
# THE IMPACT OF MEDICAL TOURISM ON THE DOMESTIC ECONOMY AND PRIVATE HEALTH SYSTEM: A CASE STUDY OF THAILAND

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**Declaration**

I, Thinakorn Noree, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed: ……..

Date: 15 June 2015

# Abstract

In the 21st century, medical tourism has emerged as a prosperous industry. Its growth has been fostered by increasing healthcare costs, long waiting lists for non-emergency operations and a lack of service availability in many developed countries. This has resulted in a reverse phenomenon of patients travelling from developed countries to developing ones to seek affordable healthcare and prompt services. Developing countries in particular have established a variety of strategies to benefit from this profitable market. However, the negative implications of the cross-border movement of services have raised concerns. Quality of services and continuity of care for patients are key concerns in source countries, and inequity, in terms of access to services, rising healthcare costs and the 'internal brain drain' of healthcare personnel are concerns in destination countries.

It is widely believed that there are substantial economic benefits to be gained from medical tourism, but this belief is not based on a firm empirical foundation. Similarly, there is a lack of empirical evidence concerning the impacts on the health systems of destination countries. The divergence of views and overall lack of evidence affords the potential for policy incoherence between trade and health. This study intends to address this gap in the literature through an empirical assessment of both medical tourism and the healthcare profiles of medical tourists. The overall aim of the study is to assess the impact of medical tourism on the Thai economy and domestic private health system. Thailand was selected as a appropriate country for a case study due to its significant medical tourism industry. This study presents the most extensive and detailed research on medical tourism and its effects on the private health system to date, by drawing on 324,906 patient records in the five largest private hospitals in the country.

The key findings are that medical tourists in Thailand are non-homogenous. Comparisons present differences between them and non-medical tourists and Thai private patients in terms of demography and service profiles. The majority are likely to be opportunistic tourists, especially patients who use out-patient departments.

Furthermore, the actual number of medical tourists is far fewer than is generally suggested, although they and their companions contribute disproportionately to the Thai economy in terms of medical and tourism-related spending. In terms of medical services, there is no difference between the critical aspects of care given to Thai and foreign patients. Hospitals make use of spare capacity to serve the demand of foreigners. However, foreign patients might be partially responsible for a shortage of high calibre doctors in public hospitals. Hence, if it wishes to continue with its "Medical hub" policy, there is an evident need for the Thai government to consider carefully the overall "cost" of this policy.

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# Abbreviations

| | |
|---|---|
| AEC | ASEAN Economic Community |
| AMA | The American Medical Association |
| AMA-OMSS | The American Medical Association – Organized Medical staff Section |
| ASEAN | Association of Southeast Asian Nations |
| BDMS | Bangkok Dusit Medical Service Public Company Limited |
| BMA | Bangkok Metropolitan Administration |
| BAPRAS | The British Association of Plastic, Reconstructive and Aesthetic Surgeons |
| CEOs | Chief executive officers |
| DEP | Department of Export Promotion |
| GDP | Gross domestic product |
| HRH | Human resources for health |
| ICD-10 | Tenth revision of the International Classification of Diseases and Related Health Problems (ICD-10) |
| ICD-9 CM | Ninth revision of the International Classification of Disease, Clinical Modification |
| IP | In-patient |
| JCI | Joint Commission International |
| LSHTM | London School of Hygiene and Tropical Medicine |
| MOC | Ministry of Commerce |
| MOPH | Ministry of Public Health |
| MOTS | Ministry of Tourism and Sports |
| NGO | Non-government organization |
| OP | Out-patient |
| TAT | The Tourism Authority of Thailand |
| TEIM | The travel economic impact model |
| THB | Thai Baht |

# Chapter One

## Introduction

# Chapter 1
# Introduction

Tourism is the world's largest industry and it is considered of vital importance to the global economy [1]. Its contribution has risen dramatically over recent decades [2]. In 2012, international tourist arrival was 1,035 million, representing a growth of 4% from 2011 [3]. The industry is highly fragmented, being made up of a large number of small businesses. Considerable numbers of people travel domestically and internationally and spend money with many businesses, from transportation to local businesses in the destination areas. This creates significant employment at all levels, from highly skilled managers in world-class hotels to employees in small souvenir shops.

Travel for health and wellness care has a long history, beginning in the 19$^{th}$ century. Wealthy patients from less developed countries travelled in search of the advanced care available in western countries. However, in the 21$^{st}$ century, a new type of tourism – medical tourism – emerged [4]. This phenomenon refers to people travelling outside their home countries, specifically for health care, usually specialized, and typically delivered in hospital. This development represents not only a change of reason for a great deal of travel, but that it is also no longer the preserve of the rich [5]. It is increasing significantly throughout the world, particularly in developing countries [6]. Increasing costs of healthcare, long waiting lists for non-emergency operations and a lack of service availability in many developed countries, together with cheaper travel and borderless communication through the internet, are major factors in fostering the growth of medical tourism [7]. This is resulting in a reverse phenomenon of patients travelling from developed to developing countries to seek affordable healthcare and prompt service [8]. Medical tourism as a term is still ambiguously defined. However, it is widely accepted that it relates to health services; for example, medical check-ups, dental care and elective procedures. Wellness tourism, such as spas, traditional therapy and homeopathic therapy, is generally excluded.

The growth and importance of tourism as a global industry has led many countries to identify medical tourism as a potentially important national industry [9], and they have developed various means to capitalize on it, including the presentation of international road-shows advertising a country as a desirable destination, and tax exemption schemes to encourage investment in facilities to service these medical tourists. Many private hospitals have also improved their capacity by using advanced medical devices and state-of-the-art techniques, conducted by highly skilled professionals, in the same way as those employed in world-famous medical institutes in the US and Europe.

Thailand is the foremost destination country for medical tourists in Southeast Asia [10]. Besides its reputation as a tourist destination, the relatively competitive prices; the high quality of services, accredited by the Joint Commission International; and excellent hospitality, are the main contributing factors. Government policy first emphasized medical tourism in 2003 through the "Thailand: Centre of Excellent Health Care of Asia" initiative, designed to attract international patients, with the collaboration of the Ministry of Commerce, the Ministry of Public Health, the Ministry of Tourism and Sports, the Ministry of Foreign Affairs and the Private Hospital Association. To promote the medical tourism industry, many strategies were initiated including international marketing, the improvement of domestic health facilities to international standards, and tax exemptions for local and foreign investors investing in new health facilities for serving foreigners. The policy was perceived as successful, making Thailand the largest service provider for medical tourists in the world, and led to a second phase of the policy, originally planned for launch in 2013 but so far not implemented, to maintain the growth of this industry. Based on a Thai Ministry of Commerce survey conducted in 2007, private hospitals have by far the major role in serving this industry, with 99% of medical tourists treated in the private rather than the public sector.

Over the last decade there has been a sustained increase in foreign patients in Thailand, and this trend is still continuing [10]. There is an expectation that it will lead to substantial financial benefit and a boost to the economy. The Thai government was expecting an income of 1 billion USD in 2008 from these lucrative

patients. However, many concerns were expressed about its implications for the domestic health system, such as the likelihood of crowding-out local patients, and contributing to a two-tier health system. Much international and domestic literature discusses these controversial issues [11, 12], but there remains a lack of empirical evidence. There has been only one study, which concludes that MT makes a small contribution to the overall economy [10] and there is no empirical evidence for any effects on the Thai health system. This study, therefore, investigates the implications of MT for both the domestic economy and the Thai health system, with a specific focus on private hospitals, as this is where 99% of medical tourism takes place. It provides the most extensive and detailed research on medical tourism and its effects on the Thai health system to date, by drawing on 324,906 patient records in the five largest private hospitals in the country.

This chapter introduces the thesis by providing an overview of medical tourism at both the global level and in Thailand. An overview of the Thai health system is also provided, and the rest of the thesis outlined.

### *1.1 Medical tourism at the global level*

The number of patients travelling for health care abroad has continually increased during the past few decades. This type of cross-border service has become a new type of health industry, but the actual number of medical tourists is still difficult to identify. However, it is estimated that the industry generates approximately 60 billion USD per year with a growth rate of 20% per year [13].

Patients mostly come from North America, Western Europe and the Middle East. In 2007, it was estimated that approximately 750,000 American patients travelled abroad for healthcare [14]. The main destinations were in Asia, Eastern Europe, the Caribbean and South America. The key push factors in the source countries are the high cost of care, long waiting lists for elective procedures and unavailable or poor quality services. Meanwhile, international standards of service, competitive prices and prompt service are key pull factors in destination countries. Moreover, cheaper long-haul transportation, an increase in the effectiveness of the internet and an

emergence of medical brokerage encourage the growth of the medical tourism industry.

However, despite this growth the implications of medical tourism remain inadequately assessed. Most literature is based on assumptions and opinion rather than empirical evidence. However, it is widely accepted that medical tourism is likely to create substantial increases to a country's revenues, but will also have an undesirable impact on the domestic health system, such as increasing the development of a two-tier health system and aggravating doctor shortages in the public sector [6, 15, 16]. There is no strong evidence base supporting this wide acknowledgement, however.

### *1.2 The medical tourism industry in Thailand*

Thailand is the largest medical tourism market in Asia. In 2006, there were estimated to be 1.2 million international patients entering the country for health services, generating approximately US$ 1.1 billion in revenue; approximately 9% of the total revenue from tourism overall, and 0.53% of overall GDP [4].

The turning point pushing Thailand into a flourishing medical tourism market came after the economic crisis in 1997. During the economic boom era, from 1991, the increase in the personal income of Thai nationals resulted in increased demand for high quality health services, particularly in the private sector. Many leading private hospitals expanded their capacity in order to cope with this increased demand. The proportion of beds in private hospitals increased from 10.6% in 1989 to 22.6% in 1997 [17]. After the economic crisis in 1997, domestic consumption of private health services declined considerably and many private hospitals closed down between 1998 and 2003 [17]. Some found new markets to compensate for this loss; principally marketing services to patients from abroad. This approach resulted in 470,000 international patients in 2001, an increase of 38% on the previous year [18].

