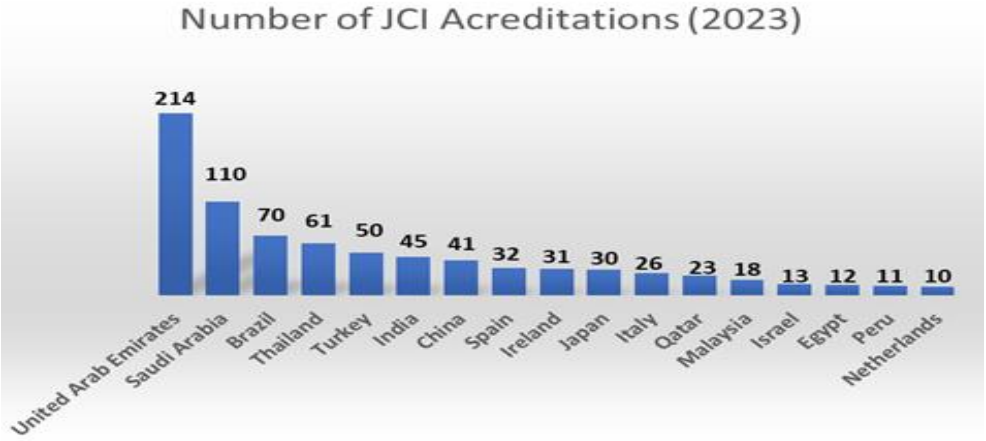
Overall, technology enhances accessibility, facilitates remote communication and may improve the overall healthcare and travel experience (Aydin & Karamehmet, 2017; Delaplace et al., 2022) for medical tourists. Some other arguments underlying the rise of health tourism are the national health systems which cannot meet the demands of patients, the long waiting time for specific procedures (Veselova, 2017), legislative barriers and too high costs.

Although studying abroad has become a significant industry nowadays, its concept dates back in Ancient Greece and Rome, when scholars used to travel to different regions to learn from the best known philosophers, thus setting the solid bases of the education flow created by the universities in Europe during the Middle Ages. In modern times, globalization and technology have made studying abroad more accessible to a wider range of students worldwide. According to UNESCO Institute for Statistics (UIS), there were over 4.8 million international students in 2016 in the UN member states, compared to 3.9 million in 2011 (Global Migration Indicators). Students are classified as "international" if they move to another country to study, and as "foreign" if they are not citizens of the country where they are studying (OECD, 2022). It is important to mention that the current study focuses on the impact of foreign students (as "degree-mobile students" with the period of stay exceeding one year) on international and health tourism.

Along with education, health is another essential aspect of life that the tourism industry managed to successfully transform into a niche. Health tourism is a $439 billion global market and every year there are around 50 million medical tourists benefiting from medical interventions abroad. In 2023, the market size was $31.9 billion, while in 2027 it is expected to reach $53.87 billion. The Medical Tourism Association (MTA) highlights a set of medical tourism trends in 2022, including the

development of multidisciplinary centres where complete medical and touristic packages may be offered; the increase in the number of qualified specialists, as the development of the industry requires more medical personnel as doctors, nurses, translators; new directions in terms of medical destinations and an increased demand for treatment in Asia due to high quality standards in treatment and service, high-tech equipment and a flexible pricing policy in the region. The most demanded procedures in 2022 seem to be oncology treatment, cardiovascular surgery, dental procedures, kidney dialysis, cosmetic and plastic surgery and organ transplants. Also, an important factor in the development of health tourism is the international recognition and accreditation of services, Joint Commission International (JCI) being a trusted accreditation body certifying the quality and safety of patient care in more than 100 countries. As shown in Figure 1, United Arab Emirates has the greatest number of accredited institutions, followed by Saudi Arabia, Brazil, Thailand, Turkey and other European and Asian countries.