In 2003, though the crisis in private hospitals had been relieved, the Thaksin government tried to push Thailand to be a centre of healthcare in the region by

attracting foreign patients in order to increase national revenues. The policy *"Thailand: Centre of Excellent Health Care of Asia"* was launched. This policy focused on three main products; medical services, health promotion services and herbal products [19]. Well-organized coordination among public and private agencies was established. There was collaboration between the Ministry of Public Health, the Ministry of Commerce, the Ministry of Tourism and Sports and the Ministry of Foreign Affairs. Many strategies were used, such as an international road show and tax exemptions for investment in new international health facilities [20]. However, the private sector remains the main driving mechanism to achieve the targets [10]. At the end of this first phase, the Department of Export Promotion and the Ministry of Commerce deemed the policy a success, as there were more than 1.2 international patients annually and Thailand had become the foremost country in this market. During 2004-2008, the industry generated US$ 7.5 billion, 60% more than was expected [21].

During the political instability after the coup d'état in 2006, there was no apparent movement on this policy during 2007-2009 [22]. In 2010, the Ministry of Public Health planned to announce the second phase of the *"Thailand Medical Hub"* policy, planned for the period between 2010 and 2014. However, there was concern in the wider Thai society about the negative implications of this policy, such as an internal brain drain of doctors and the possibility of generating a two-tier health system. This issue was placed into the third forum of the Thai National Health assembly in 2010. This is a public forum, convened once a year, to develop participatory public health policies. The second phase of the *"Thailand Medical Hub"* policy was then deferred to reconsider these possible undesirable impacts and how to mitigate them [23].

In 2012, the new government of Prime Minister Yinglak pursued the second phase of the *"Thailand Medical Hub"* policy again. In this period, the scope of this policy was extended beyond health service arena. The new "Thailand Medical Hub" expanded to 1) The Wellness Hub – including health promotion service and spas, 2) The Medical Service Hub – serving foreign patients, 3) The Academic Hub – including research centres in the health arena and 4) The Product Hub – including drugs and other health products [19]. This movement included medical schools as

major stake-holders in order to establish the Academic Hub. The strategic plan for the second phase of the *"Thailand Medical Hub"* between 2014 and 2018 is being revised by multi-stake holders to ensure that concerns over undesirable implications are taken into account before government approval [22].

The new phase aims to push Thailand to the status of a world class healthcare provider and a sophisticated academic hub. General patients, specialized care, dental procedures and services for older people are the main foci for medical services. It is also encouraging public hospitals to develop international standards of care to service both domestic and foreign customers. Total revenues of 814 billion THB (27 billion USD) are estimated to result from this policy during the period 2014-2018 [19].

*Competitive advantage of Thailand*

Thailand, India and Singapore are well-known as medical tourism destinations in Southeast Asia, accounting for an estimated 90% of the medical tourism industry in the region [10]. It is estimated that in 2008 there were 1.36 million international patients in Thailand (Table 1.1). The Asian Trends Monitoring Bulletin reported that in 2007 there were an estimated 341,288 international patients in Malaysia and 348,000 international patients in Singapore, producing revenues of 0.78 billion USD and 1.2 billion USD respectively [24]. The competitive prices, high quality of services and impressive hospitality of many tourist attractions are seen as key elements of success for Thailand [25]. Medical care in Thailand costs more than in India, but less than in Singapore. Local currency devaluation after the economic crisis, as well as low labour costs, make the price of medical treatment in Thailand attractive. For some kinds of heart operation, such as a heart bypass, the Thai price is 90% cheaper than that in the US [26]. Thailand also has good health infrastructures: many private hospitals provide highly-specialized tertiary care at international standards. Currently, 22 private hospitals are accredited by the Joint Commission International (JCI), the global hospital accreditation organization. These hospitals utilize sophisticated, state-of-the-art medical equipment. Many Thai doctors serving there have been trained in the US, the UK, and other European countries. The high quality of Thai medical service is another factor in attracting foreign patients. Thai

hospitality is also unique and distinguishes the country from others. Moreover, Thailand is a well-known tourist destination. A warm climate, a variety of tourist attractions from coasts to tropical forests, and good sanitation are key contributing factors, whereas Singapore is a small island with a limited number of tourist destinations, and India still has sanitation problems.

*Increasing demand by overseas patients*

Expensive health care, long waiting lists and unavailable services are key contributing factors that drive patients to seek healthcare abroad [27]. Patients in western countries, especially the US, have faced high-cost medical care for many years, and may have no insurance, making access to domestic health services prohibitively expensive. Overall expenses, including travelling costs and accommodation are often cheaper in other countries. Patients from Canada, the United Kingdom and other European countries may not face high healthcare costs, but do face long waiting lists for treatment, particularly elective procedures, under their national health insurance schemes. Patients from the Middle East and some countries in Southeast Asia, such as Myanmar and Cambodia, seek services abroad which are unavailable in their own countries, such as heart-related and orthopaedic procedures.

*Current information on medical tourists*

The Department of Export Promotion, Ministry of Commerce (DEP, MOC), estimated that in 2003 there were 973,532 international patients generating US$ 660 million in revenues. With the continuous growth in numbers of these patients, there were an estimated 1.36 million foreign patients in Thailand in 2008 (Table 1). However, most of their treatment was delivered in private hospitals. The public sector has taken very little part in this industry. Data from the MOTS survey in 2008 showed that the majority of international patients were in private hospitals, and only 0.9% of them were in public hospitals; mostly university hospitals. Patients from Japan, the USA, UK, Middle East and ASEAN are key market share. Expatriates are the main component of the international patients in Thailand, while medical tourists

coming specifically for medical services constitute 27% (Figure 1.1). The most popular services for these medical tourists are orthopaedic procedures, cardiac surgery, physical examination, cosmetic surgery, gastrointestinal diseases and dental care (Figure 1.2).

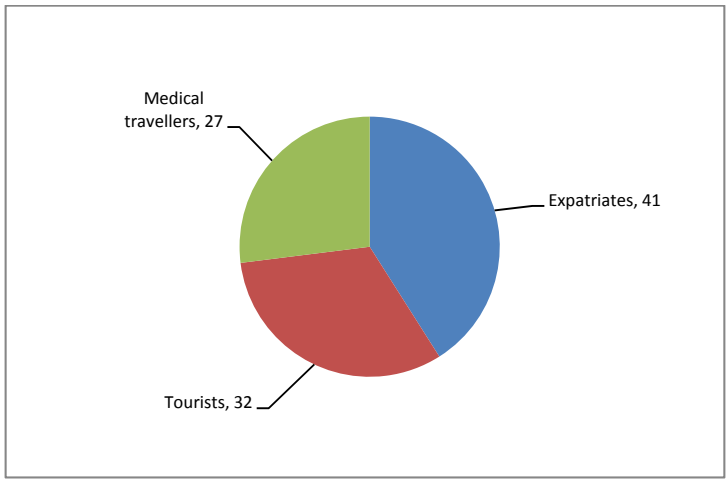
Table 1.1: International patients in private hospitals

| | Country of origin | Number of patients | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **2002** | **2003** | **2004** | **2005** | **2008** | **2011** | **2012** |
| 1 | Japan | 131,584 | 162,909 | 247,238 | 185,616 | 200,642 | 177,058 | 182,807 |
| 2 | USA | 59,402 | 85,292 | 118,771 | 132,239 | 114,872 | 74,058 | 76,277 |
| 3 | South Asia | 47,555 | 69,574 | 107,627 | 98,308 | 73,991 | 52,004 | 61,999 |
| 4 | UK | 41,599 | 74,856 | 95,941 | 108,156 | 91,969 | 63,937 | 62,448 |
| 5 | Middle East | 20,004 | 34,704 | 71,051 | 98,451 | 164,943 | 91,117 | 98,657 |
| 6 | ASEAN | N/A | 36,708 | 93,516 | 74,178 | 139,887 | 122,404 | 113,522 |
| 7 | Taiwan/China | 27,438 | 46,624 | 57,051 | 57,279 | 33,492 | 32,310 | 48,396 |
| 8 | Germany | 18,923 | 37,055 | 40,180 | 42,798 | 38,730 | 32,310 | 28,716 |
| 9 | Australia | 16,479 | 24,228 | 35,092 | 40,161 | 35,998 | 24,915 | 42,831 |
| 10 | France | 17,679 | 25,582 | 32,409 | 36,175 | 31,000 | 34,519 | 35,472 |
| 11 | South Korea | 14,877 | 19,588 | 31,303 | 26,571 | 21,999 | 17,262 | 19,594 |
| 12 | Scandinavia | N/A | 19,851 | 20,990 | 22,921 | N/A | N/A | N/A |
| 13 | Canada | N/A | 12,909 | 18,144 | 18,177 | 18,750 | 12,784 | 14,109 |
| 14 | East Europe | N/A | 8,634 | 6,728 | 6,120 | 12,782 | 7,841 | 9,947 |
| 15 | others | 234,460 | 315,018 | 127,054 | 302,834 | 384,240 | 192,516 | 147,379 |
| | **Total** | **630,000** | **973,532** | **1,103,095** | **1,249,984** | **1,363,295** | **934,587** | **954,107** |

**Source:** Department of Export Promotion, Ministry of Commerce

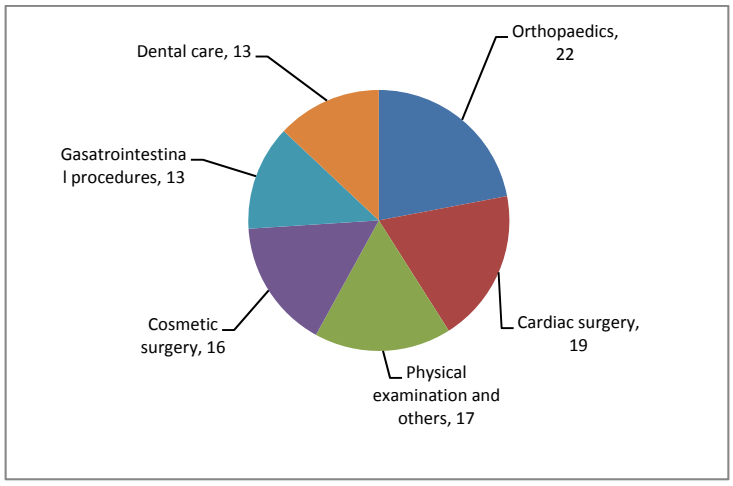
**Note:** Number of international patients after 2008 shows a decline, as not all hospitals responded to this survey.