Figure 1. Joint Commission International Accreditations 2023



Source: authors' representation based on official data (Joint Commission International, 2023)

The motivations and experiences of participants lie at the crossroads of international, education and health tourism. Educational tourism includes visits to renowned institutions, cultural monuments and language immersion programmes that promote intellectual enrichment. Health tourism focuses on wellness retreats, medical treatments and holistic therapies to promote physical and mental well-being. International tourism essentially provides a platform for creating a common path to these different destinations, allowing travellers to combine leisure, learning and health-enhancing experiences while exploring new cultures and places. This convergence reflects the evolving desires of today's travellers who seek holistic, transformative travel that encircle education, wellness and leisure, contributing to more fulfilling and sustainable travel experiences. Often, the meeting point between

all these travellers are is provided by the common tourist destinations that have become specialized in specific niches in order to attract a particular type of travellers and to create a personalized destination brand. Destination plays a central role in shaping the entire experience, effective destination management, marketing, and sustainability practices being essential to ensuring the positive impact of tourism. As destination is a topic of preference, the literature provides numerous ways of evaluating it. As a sum up, Table 2 presents the most common criteria by which the best tourist destinations are chosen for international, health and educational tourism.

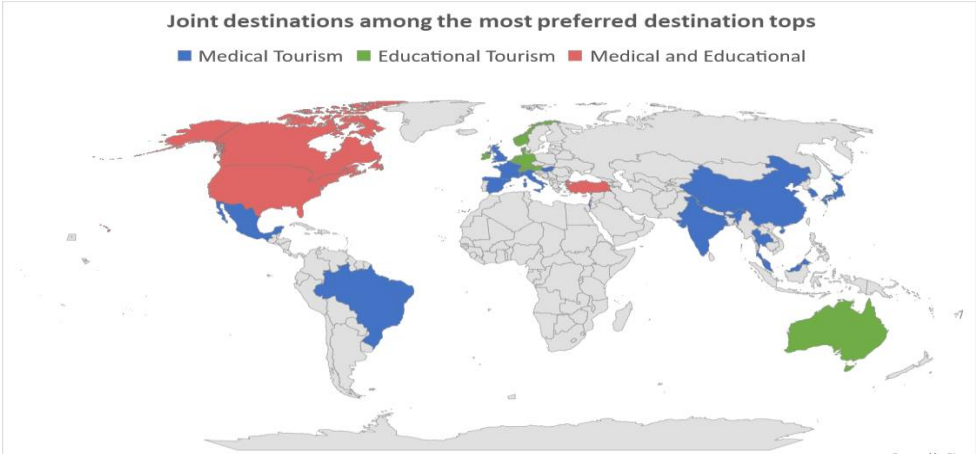
Table 2. Top countries for international, educational and health tourism

Criteria	Top Countries	Explanations	Source
International Tourism			
Number of visitors	France (90), Spain (83.7), United States (79.3), China (65.7), Italy (64.5), Turkey (51.2), Mexico (45), Thailand (39.8), Germany (39.6), United Kingdom (39.4)	Data covers tourist arrivals for the year 2019 (millions)	United Nations World Tourism Organization
Travellers' Choice Awards	United Kingdom, France, Italy, Greece, Indonesia, Thailand, Spain, Turkey, Morocco, United Arab Emirates	Top destinations in the world whose hotels, restaurants and things to do received a high volume of above-and-beyond reviews and opinions in 2019	TripAdvisor.com (travel guidance platform)
Travel and Tourism Competitiveness Index	Spain (5.4), France (5.4), Germany (5.4), Japan (5.4), United States (5.3), United Kingdom (5.2), Australia (5.1), Italy (5.1), Canada (5.1), Switzerland (5.0)	The score is based on the latest statistics from international organizations and a survey of executives, with a scale from 1-worst to 7-best; (Rankings for 2019)	World Economic Forum
Health Tourism			
Medical Tourism Index (MTI)	Canada (76.47), Singapore (76.43), Japan (74.23), Spain (72.93), United Kingdom (71.92), Dubai (71.85), Costa Rica (71.73), Israel (70.78), Abu Dhabi (70.26), India (69.80)	MTI is a global measure of the attractiveness of countries as medical tourism destinations (with a score from 0 to 100) - based on industry, medical facility and personal indicators, for the year 2019	Medicaltourism.com (Medical Tourism Association media hub)
Market size	United States, Canada, Mexico, France, Italy, Spain, Turkey, Hungary, China, India	Total revenue from medical tourism products, 2019	Global Healthcare Accreditation
Potential cost savings	Brazil (20-30%), Singapore (25-40%), South Korea (30-45%), Spain (30-70%), Taiwan (40-55%), Mexico (40-65%), Costa Rica (45-65%), Turkey (50-65%), Thailand (50-75%), Malaysia (65-80%), India (65-90%)	Average overview of the savings made for all procedures based on Patients Beyond Borders least to highest savings calculated in comparison to the average U.S. cost, 2023	Health-Tourism.com (online marketplace for Medical Tourism)

Educational Tourism			
Number of foreign students	United States (833), United Kingdom (601), Australia (378), Germany (376), Canada (313), France (253), Turkey (224), Japan (216), Netherlands (136), South Korea (119)	Share of foreign students in tertiary education in 2019 (thousands)	OECD
Medical graduates	Ireland (23.7), Denmark (19.5), Australia (15.8), Spain (13), United Kingdom (12.8), Italy (12.3), Germany (11.3), Norway (11.2), Mexico (10.7), France (10), Turkey (8.9)	Medical graduates per 100.000 of the population for the year 2015	OECD
Percentage of foreign students	Luxemburg (49%), United Kingdom (20%), Austria (19%),Switzerland (18%), Canada (17%), Estonia (12%), New Zealand (12%), Belgium (10%), Denmark (10%), Ireland (9%), **Turkey (2%, position 39 in the ranking)	Percentage of international or foreign tertiary students out of the total number of students in a country for the year 2019	OECD

Source: authors' representation

Figure 2. Top regions for educational and health tourism



Source: authors' representation

According to Table 2, the United States of America, United Kingdom, Canada and Turkey are the most often mentioned countries, at the crossroads of international, health and educational tourism. Moreover, based on the data in Table 2, Figure 2 illustrates the top regions for educational and health tourism, and Turkey as a top

joint destination in these regards, a popular destination for leisure and trade, an educational hub and a leading country in health services and medical technology connecting European and Middle East markets.

4. Analysis of foreign students, foreign medical students and development of health tourism in Turkey

Turkey is one of the most affordable and accessible places to live and study, in terms of economic, transportation, life-standards, education and medical systems. Comparatively speaking, studying in Turkey is more affordable than in other countries with an equivalent degree of education and this is one of the main reasons for students choosing Turkey, as a way to be close to both the East and the West. Moreover, Turkey has hosted many deep-rooted civilizations in its territory for thousands of years, and may be characterized by cultural diversity, which makes it easy to adapt for most of the foreigners. Additionally, the cultural heritage, landscape, climate, costs and reputation for tourism services make Turkey a popular destination.

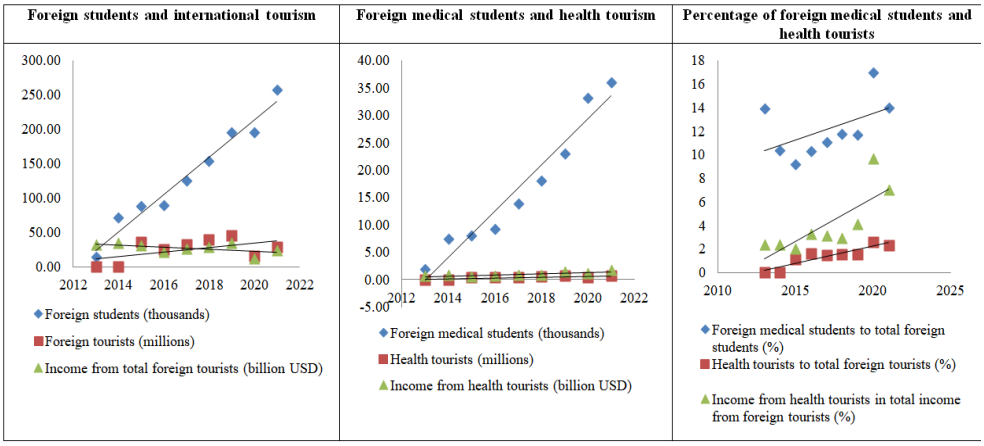
Turkey has 208 universities (public and non-profit foundation universities) and more than 8 million students every year, being the country with the most students in the European Higher Education Area. With a 94.2% schooling rate, Turkey ranks second in the world in terms of access to higher education (www.trade.gov). Higher education in Turkey is centralized and compatible with the Bologna three-cycle system. Turkey is also among the most successful nations taking part in the Erasmus + exchange programmes and other programmes like Mevlana and Farabi.