Figure 1.1: Type of international patients




Source: Department of Export Promotion Ministry of Commerce

Figure 1.2: Type of medical services




Source: Department of Export Promotion Ministry of Commerce

Bumrungrad International Hospital has progressed forcefully in this market [28]. In 2005, the hospital welcomed around 150,000 overseas patients, 55,000 of whom were from the US [29]. At present, international patients account for 50% of their total clientele [29].

Although the number of international patients has increased in recent year, it remains very small compared to the number of domestic patients. The National Statistical Office reported that in 2011, 46 million patients were treated in private hospitals [30], while 136 million patients were treated in public hospitals [31]. According to

this estimate, international patients represent approximately 2.8% of the total number of private patients, and 0.9% of the total number of all patients, in Thailand.

*Domestic economic impact*

It is widely believed that the medical tourism industry contributes to the Thai economy, but how much it contributes remains unclear. The Department of Export Promotion, the Ministry of Commerce estimated that international patients contributed some 3.5 billion USD in 2008 [21]. Based on the international patient survey by DEP, from the MOC, Na Ranong et al (2011) forecast that medical tourists contribute some 1.9-2.1 billion USD from medical services and related tourism [10].

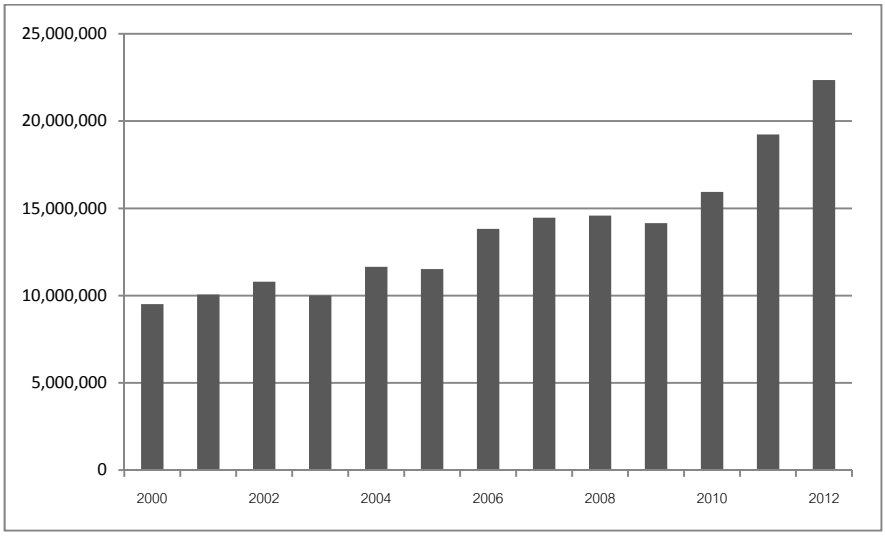
*1.3 The tourism industry in Thailand*

Thailand is famous for impressive historical sites, rich and vibrant cultures, beautiful beaches, scenic countryside, and gentle, polite and genuinely friendly people [32]. The country has had a long experience in the tourism industry, and tourists from all over the world know Thailand as the *"Land of Smiles"*.

The tourism industry is important to Thailand [33]. According to World Tourism Organization data, in 2012, 20.7 million overseas travellers visited Thailand, an increase of 16.2% compared to the previous year. Thailand is ranked 4$^{th}$ in terms of the size of its tourist sector amongst Asian and Pacific countries [1]. The industry has grown continuously since 1960, after the Tourism Authority of Thailand (TAT) was established as having specific responsibility for the promotion of tourism, the importance of which was realized and established in the first National Economic and Social Development plan in 1961 [34]. Since 1960, Thailand has seen the annual number of international tourists increase from 81,340 to over 20 million. After the economic crisis in 1997, the tourism industry was one of the key factors which drove the domestic economic recovery. The campaign "Amazing Thailand" was launched between 1998 and 1999.

Many factors affect the tourism industry. At the global level, increases in the overall number of international travellers around the world directly have enhanced the number of tourists in Thailand, while the financial crisis in The US and Europe in 2009 resulted in a reduction of the overall numbers of international travellers around the world. Meanwhile, internal factors, such as the tsunami of 2004, political instability in 2009-2010, and a serious flood in 2011, directly affected the number of tourists. However, to date there has always been a strong rebound from such events (Figure 1.3).

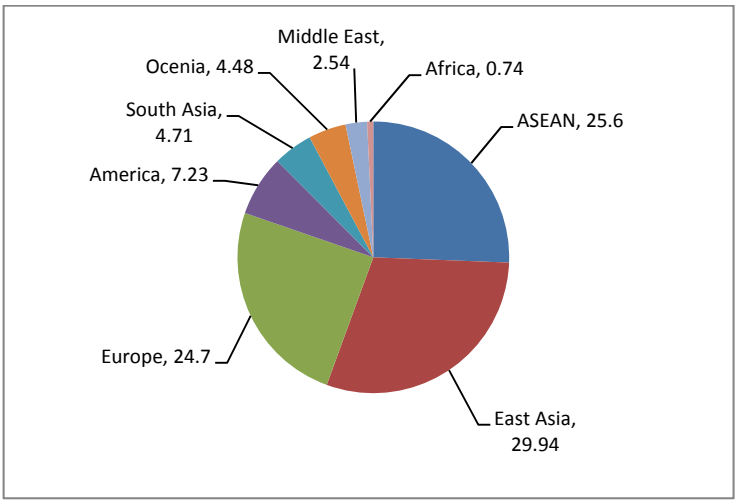
Figure 1.3: Number of international tourists in Thailand between 2000 and 2012




Source: Department of Tourism, MOTS

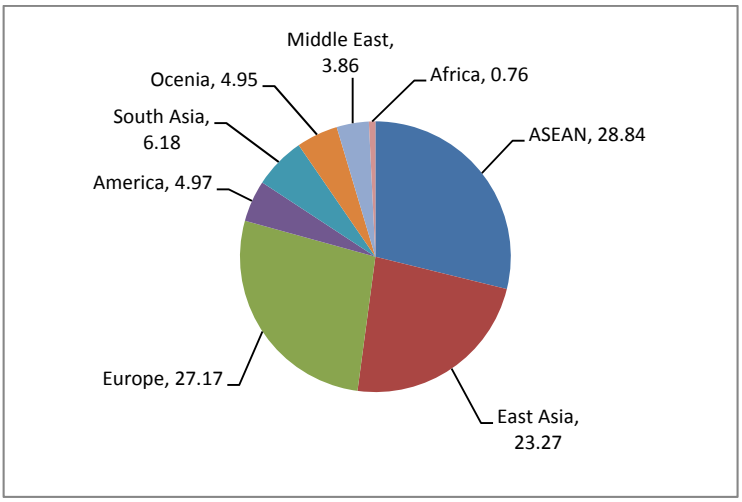
Tourists from within the local region have dominated, accounting for 62% in 2005 and 2010 (Figure 1.4 and 1.5). Tourists from ASEAN have become more important. Tourists from East Asia were the largest group in 2005, accounting for almost 30%, while tourists from ASEAN took over as the largest group in 2010, accounting for 28.8%. Tourists from Europe were still the largest group of those from long-haul origins, accounting for 27% in 2010 (Figure 1.5). Moreover, tourists from ASEAN will become more important after the starting of ASEAN Economic Community (AEC) in 2015 which will enable people in the region to move freely across borders (similarly to EU practice). It is expected that Thailand will benefit, given its location in the centre of the region. In 2011, the top ten countries of origin of tourists arriving in Thailand were Malaysia, China, Japan, Russia, South Korea, India, Laos, Australia, the UK and the USA.

Figure 1.4: International tourists by region in 2005




Source: Department of Tourism, MOTS

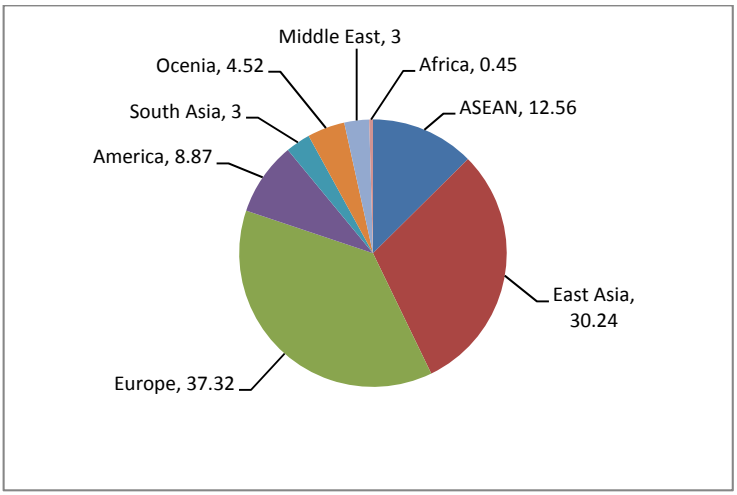
Figure 1.5: International tourists by region in 2010




Source: Department of Tourism, MOTS

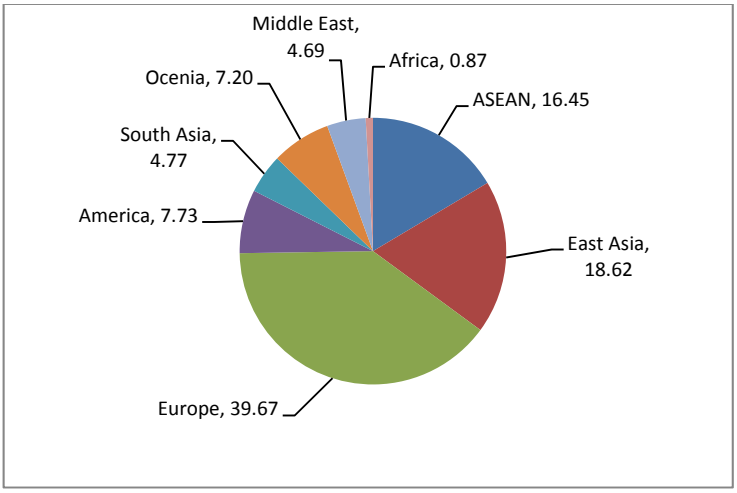
The continuous expansion of revenue has significantly contributed to the Thai economy, accounting for 5.8% of GDP in 2009 [35]. Revenues from international tourists have continuously increased from 367 billion THB (12.2 billion USD) in 2005 to 585 billion THB (19.5 billion USD) – an approximately 60% increase in five year. Tourists from Europe were key contributors; approximately 37% and 40% of total revenues from international tourism in 2005 and 2010 respectively (Figure 1.6 and 1.7).

Figure 1.6: Revenues from international tourists by region in 2005




Source: Department of Tourism, MOTS

Figure 1.7: Revenues from international tourists by region in 2010




Source: Department of Tourism, MOTS

### *1.4 The Thai health system*

The Thai health system is pluralistic and dominated by the public sector. Thai people depend increasingly on health-facility based services. The percentage using facility-based health services has increased from 38.5% in 1970 to 72.5 % in 2006 [36].

Annual health expenditure rose from 4.47% of gross domestic product (GDP) in 1983 to 6.4% in 2008 [17]. There was also a trend toward increased public spending from 31.5% in 1983 to 42.7% in 2008 [17]. The Ministry of Public Health [37]

covers around two thirds of the public spending on health. In the past, 75% of Thais were insured under various health insurance schemes. The former government started to implement universal coverage of healthcare (30 Baht Scheme) in 2001, and currently more than 95% of Thais are covered by health insurance [38].

### *1.4.1 Public health facilities*

Structurally, the Ministry of Public Health [37] is the main national health agency. It owns the majority of health resources, particularly in rural areas (Table 2). In 2009, the MOPH has four general hospitals in Bangkok, 25 regional hospitals and 69 general hospitals at provincial level (Table 2), all providing tertiary medical care. All hospitals at the district level are under the MOPH, providing secondary care. At sub-district level, there are 9,976 health centres under the MOPH, mainly providing primary care. There are a few hospitals under the Ministry of Education (mostly medical schools), the Ministry of Defence and the Bangkok Metropolitan Administration (BMA).

Table 1.2: Thai health care infrastructures in 2009: Pluralistic nature

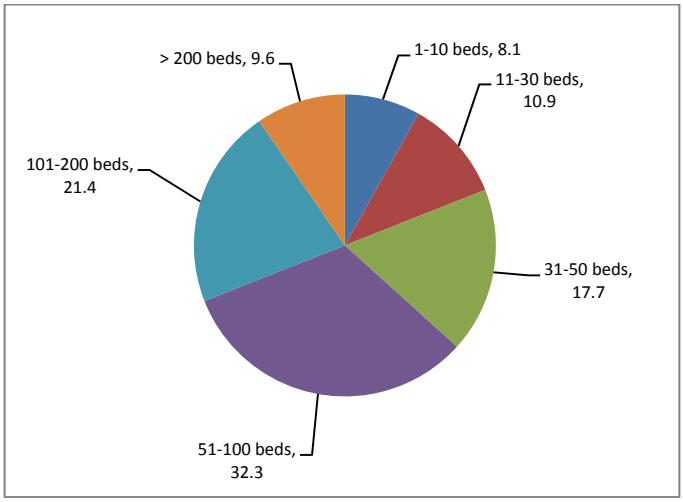
| | ***Bangkok*** | ***Provinces ( urban )*** | ***Districts ( rural )*** | ***Sub-district ( rural )*** | ***Villages ( rural )*** |
|---|---|---|---|---|---|
| **N** | **1** | **75** | **796** | **7,255** | **74,435** |
| **Medical schools** | | | | | |
| *Public* | 6 | 11 | - | - | - |
| *Private* | 1 | - | - | - | - |
| **Specialized Hospitals** | 14 | 48 | - | - | - |
| **Regional Hospitals [37]** | - | 25 | - | - | - |
| **General Hospitals** | | | | | |
| ***Public*** | | | | | |
| *– MOPH* | 4 | 69 | - | - | - |
| *– Other* | 22 | 62 | | | |
| ***Private*** | 96 | 226 | - | - | - |
| **Community Hospitals [37]** | - | - | 734 | - | - |
| **Private Clinics** | 3,878 | 13,793 | - | - | - |
| **Health Centres** | | | | | |
| *MOPH* | - | - | - | 9,768 | - |
| *Local government* | 76 | - | - | 214 | - |
| **PHC Centres** | - | - | - | - | 66,223 |

Source: Thailand Health Profile 2008-2010

*1.4.2 Private health facilities*

Private hospitals play a key role in urban areas. They have been flourishing for the past three decades. Private hospital capacity has grown rapidly from around 10% of total hospital beds in 1985 to 20.6% in 2008 [17]. This was in response to rapid double-digit economic growth, and the influx of low-interest foreign loans [39]. Although some of them were closed after the economic crisis in 1997, their numbers have grown continuously since the economic recovery. Private health facilities in Thailand range from drugstores, private clinics without in-patient beds, through to private hospitals with in-patient beds. In 2009 there were 322 private hospitals in Thailand, 30% of them located in Bangkok. The largest group of private hospitals (approximately 32.3%) had between 51 and 100 beds, while those with over 200-beds represented only 9.6% of the total (Figure 1.8). Over 200-bed private hospitals are mostly located in Bangkok and other big cities, providing sophisticated tertiary medical care.

Figure 1.8: Private hospitals by number of beds in 2009




Source: Thailand Health Profile 2008-2010

In 2011, there were 46 million patients using private hospitals. 44 million of these visited out-patient clinics, while 2 million, approximately 5%, needed in-patient treatment; this compares to an admission rate of 6% in public hospitals under the MOPH and is thus a very different profile [30]. Private hospitals created gross revenues of around 119 billion Thai Baht, approximately 3.9 billion USD, from

hospital operations, and their net revenue was 47 billion Thai Baht, approximately 1.5 billion USD [30].

### *1.4.3 Human resources for health (HRH)*

The health system is labour intensive [40]. The health workforce is central to every health service system [41]. It is one of the most finite of resources, and health system performance depends on the knowledge, skill and motivation of the people responsible for the delivery of services.

Multiple cadres of HRH deliver health services in Thailand. As the country develops, more professionals and fewer paramedics are being trained [42]. There are 18 medical schools (17 public and one private) and 10 dentistry institutes (nine public and one private). Annual production capacity is approximately 2,500 new doctors and 1,000 new dentists. Meanwhile, there are 74 nursing colleges and institutes (64 public and 10 private) with an annual production capacity of 7,000 new nurses. However, there has been a continual shortage and inequitable distribution of HRH, particularly geographically. Information from the National Statistics Office in 2000 shows that there is a gap in the distribution of the main professions between the northeast region, considered the poorest area, and Bangkok. The imbalance is largest in doctors, 9.46:1, and smallest in nurses, 1.97:1 (Table 3).

Table 1.3: Distribution of main cadres of HRH by region, 2000

| | ***Doctors*** | | ***Dentists*** | | ***Pharmacists*** | | ***Nurses*** | |
|---|---|---|---|---|---|---|---|---|
| | *Number* | *Pop. ratio* | *Number* | *Pop. ratio* | *Number* | *Pop. ratio* | *Number* | *Pop. ratio* |
| ***Bangkok*** | 9,504 | 668 | 2,720 | 2,336 | 2,764 | 2,299 | 17,389 | 365 |
| ***Central*** | 4,973 | 2,850 | 1,481 | 9,598 | 2,464 | 5,769 | 33,474 | 424 |
| ***North*** | 2,774 | 4,121 | 956 | 11,959 | 1,864 | 6,133 | 23,034 | 496 |
| ***Northeast*** | 3,294 | 6,322 | 1,136 | 18,332 | 1,916 | 10,869 | 28,887 | 720 |
| ***South*** | 1,890 | 4,279 | 673 | 12,017 | 1,346 | 6,008 | 16,867 | 479 |
| ***Whole country*** | 22,435 | 2,758 | 6,966 | 8,882 | 10,354 | 5,976 | 119,651 | 517 |
| ***Discrepancy ratio between Northeast : Bangkok*** | ***9.46*** | | ***7.84*** | | ***4.72*** | | ***1.97*** | |

Source: The Population and Housing Census 2000, National Statistical Office

The distribution of doctors is influenced by multiple factors, including over-specialization and lack of opportunities for further training [43]. However, also significant has been the growth of private hospitals, resulting in an internal brain drain of HRH, and especially the movement of specialists from public hospitals to urban private hospitals. The percentage of doctors working in private hospitals has doubled over the last twenty year, from 11.4% in 1987 to 20.9% in 2007 [17].