As previously motivated in the literature review part, it is assumed that foreign students may represent an enhancing factor of tourism and, particularly, of health tourism. Turkey has become one of the most popular destinations in terms of health tourism, as a result of the merge of geographical location, natural beauties, and accessibility - as it is a great transportation hub between Europe and Asia - tourist and medical infrastructure, cultural heritage, quality-price ratio, visa facilities and encouraging policies. Turkish authors pay special attention to the importance of the cooperation between the public and private sectors (Şengül & Çora, 2020) and of the digitalization of the whole national health system. Health tourism in Turkey has also been empowered by the huge investments directed by the government, this being one of the objectives of the National Tourism Strategy of 2023.

The analysis of health tourism tendencies and of its connection with foreign medical mobilities is based on official statistics and country-level data retrieved from Turkish Statistical Institute (https://www.tuik.gov.tr), Council of Higher Education (https://www.yok.gov.tr) and USHAŞ Direction for International Health Services from the Ministry of Health (https://www.ushas.com.tr). According to data availability for the selected indicators, the period of analysis is 2013-2021, as shown in Figure 3.

Turkey has received roughly 1.5 million health tourists as of 2021 despite the Covid-19 crisis (USHAŞ, 2022) and holds a leading position in health tourism worldwide, its development being based on significant investment in medical infrastructure and technology. Figure 3 indicates a significant increase in the number of international health tourists, representing more than 2% of the total number of international tourists. In terms of income, health tourism generated around 7% of the total international tourism in 2021 and thus proves the economic potential of this relatively new and constantly evolving niche of tourism. An intensively increasing trend in the number of foreign students and especially in that of foreign medical students is noticed, medical education (including dentistry) attracting, on average, more than 10% and even 14% to 17% of foreign students.

Figure 3. Evolution of international, educational and health tourism in Turkey during 2013-2021



Source: authors' representation based on data from USHAŞ and Council of Higher Education

There are 879 public hospitals, 571 private hospitals, and 68 university hospitals run by the Ministry of Health in Turkey. The private sector has a significant share in the healthcare industry, covering 36% of hospitals in Turkey with a capacity of 20-21% of total hospital beds. By comparison, university hospitals represent around 4.5% of the number of hospitals in Turkey, but have a significant capacity of almost 17-18% of total hospital beds. This implies that medical education also has a well-developed infrastructure, which represents an important factor for foreign students choosing medical programmes. Turkey's Gross Domestic Product (GDP) is spent on healthcare at a rate of 4.5%. Turkish medical school tuition varies based on the institution. While public universities have lower tuition fees, private universities have more accessible admission criteria for international students.

The significantly increasing trends of health tourism, foreign students, foreign medical students and healthcare infrastructure suggest that these fields were not

considerably disrupted by the recent Covid-19 pandemic, but rather enhanced during the pandemic and post-pandemic period. The development of these niches seems to have started more than a decade ago with continuous and rapid stakes. From the current descriptive analysis, it may also be inferred that foreign education, especially medical education and health tourism are interrelated and complementary. The number of international health tourists over the analysed period has an increasing trend, thus contributing to the health tourism income. However, the rise of foreign students and foreign medical students is a lot more substantial. These suggest that private and university-based healthcare opportunities and infrastructure as well as the academic education offer in Turkey may facilitate the development of health and educational tourism niches.

These findings imply that the quality and offer of educational and health services provide new opportunities in terms of affordability, medical technology and accessibility for foreign students, patients and tourism.

5. Analysis of foreign students and international tourism by provinces in Turkey

The next part of the study reflects the analysis of the relation between foreign students, foreign medical students and indicators of international tourism in Turkish provinces. The data was collected from official national statistics of Council of Higher Education and Turkish Statistical Institute for all 81 provinces of Turkey during the available period 2013-2021.

Considering the larger number of observations and panel structure of data, the study of the connection between foreign students and international tourism is based on statistical analyses such as descriptive statistics, correlation and regression analysis.

Table 3 summarizes the selected variables for this analysis. Besides the main variables of interest, a control variable for economic conditions is included to reflect the differences between provinces in this regard. Additional variables for medical infrastructure, such as number of physicians, number of hospitals and hospital beds, were proposed but due to high correlation (above 0.70) among these variables and foreign (medical) students, they do not represent valid proxies to be included in the estimations.