### *1.5 Conclusion*

It is widely accepted that a substantial benefit of medical tourism comes in terms of the economy, but this is not founded on firm empirical evidence of any *extra* revenue resulting from medical tourism that would not otherwise (without medical care) have accrued from ordinary tourism. Conversely, it has been argued that there is a substantial cost to the domestic health systems of the service-delivering countries from medical tourism, especially with respect to equity of access to healthcare by domiciled patients [10,12,16,20]. These controversial aspects may result in policy incoherence between trade and health [44]. However, current information concerning these issues is relatively limited. Most of the literature is based on speculation rather than empirical evidence [45].

There is still a lack of evidence on whether a country stands to gain or lose overall from investment in medical tourism, and more specifically, *who* gains or loses with respect to the domestic economy and the domestic health system. Hence, this study seeks to establish empirically the impact of medical tourism on *both* the domestic economy and domestic health system. Three objectives were established: to assess (i) medical tourist characteristics; (ii) their expenditures; and (iii) their impact on the domestic health system, specifically on private hospitals. Understanding the nature and size of the industry, and its impact on the private sector, will also allow better inference of the likely impacts, and the pathways for those impacts, on the public sector; for instance, with respect to the likely crowding-out of local patients, contribution to the 'internal brain drain', and the skewing of the forms of medical care receiving investment. Furthermore, there is also a need to provide some

indications of whether medical tourism can provide a "net" benefit, and identify significant factors which may shift this balance to ensure that a country can move closer to the "net" benefit by maximizing the opportunities and minimizing the risks.

### *1.6 Thesis outline*

This thesis focuses on the implications of medical tourism on the domestic economy and the health system of Thailand. While the focus is primarily on the private sector, conclusions on 'spill-over effects' for the public sector are included. The thesis provides a survey of their characteristics, a demonstration of their contribution to the Thai economy and an investigation of their possible implications on the domestic health system. Seven chapters follow this introductory chapter.

Chapter Two presents a literature review of the tourism and medical tourism industries, and the interrelationship between these two arenas. The gaps in the literature are outlined.

Chapter Three presents the conceptual framework of this study. Research methodologies are described to demonstrate how to answer the key and specific research questions in each sub-study contained in the thesis.

Chapter Four explores the characteristics of medical tourists from various aspects, including their demographic and service profiles. Comparisons of the characteristics of medical tourists and non-medical tourists, and medical tourists and Thai private patients are presented.

Chapter Five analyses the economic impact of medical tourists on medical and tourism elements. A comparison of the expenditures of non-medical tourists and Thai private patients is also provided. Moreover, the expenditure of their companions is investigated as well.

Chapter Six analyses the implications of medical tourism on the Thai health system. Various key informants in private hospitals are interviewed to demonstrate whether

medical tourists displace domestic patients. Issues concerning whether there is any discrimination between medical tourists and Thai private patients, and how hospitals obtained additional resources to cater for foreign demand for health services, are also investigated.

Chapter Seven synthesizes the findings of the study and presents a discussion of the issues involved in establishing whether a country gains or loses from serving medical tourists. Policy recommendations are also provided to guide policy makers to generate effective policies.

# Chapter Two

## Literature review

# Chapter 2
# Literature review

## *2.1 Search methodology*

In order to establish a better understanding of the implications of medical tourism for the domestic economy and health system, a review of the literature related to these issues was conducted. The search methodology comprised two components; a primary literature search of electronic bibliographic databases, and a secondary literature search for statistical data and policy documents relating specifically to Thailand, which were unlikely to be found in the primary search.

The primary literature search was carried out in various electronic databases including Global Health, MEDLINE, Web of Science, Social Policy and Practice, Health Management Information and EMBASE. Search terms used were "Medical tourist", "Medical tourism", "Health tourism", "Trade in Health Service" and "Cross border patient". These search terms were adopted for each database and used across fields such as *title*, *abstract*, *key word* and *subject heading*, from the earliest date available until 31 October 2013. Papers not related to medical tourism, and/or which were in languages other than English or Thai were excluded from the review. From this preliminary search, approximately 342 papers were initially identified. These were thoroughly reviewed and 129 were judged to be relevant to the thesis objectives.

The secondary literature search was for specific statistical information and policy documents relating to Thailand, which were unlikely to be included in the bibliographic databases above. For this literature and data, domestic websites related to the thesis objectives were identified, as follows:

Ministry of Public Health - http://www.moph.go.th/
Ministry of Commerce - http://www2.moc.go.th/
Ministry of Tourism and Sports - http://www.mots.go.th/

The Tourism Authority of Thailand – www.tat.or.th
National Statistical Office – www.nso.go.th
Office of the National Economic and Social Development Board – www.nesdb.go.th
National Health Commission Office – www.nationalhealth.or.th
In addition, the websites of many private hospitals were also searched.

It was found that most literature on medical tourism contained very limited information and sparse and out-of-date data [46]. Moreover, most were based on speculation rather than empirical evidence [45]. Smith (2011)[47] reviewed 63 papers related to medical tourism and the role of bi-lateral trade, and found that very few papers provided empirical data while others mentioned statistical information without being a primary study themselves. The most popular source of statistical information in the medical tourism literature was from newspapers and brokerage claims [45, 46].

### *2.2 What is medical tourism?*

The term *"medical tourist"* is still inconclusively defined [5]. The Medical Tourism Association defines *"medical tourism"* as a situation in which people living in one country travel to another country to receive medical care, receiving care equal to or better than that which they would receive in their own country. Medical tourists were defined as people who travelled in order to receive medical care because of easier affordability, better access to care or a higher standard of quality of care. This new and distinct niche market targets medical need in developed countries [48, 49]. In essence, medical tourism is an act by patients who travel abroad to seek medical care [50, 51]. Most definitions focus on medical services ranging from simple health check-ups; non-invasive treatments not involving hospitalization, such as dental care; and some cosmetic procedures, to more invasive and complicated treatments such as heart operations and major orthopaedic operations. In some countries, it includes controversial procedures such as reproductive procedures and organ transplants, which raise concerns about patient safety and ethical considerations [47, 52-58]. Alternative treatments may also be provided, for example Ayurvedic medicine in India. Even though a successful outcome from a specific medical procedure is

considered the main purpose of travel, medical travellers also experience other aspects of tourism, sampling a different culture, and enjoying leisure and shopping activities [59]. Some literature expands the definition of these patients into other arenas as well as health; direct and indirect engagement in tourism and other activities is included in the definition of a medical tourist [46], but passive health activities, such as spa and wellness centres, are conclusively excluded from the medical tourism arena. These kind of non-invasive and health-promotion activities are termed *"Health tourism"* or *"Wellness tourism"* [45].

The term *"Health tourism"* covers all forms of health-related tourism which doesn't involve actual medical treatment, but assumes incidental benefits in an amenable, relaxing context. A 'spa' is typical of the sort of service usually mentioned in respect of health tourism. The European Union's High Level Group on Tourism and Employment reported in 1998 that "Spa, health and fitness facilities" would be one of the fastest growing segments in tourism [60]. The term *"Wellness tourism"* is widely used in European countries. The quality of services is a significant competitive factor between countries [61].

### *2.3 Globalization of medical tourism*

Globalization currently challenges most policy makers and public health practitioners [62, 63]. In the past, globalization was often been seen as being a purely economic process associated with greater 'liberalization' of trade. Currently, it is considered to be a more comprehensive phenomenon causing considerable changes in culture, politics and other aspects of society [64]. It has a positive impact on health by increasing a country's economic growth and the availability of goods, and introducing difference concepts of well-being. However, it also has a negative impact due to the market penetration of "bads" such as tobacco and alcohol [65]. The globalization of health services is illustrated by increasing cross-border movement of patients and health professionals and also by international investment in health services and e-health [66].

*"Medical tourism"* is an explicit manifestation of globalization which has emerged in the 21st century, but actually has a long history, especially emerging in the 18th century when travelling was closely linked to an increase in well-being and recreation. "Taking the waters" in spas in many parts of Europe was an early example of well-being tourism [49]. More recently, many tourists travel for alternative care, such as Ayurvedic medicine, yoga and meditation; this is considered another form of *"Health tourism"*, specifically for recreation and an increase in well-being. For many year, medical care in developed countries, such as the US, attracted wealthy patients from developing and less developed countries who went in order to receive technologically advanced healthcare services not available in their home countries [29]. Currently, a reverse phenomenon exists, where patients from developed countries travel to less developed countries to seek economical and prompt medical services.

It is difficult to determine the precise scale of this industry, as various definitions of medical tourism exist [5, 67]. Official data concerning medical tourism at national level is limited, as there is no means to access it and no independent body to verify it [5]. Routine data is ineffectively collected, and is mostly from the private sector [45]. Most of the available national data is based on estimation, substantially overstated [5]. McKinsey & Company estimated that the medical tourism industry worldwide generated approximately 60 billion USD in 2006 and reached 100 billion USD in 2012[68].

### *2.3.1 Source and destination countries*

The main source countries are North America, Western Europe and the Middle East where patients have high purchasing power [49]. In 2010, an estimated 63,000 UK patients travelled abroad for medical care mainly for fertility, cosmetic and bariatric treatments [69]. Approximately 50,000-120,000 US residents travelled abroad to obtain medical services in 2007 [70]. However, the USA and the UK import and export health services. Many international patients come to USA and UK for medical care as well [69, 70].

Medical tourism companies, called *"Brokers"or "Medical tourism facilitators",* stimulate the growth of this industry by linking patients and destination services [54, 71]. They act as a 'one-stop' service offering information and a variety of services to meet patient needs [72]. These agencies provide a list of hospitals and doctors for selection, and arrange hospital appointments, transportation and accommodation [67]. They sometimes provide follow-up services with doctors in the patient's own country. Information concerning medical services is also presented on websites which helps in matching patients with a destination country. Information on these websites varies from the general for example concerning travel and accessing services abroad, to the more specific, such as details of the services available.

The main destination countries include several in Eastern Europe, Latin America, Asia and to a lesser degree Africa. Medical tourism has been a significant growth industry in many regions. In 2007, Thailand received 1.5 million medical tourists, and was the largest provider of these services. India, Singapore and Malaysia received 450,000, 410,000 and 300,000 incoming patients respectively. The Philippines, Korea and Taiwan are new players in this market [4]. Other regions, such as Jordan, Hungary and Mexico, have served patients from neighbouring countries. Costa Rica, Brazil and South Africa are also well-known for providing cosmetic surgery for overseas patients [4].

Most exporting service countries have to differentiate themselves by promoting their attractiveness in terms of the quality of services, competitive prices and their specialized services. Cuba has developed a specialization in plastic surgery and dental care [49]; the Caribbean Islands developed a medical tourism industry from their existing tourism-oriented economy [73]; Eastern European countries have a reputation for cosmetic and dental care; *"Surgeon and Safari",* which explicitly links medical care with tourism, is used as an advertising slogan to attract patients to South Africa; and Israel specializes in female infertility and in-vitro fertilization [49]. In the 1970's, Thailand was initially famous for gender reassignment and then changed to providing cosmetic surgery. India promoted themselves as providers of Ayurvedic therapy, and coronary bypass and cosmetic surgery.

Many countries have introduced strategies to encourage medical tourism, such as tax exemptions for foreign investment in health facilities, or tax reductions for importing advanced sophisticated medical equipment. To facilitate overseas patients obtaining services, the Indian government introduced a special visa, called an "M" visa, for these patients [15].

### *2.3.2 Regional effects of movement*

Current information suggests that the majority of international patients travel within their regions. Social, cultural and linguistic factors are the main reasons cited [74]. A growth in the numbers of the wealthy middle classes has contributed to increased travel for services unavailable in their various home countries [75]. For instance, around 70% of medical tourists in Singapore are from the Association of Southeast Asian Nations (ASEAN). The majority of medical tourists in Malaysia, approximately 72%, are from Indonesia, followed by patients from Singapore, approximately 23% [76]. Cuba is a very popular destination for visitors from the Caribbean and Central America. Tunisia serves customers from neighbouring Libya [77]. Yemeni patients travel to India and Jordan for services [78]. Jordan also caters mainly for patients from the Middle East. Some pregnant women in China come to Hong Kong to give birth [79].

Similarities of culture and religion are contributing factors for regional movement. Musa et al (2012) reported that apart from price and quality of services, cultural and religious similarities constituted the third most important reason for medical tourists visiting Kuala Lumpur [80]. However, multiple factors affect patient choice, including shorter distances to providing hospitals, language similarities, differences in cost and length of waiting lists for example are reasons for the cross-border movement of patients in the Euro region Meuse-Rhine, covering provinces in Germany, Belgium and the Netherlands [81].

### *2.4 Why do they travel?*

A more recent trend is patients travelling from developed countries to less developed countries to obtain medical care [49]. Key 'push' factors are high healthcare costs and long waiting lists for particular procedures in developed countries such as the US, the UK, and Canada [27, 82]. Meanwhile, there is an increase in well-trained medical staff and high quality services in destination countries.

#### *2.4.1 Push factors in source countries*

The main contributing factors pushing patients from developed countries are high healthcare costs, long waiting times for medical care and lack of particular services [8, 46]. Americans form the largest group of medical tourists. Cost is a particular factor for US citizens given the prohibitive cost of healthcare there [26, 83, 84]. This continues to fuel growth in the medical tourism industry [28, 85]. In Canada, the UK and some other countries in Europe, some non-emergency operations have waiting times of more than six months. Some reports have suggested that in 2005, 50,000 UK patients went to Thailand alone [86]. In Australia, around 7-8% of travel insurance claims are for dental care abroad [87]. Patients in many European countries travel to Italy and to several countries in Eastern Europe for reproductive services unavailable in their home country. Cultural familiarity is one contributing factor for patient mobility [88]. Mexicans dwelling in the USA tend to return home to obtain familiar medical services [89]. People of the Indian diaspora in the UK often return to India for medical care [90]. Acquaintance with a healthcare system, trust in the service providers and communication through the same language is important [91].

#### *2.4.2 Pull factors in destination countries*

- *Competitive price*

Cost saving is considered the most significant benefit for overseas patients [67]. Lower labour costs, inexpensive drugs and lack of malpractice insurance, are major determinants for countries exporting services in making their price competitive [92].

Total health service expenses, including travelling and accommodation costs, are still cheaper when compared with the same treatment in the US or the UK [28, 93]. Currently, reimbursement for treatment carried out abroad is allowed by many insurance companies [9].

However, there is also price competitiveness among destination countries. Thailand and Malaysia offer a competitive price compared with Singapore for example [25], and India also charges attractively lower prices than many of its competitors (Table 2.1) [67].

Table 2.1: Comparative cost of medical procedure by country

| Procedure | US. | India | Thailand | Singapore |
|---|---|---|---|---|
| Heart bypass | 130,000 | 10,000 | 11,000 | 18,500 |
| Heart valve replacement | 160,000 | 9,000 | 10,000 | 12,500 |
| Angioplasty | 57,000 | 11,000 | 13,000 | 13,000 |
| Hip replacement | 43,000 | 9,000 | 12,000 | 12,000 |
| Hysterectomy | 20,000 | 3,000 | 4,500 | 6,000 |
| Knee replacement | 40,000 | 8,500 | 10,000 | 13,000 |
| Spinal fusion | 62,000 | 5,500 | 7,000 | 9,000 |

Source: AMA-OMSS Governing Council Report B June 2007-Appendix A

- *High quality medical service*

Apart from economics, quality of care is considered an important issue for international customers [94]; "First world health care at a third world price" slogan is commonly used. International accreditation by the Joint Commission International (JCI), the global brand of hospital accreditation organizations, and highly proficient medical staff trained in the US and UK, are often cited by suppliers as a guarantee of quality. A *"Brand"* corporation with state-of-the-art medical institutes in the US and UK is also widely used in marketing and advertising [78]. Many hospitals deliver a high level of customer services which is blurring the lines between hospital and hotel. Attentive private care, luxurious rooms, outdoor pools, room service and a private limousine service are advertised in order to attract customers [78].

A combination of various factors including cost, hospital accreditation, infrastructure, quality of care and physician training contribute to the decision by a patient to travel in order to receive healthcare [95]. Information about medical treatment is also extremely important: for example, Canadian patients have indicated that information, especially by word-of-mouth, lies behind the decision-making process used when thinking about travelling abroad [96], and rapid technological developments make it far easier to access healthcare information [97].

### *2.4.3 Who pays for services abroad?*

When people wish to travel abroad for healthcare, public health insurance schemes are comparatively restrictive, while private health insurance is more flexible. If patients have no third party covering their medical expenses abroad, they have to be responsible for funding themselves. However, there are a variety of funding mechanisms available to help pay for these services, offering partial or complete subsidy [91]: private health insurance, which covers certain types of patients and services; national social protection legislation, which may allow patients to receive treatment abroad: for example, Canadian patients can travel abroad for some operations, subsidized by a publicly financed scheme [96]; purchasing agencies, which may have contracts with foreign health providers; and the government, who may also have contracts with foreign health providers, and may subsidize expenses arising from medical care from public funds [91].

## *2.5 Implications of medical tourism*

### *2.5.1 Economic implications*

Medical tourism contributes economic benefit to source countries. In the US, as health care costs have increased and quality of service declined, many businesses have tried to find more options to control costs [98]. Some US states have introduced bills which allow employees to go overseas for medical treatment. In addition, some health insurance companies provide options for overseas treatment for their clients [6, 67, 85]. Source countries will benefit from the economic effect of medical

tourism. Mattoo and Rathindran (2006) estimated that if a percentage of US patients needing low-risk surgical procedures go abroad, the annual saving could reach US$ 1.4 billion [99]. Kumar et al (2011) estimated that in 2011 the US healthcare industry would lose USD 20-30 billion by patients travelling to India and Thailand for three major operations: knee replacements, hip replacements and heart bypasses [100]. Outsourcing medical services is considered to be a safety net for uninsured and under-insured Americans who cannot afford high-cost US healthcare [71].

For destination countries, medical tourism generates foreign exchange earnings, strengthening their economy [101]. Overseas patients are likely to be more lucrative customers; a study in the UK conducted by Hanefeld et al demonstrated that 7% of overseas patients in the UK generate approximately 25% of private healthcare revenues [69]. Governments in countries such as Thailand, Singapore, Malaysia and Hong Kong have employed many strategies to encourage private sector involvement in this global market [25, 102]. Well-coordinated government programs and public-private initiatives to increase the market share of the industry have been established. Advertisement by international road shows and promotion via the internet aims to demonstrate competitiveness in price and quality. India has a special medical visa which extends entry validity to one year for medical tourists [26].

It is estimated that, worldwide, there are around 4 million international patients every year [74]. The revenue generated by these medical tourists is very attractive, estimated at around US$ 20-40 billion annually. The Asia Medical Tourism Analysis report (2008-2012) states that, in 2007, total medical tourism revenue in Asia was around US$ 33.4 billion, or around 13% of the global medical tourism market [82]. Chew Ging Lee (2009) reported that the development of health systems has a positive effect on international tourism in the long term [103]. However, no cost-benefit analysis of these policies has been undertaken to date.

“Trickle-down” economics is expected to provide another benefit from medical tourism throughout many areas in destination countries [46]. However, in some countries, India being one example, there is still a lack of enforcement of regulations to ensure that revenues from medical tourism are allocated back into public health

care [104]; policies are needed in each country to ensure that income from medical tourism is reinvested for the public benefit.