Table 3. Selected variables

Variable name	Description	Sources
International Tourism	Number of overnights stays by foreign tourists in Turkey	Turkish Statistical Office
Foreign students	Total number of foreign students in an academic year	Official reports of the Council of Higher Education in Turkey
Foreign medical students	Number of full-time foreign students enrolled in medical study programmes (including dentistry)	

GDP per capita	Gross domestic product per capita by provinces (USD)

Source: authors' calculations

Table 4 presents the key descriptive statistics indicators on the common sample of 711 observations (based on data from 79 out of 81 provinces; two provinces were excluded from analysis due to non available data for foreign students over the period 2013-2021).

Table 4. Descriptive statistics on province-level data

	N	Mean	Median	Std. Dev.	Min	Max
International Tourism	711	1,229,075	19,335	7,171,202	0	82,599,249
Foreign Students	711	1,675	450	5,005	0	76,456
Foreign Medical Students	711	211	53	851	0	13,782
GDP per capita	711	8,030	7,602	2,986	2,907	20,883

Source: authors' calculations

In order to determine the potential relations among variables of the study, the correlation analysis coefficients are reported in Table 5. Alternative independent variables reflecting the number of foreign students and foreign students within medical programmes are significantly correlated with international tourism. The control variable reflecting economic conditions of the region is also positively correlated with international tourism. Thus, it is indicated that a relation exists between foreign students and tourism in Turkey.

Table 5. Correlation analysis on province-level data

	Foreign Students	Foreign Medical Students	GDP per capita
International Tourism	0.223***	0.169***	0.248***
Foreign Students		0.877**	0.335***
Foreign Medical Students			0.259***

*** denotes statistical significance at 0.01 level
Source: authors' calculations

Panel regression analysis results are reported in Table 6. In order to control for the omitted variables bias related to all the other factors which affect the dependent variables, and for the effect of particular events which influenced the tourism and education during the analysed period (terrorist attacks and military coup in 2015, political elections, Covid-19 pandemic and other international events), the panel regression is estimated with fixed effects and time fixed effects (Konstantinov et al., 2022), which refer to the unique characteristics of each of the provinces and each of the years included in the analysis. Absolutely, estimations with fixed effects

determine high levels of adjusted R-squared, reflecting the total influence of the variables included in the model (including the fixed effects dummies) on the dependent variable. Also, the difference in size and scale of the variables and the significant differences between the number of overnights of international tourists in comparison to the number of foreign students and GDP per capita determine the differences in the size of estimated coefficients.

Table 6. Influence of foreign (medical) students on international tourism

	Dependent variable: International Tourism			
Variables	**2013-2021**	**2013-2019**	**2013-2021**	**2013-2019**
Foreign Students	133.08***	163.94***		
	(40.63)	(44.18)		
Foreign Medical Students			182.80	1254.86***
			(305.93)	(246.26)
GDP per capita	1221.96**	646.08*	1115.30**	654.88**
	(505.13)	(330.31)	(520.29)	(332.78)
Constant	-8807451**	-4260904	-7766563*	-4299362
	(4132365)	(2819039)	(4243813)	(2838245)
N	711	553	711	553
Adjusted R-squared	0.925	0.958	0.923	0.958
F-statistics	100.17***	1445.98***	97.57***	147.69***

***,**,* denotes statistical significance at 0.01, 0.05, and 0.1 level; Clustered standard errors are reported in parenthesis.
Source: authors' calculations

The estimations presented in Table 6 indicate that foreign students have a statistically significant influence on international tourism over the entire analysed period and on the reduced sample for the period 2013-2019, before Covid-19 pandemic restrictions in force during the year 2020. Foreign medical students have also had a significant effect on tourism, but only in the pre-pandemic period. Thus, it is understood that their effect may be reduced during the pandemic when, indeed, the health sector was overloaded and medical students were exposed to higher risk or restricted from conducting their practical training in hospitals.

For robustness purposes and validity of the analysis, the estimations were also conducted considering one year lag in the independent variables. Thus, the effect of the number of foreign (medical) students in year n-1 on the international tourism in the year n is estimated as shown in Table 7. Similarly, the results indicate a significant relation between foreign (medical) students and international tourism in Turkish provinces, stronger in the pre-pandemic period. When including the pandemic years, there is no significant effect of the prior number of foreign students, which points to the fact that international tourists could not come to Turkey due to

pandemic restrictions. In terms of education, it was conducted mainly online during 2020-2021, the new students starting their education in the online format.