A significant increase in medical tourism is closely linked to direct medical intervention, particularly in developing countries. However, most literature does not describe the *"tourism element"* separately from the *"medical element",* particularly the ways in which medical tourism contributes to the tourism industry. Information about the revenue from medical tourists quoted in literature about tourism is ambiguous; it is unclear whether the figures represent medical expenditure alone, or whether they include other tourism expenditures.

### *2.5.2 Health system implications*

The risks presented by the medical tourism industry relate to equity and access to healthcare by domestic patients [101, 105]. It has been claimed that an increase of investment in private hospitals catering to international patients would widen existing inequities in society. In many countries, these investments need long term government subsidy. National resources may shift from local patients in the public sector to well-off locals and overseas patients in the private sector. This diversion of resources may exacerbate disparities in the health system [106]. However, there is a counter-claim that more investment in the private sector for overseas customers would increase the chance for locals to access sophisticated medical equipment and high-quality services. In the case of India, there is no evidence to support this assertion [107].

It is also a concern that an increasing number of overseas patients may increase an internal "brain drain" of highly skilled health professionals from the public to the private sector [15, 16, 46]. On the other hand, it is sometimes argued that private hospitals can attract doctors based abroad back home to practise in their own country again. [108]. Some countries, such as Barbados, have introduced medical tourism into their health system in order to retain skilled health professionals: hospitals targeted for serving foreigners are mostly funded by foreign investors, and the

employment of local nurses, technicians and other hospital staff can help to reduce emigration [76].

Flourishing medical tourism requires an investment in infrastructure and consumes more resources in terms of investigations and manpower, which could affect the overall health care cost of a country in the long term. Domestic demand on the private sector is directly affected by medical tourism and it is possible that healthcare cost will become unaffordable for domestic patients [76, 109].

### *2.5.3 Patient implications*

The key concern of patients travelling abroad for healthcare is the quality of that care [110]: that it will be of a lower quality compared to that available in the home country is the main concern. Thus, guarantees of quality of care have become extremely important for hospitals in destination countries. Certification by international quality assurance agencies, such as Joint Commission International (JCI), the Australian Council for Healthcare Standards and the Canadian Council on Health Services, is employed to reassure customers that an international standard of care will be provided.

Meanwhile, a rapid growth of medical tourism challenges source countries to justify their prices, service quality and personalized care [71, 111]. The American Medical Association (AMA) has launched guidelines on medical tourism for patients, employers, insurers and medical tourism companies so that that they have a better awareness of coordinating care before and after operations [112]. Meanwhile, some studies have reported that morbidity and mortality following organ transplants undertaken abroad have considerably increased [113]. In 2007, a survey from the British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS) expressed concerns about UK patients presenting with complications following cosmetic procedures undertaken abroad [114].

Legal issues concerning professional malpractice is another concern [115-118]. Some patients overestimate the benefits and underestimate the risks in destination countries

less concerned with medical legislation and professional codes of conduct [71]. Patients harmed by medical malpractice may not claim for legal redress in the country which provided the services [71]. There will be legal challenges for medical travellers who try to claim compensation as a result of overseas services [117, 118].

Continuity of care after returning to the home country is another concern [93, 119]. Patients undergoing procedures abroad may have post-operative complications which manifest when they return home. Disruption of treatment and inadequate information about care received outside the country presents domestic physicians with difficulties in monitoring and following up with their patients [71, 120].

Medical tourism has the potential to create both positive and negative implications for both source and destination countries. Although it may make a positive contribution to a country's economy, the government of that country must be aware of any possible negative impact. Governance, service delivery, financing, human resource management and regulation are key concerns [121]. Proper management and regulation could mitigate these negative effects and protect access to care for local patients.

### *2.6 Conclusion*

There is very little empirical evidence in the area of medical tourism and there is a clear need for more research to generate greater understanding of this issue [45, 46, 122]. With regard to medical tourists, most literature discusses their numbers at a global level, while some tries to provide data at national level, using existing secondary data which is both patchy and outdated. Moreover, the total number of medical tourists presented is not broken down into tourists who travelled with the intent to seek medical services and other groups such as expatriates and ordinary tourists who fell ill by chance. There is no clear picture of the specific characteristics and behaviours of medical tourists as distinct from other tourists.

With regard to the impact of medical tourism, most literature describes the effect on a country's economy as positive in terms of increasing revenue. However, there is no

reliable evidence on how much revenue *medical* tourism adds to revenue brought in by tourism in general; its particular contribution might be marginal. Furthermore, there is no evidence of the impact of medical tourists on private and/or domestic patients in terms of resource allocation; whether it increases inaccessibility and a two-tier system; these patients might be a small addition to the current level of private patients within a system and have little or no effect. Currently, there are no empirical studies assessing both the economic and health system implications simultaneously, in order to try and generate a more holistic assessment of any additional value the medical tourist has on tourism. This study tries to fill that gap, by investigating critical data from the private sector.

# Chapter Three

## Aim, objectives and research methodology

# Chapter 3
# Aim, objectives and research methodology

From the previous chapter, it is clear that there is a lack of explicit understanding of who medical tourists actually are and how much they differ from local patients in terms of demography and services used. Moreover, there is also very little empirical evidence on how much they affect a destination country in terms of the domestic economy and the domestic health system [75, 123].

This study aims to contribute to this gap in the literature through assessing the impact of medical tourism on the Thai economy and private health system. It then explores the potential effect on the public health system, following pathways such as those outlined in Section 3.1. Thailand was chosen as a suitable country for this case study due to its significant medical tourism sector, large number of ordinary tourists, and because the government has a policy of increasing the level of medical tourism. This chapter outlines the study framework and approach used to investigate and evaluate the possible impact of medical tourists on the national economy and domestic health system. The first section presents the conceptual framework and the objectives of the study. The second section describes the research methodology used for data collection and analysis. The last section addresses the ethical considerations of the study.

## *3.1 Conceptual framework*

To describe the main implications of medical tourism, a conceptual model of the study is presented in figure 3.1. This conceptual framework focuses on ways in which the presence of medical tourists could affect the income and expenditure of the domestic economic and health systems.

Medical tourists contribute revenue to the domestic economy in two ways. First, that directly related to the main purpose of this travel sector: *"medical care"*. This

includes the cost of physicians, other health staff, hospitals, medications and medical devices.

The second is the *"non-medical expense"* which pertains to expenses related to the role of 'tourist'. In this study we will use the term *"tourist expense"* when referring to "non-medical expense". The tourist expense includes collateral goods and services such as airfares, local transportation, food, entertainment and souvenirs. During each visit, the medical tourist, as well as any companions and relatives, will generate revenue in both components for the destination economy. The tourism expense will be an add-on to the value of medical care services and, at the same time, the medical expense will enhance the value of the tourism industry.

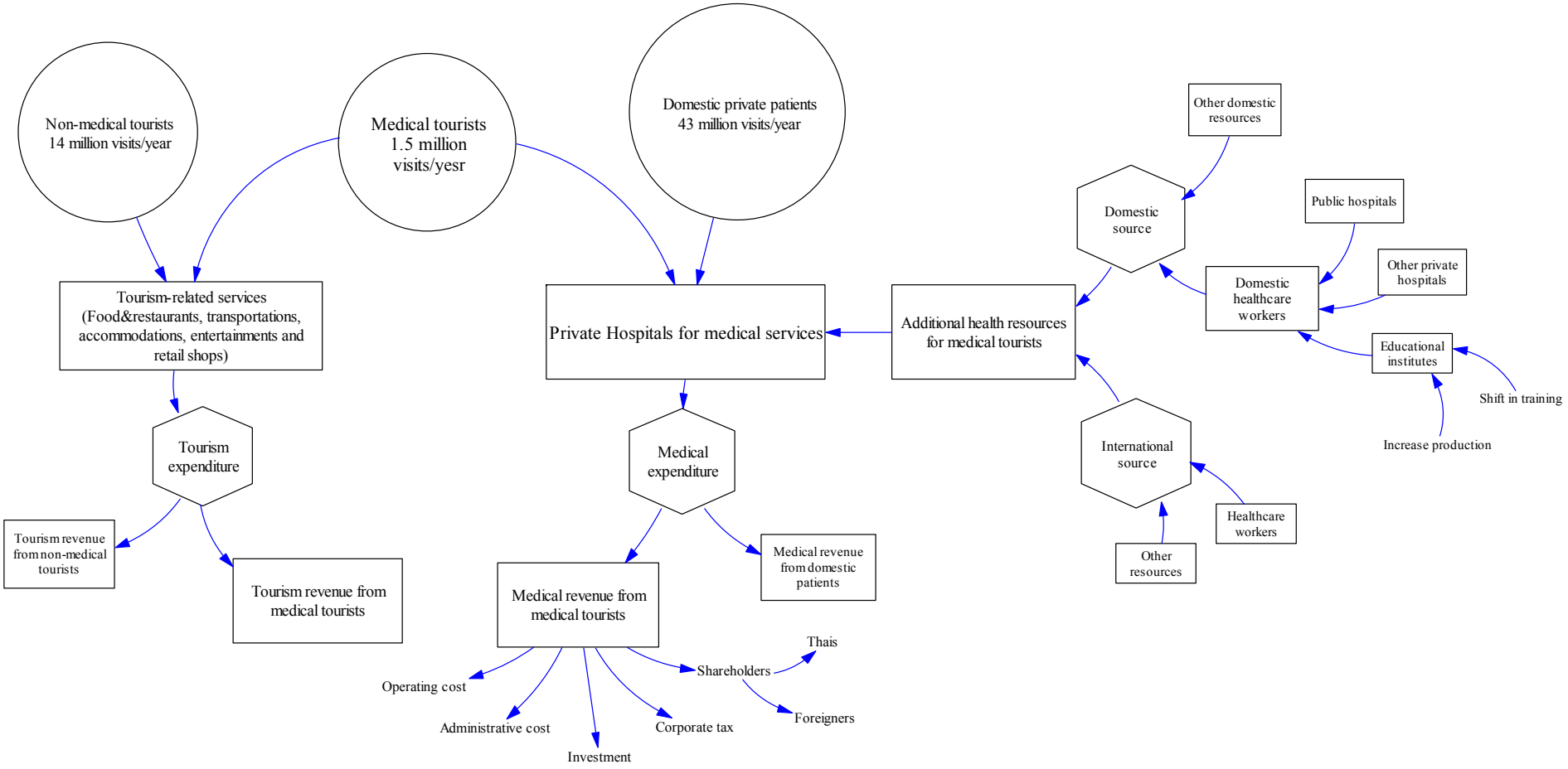
According to the conceptual framework, the revenue from medical tourists is a part of overall private hospital income, derived from many areas including operating costs, administrative costs, corporate tax for government income and income for shareholders. The concerns identified over any undesirable impact of medical tourism are in respect of equity and access to health care. The growth of this market may result in the creation of a dual market structure in the destination health system [77]. Domestic resources may shift from the public sector, or even within the private sector, to serve foreigners rather than nationals. Health personnel may tend to move from public facilities which pay less and have a substantial workload, to private ones, particularly those serving overseas patients, which pay more for less work. Increased shortages in public resources would be likely to induce educational institutes to increase their production and even shift training towards international customer services.