Table 7. Influence of foreign (medical) students on international tourism with one year lag

	Dependent variable: International Tourism			
Variables	**2013-2021**	**2013-2019**	**2013-2021**	**2013-2019**
Foreign Students (-1)	80.99	198.26***		
	(100.62)	(67.50)		
Foreign Medical Students (-1)			375.04*	1813.25***
			(210.29)	(315.53)
GDP per capita	1403.37**	861.53**	1390.37**	885.66**
	(638.99)	(419.26)	(617.47)	(413.33)
Constant	-9901145*	-5885838*	-9747469**	-6077026
	(5111119)	(3470542)	(4894769)	(3413496)
N	632	474	632	474
Adjusted R-squared	0.914	0.950	0.914	0.950
F-statistics	78.17***	106.33***	78.41***	108.25***

***,**,* denotes statistical significance at 0.01, 0.05, and 0.1 level; Clustered standard errors are reported in parenthesis.
Source: authors' calculations

Table 8. Influence of international tourism on foreign (medical) students during 2013-2021

	Dependent variable: Foreign (medical) students			
Variables	**Foreign students**		**Foreign medical students**	
International Tourism	0.001**		0.001	
	(0.001)		(0.001)	
International Tourism (-1)		-0.001		0.001
		(0.001)		(0.001)
GDP per capita	-1.44***	-0.91***	-0.33***	-0.322**
	(0.466)	(0.350)	(0.110)	(0.127)
Constant	13068***	9116.88***	2858.71***	2751.77***
	(3661.98)	(2808.94)	(895.77)	(988.84)
N	711	632	711	632
Adjusted R-squared	0.766	0.824	0.571	0.617
F-statistics	27.44***	34.88***	11.73***	12.70***

, * denotes statistical significance at 0.05 and 0.01 levels, respectively;
Clustered standard errors are reported in parenthesis.
Source: authors' calculations

To check for the reserve effect, alternative estimations for the influence of international tourism on the number of foreign and medical students are reported in Table 8. These results indicate that there is only a weak effect of international tourism on the number of foreign students due to the influence of the post-pandemic period, but this effect is not consistent for the pre-pandemic period (unreported results) or for medical students. This means that the choice for education in Turkey is not necessarily influenced by the evolution of international tourism in the same or prior period before starting the education, but rather by other factors, such as price and quality of education, living costs, culture, religion, geographical proximity, career perspectives and other potential factors (Tashlai & Ivanov, 2014).

The findings support the main results of the study and indicate that foreign students and particularly foreign medical students have a statistically significant influence on the measure of international tourism in Turkish provinces, suggesting that education may be a potential factor of international tourism and its niches (such as health tourism, if considering the stay in Turkey for medical purposes in other facilities than hospitals overnights stay). Thus, the study shows that foreign students impact the host countries and may also be a factor contributing to the development of the tourism industry.

These findings may contribute to the development of Turkish provinces, indicating the role of foreign students and their impact on the growth and popularity of the regions. This example of Turkey may inspire other countries to consider the joint effects of education, health and conventional tourism attractiveness in developing their action plans and local branding strategies.

Conclusions

Driven by better accessibility, improved infrastructure and the desire for cultural discovery, international tourism continues to grow. Global trends show us that, along with all the tourism sector, educational and health tourism are strong agents of change, facilitating cross-border interactions and economic growth. Whereas the health tourism offers economic, cultural and social benefits for both patients and host countries, supporting the improvement of the global health sector and the quality of health services by providing new opportunities in terms of affordability, medical technology and accessibility, foreign student mobilities represent an enhancing factor for other types of tourism such as health tourism and conventional international tourism. The Covid-19 pandemic has accelerated the adoption of telemedicine and digital health services, created new opportunities for global healthcare access and facilitated education abroad through online and hybrid learning systems. Moreover, equality in opportunities and sustainability are concepts that both sectors pay attention to.

Overall, this study highlights the need of further investigation of the links between various niches of the tourism field, relating health with education, where

the stakes are high and the potential risks are significant, and suggests that continuous investment and research are required to reach the real potential of international health and educational tourism.

By discussing the interrelation between two key sectors, the study opens a potential development path and provides insights into the synergies between well-being and knowledge acquisition at a global scale. It contributes to the literature by bringing this so far unexplored topic into the spotlight and by providing potential approaches to follow for key actors in the industry and for governmental authorities. Further studies in this area may lead to economic prosperity, improve the quality of education, promote cultural understanding, and improve health practices worldwide.

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