The main concern relating to the effect of medical tourism on local health care systems in destination countries is whether the inflow of foreign demand could push out local patients. As many developing countries already have a two-tier health care system, an increase in foreign patients might accentuate this inequality.

However, the extent of such undesirable impacts depends on any existing spare capacity among private providers and on how hospitals manage and allocate their

resources between medical tourists and local patients. For instance, profits from medical tourism could be used to invest in facilities for domestic patients, and spare capacity in new technology could also be made available to local patients.

Figure 3.1: Conceptual model on impact of international patients



### *3.2 Aim and objectives*

The overall aim of this study is to assess the impact of medical tourists on the Thai economy and domestic private health system. The first main research question asks whether medical tourists add to the economy of the destination countries, in terms of medical and tourism elements, and whether they differ from non-medical tourists. As the majority (99%) are treated in private hospitals, the second main research question is what impact medical tourists accessing care in private hospitals in Thailand have on the provision of healthcare in these hospitals, and to what extent the presence of these patients affects domestic private patients. The study has three objectives, as follows:

*Objectives:*

1. To assess the characteristics of medical tourists compared with those of non-medical tourists and domestic private patients
2. To assess the expenditure of medical tourists on medical care and tourism versus that of non-medical tourists
3. To assess the impact of medical tourists on private hospitals versus the impact of domestic private patients.

### *3.3 Study design and research methodology*

This study focuses on an exploration of the impact of medical tourists by using Thailand as a case study. It aims to assess the impacts of medical tourists on the domestic Thai economy and private health system by comparing the characteristics of these medical tourists to non-medical tourists and domestic private patients. Five leading private hospitals serving international patients in Thailand were purposely selected as study areas. Multiple approaches, quantitative and qualitative, were applied to ensure that the evidence obtained enabled the key research questions to be answered. The overall framework of this study is demonstrated in figure 3.2.

In order to achieve the three objectives mentioned above, this study is separated into three sub-studies. Sub-study 1 seeks to analyse whether and how medical tourists differ from non-medical tourists and domestic private patients by comparing them from various aspects, such as their demographic profiles, treatment received and length of stay in Thailand. Comparing country of origin of medical tourists and non-medical tourists allows an assessment of whether the national strategy of promoting international patients could open new markets for tourism that Thailand is not currently benefitting from. Comparing service profiles between medical tourists and domestic private patients will allow an analysis of the differences between them and assist in forecasting the service demand of foreigners in the future, which might affect the domestic resource pool.

Sub-study 2 focuses on the impact of medical tourists on the domestic economy. It seeks to analyse how much medical tourists spend on the medical and tourism elements of their visit. A comparison with non-medical tourists and domestic private patients will demonstrate how much they differ from each other and whether expenditure from medical tourists is a marginal gain; in other words, are they more profitable than non-medical tourists? An understanding of how much medical tourists and their companions add to tourism revenue in general is very important for estimating their actual *additional* economic impact. Moreover, this section also tries to demonstrate whether spending differs from region to region: for example, patients from long-haul and nearby regions. It also identifies key factors influencing spending. These findings will help policy makers in identifying which groups of medical tourists are potentially the most profitable to the country, and in establishing strategies for enhancing tourist spending to achieve the maximum benefit.

Sub-study 3 focuses on the impact of medical tourists on health care provision in private hospitals. This section will demonstrate whether medical tourists displace domestic private patients, by analysing the differences in the medical care they receive. If they *are* treated differently, there is a need to establish why and how hospitals justify priorities in resource allocation between international patients and Thai nationals. The pattern of service profiles in sub-study 1 will be elaborated in this part, to explore how hospitals provide resources to cater for international

customers; for example from their spare capacity, importation or domestic recruitment. The approach for extra resources gained would guide policies on increasing health personnel, shifting the balance of training programmes to produce the required personnel or strengthening mutually-utilized resources between public and private sectors, in order to mitigate any negative impacts on the domestic health system. A qualitative approach is employed in this sub-study to elaborate the quantitative findings in Sub-studies one and two.

### *3.3.1 Specific research questions:*

Specific questions have been developed based on the study aims and research questions and have guided the data collection process.

Sub-study 1: Assessing characteristics of medical tourists VS non-medical tourists and domestic patients

1.1 How do medical tourists differ from non-medical tourists? In terms of:
- 1.1.1 Region of origin
- 1.1.2 Gender
- 1.1.3 Age

1.2 How do medical tourists differ from domestic patients? In terms of:
- 1.2.1 Gender
- 1.2.2. Age
- 1.2.3 Type of disease
- 1.2.4 Types of procedures
- 1.2.5 Length of stay
- 1.2.6 Payment methods

1.3 How do medical tourists differ among regions? In terms of:
- 1.3.1 Gender
- 1.3.2 Age
- 1.3.3 Type of disease
- 1.3.4 Types of procedures
- 1.3.5 Length of stay
- 1.3.6 Payment methods

Sub-study 2: Assessing the expenditure of medical tourists on medical care and tourism

2.1 Does the tourism spending profile of the medical tourist differ from that of non-medical tourists?
2.2 Does the tourism spending profile of the medical tourist's companions differ from that of the companions of non-medical tourists?
2.3 What are the factors influencing tourism expenditure for medical tourists and non-medical tourists?
2.4 Does the medical spending of medical tourists differ from domestic Thai patients?
2.5 Does the medical spending of medical tourists differ by region?

Sub-study 3: Assessing the impact of medical tourists on domestic private hospitals

3.1 Are medical tourists treated differently from domestic patients (i.e. are they more costly to treat) – and if so, why?
3.2 How are resources required for medical tourists obtained? And on what basis?
3.3 How are revenues from medical tourists allocated?

All information obtained from the three sub-studies was analyzed to identify whether Thailand will gain or lose overall from the presence of medical tourists, through an assessment of the "net" benefit, presented through the combination of effects on the domestic economy and health system. Information will also be used to identify factors used to balance these implications, by maximizing the opportunities and minimizing the risks.

### *3.3.2 Study areas*

Thailand was selected as the country for this case study as it has a leading medical tourism industry and is a well-known tourist destination. Five private hospitals were selected for this study. These were:

1. Bumrungrad International Hospital
2. Samitivej Hospital
3. Bangkok Hospital
4. Bangkok Pattaya Hospital
5. Bangkok Phuket Hospital.

The international patient survey of DEP in 2007 indicates that there were approximately 55 hospitals, both public and private, servicing international patients. The vast majority of international patients were in private hospitals; only 0.9% used public hospitals. The five hospitals listed above had a majority market share of around 63% (Table 3.1). The rest of the hospitals typically had less than 1% of the market share, and were located in large provinces and principal tourist areas. This study assumes that the majority of international patients in these hospitals were ordinary tourists who found themselves unexpectedly in need of medical care.

Table 3.1: Hospital ranking by international patient services in 2007

| Ranking | Hospital | Beds | International patients in 2007 | % Market share for international patients in 2007 |
|---|---|---|---|---|
| 1 | Bumrungrad International Hospital | 554 | 426,398 | 31.04 |
| 2 | Samitivej Hospital | 296 | 182,807 | 13.31 |
| 3 | Bangkok Hospital | 550 | 131,120 | 9.54 |
| 4 | Bangkok Pattaya Hospital | 364 | 63,586 | 4.65 |
| 5 | Bangkok Phuket Hospital | 317 | 58,941 | 4.29 |
| | Total | 2,081 | 862,852 | 62.83 |

Source: Department of Export Promotion, Ministry of Commerce

Bumrungrad International Hospital, Samitivej Hospital and Bangkok Hospital are located in Bangkok, capital city of Thailand (Figure 3.2). Bangkok Pattaya Hospital and Bangkok Phuket Hospital are located outside Bangkok (Figure 3.2). Bangkok Pattaya Hospital is in Chonburi province in the eastern part of Thailand and Bangkok Phuket Hospital is in Phuket province in the southern part of Thailand. Both hospitals are located in high-density tourist destination provinces.

Figure 3.2: Location of the five targeted private hospitals in the study


All hospitals in this study are well known as leading private hospitals in terms of serving international patients in Thailand. They are marketed to international patients as providing highly-specialized tertiary care and different service packages. They also provide specialized services for foreigners, such as translators and special areas for overseas groups.

### *3.3.3 Terms and definitions*

*1. International patients*

The term "international patient" when used in this study means non-Thai patients visiting hospitals in both out-patient and in-patient departments. This term includes medical tourists, expatriates and international tourists who fall ill while travelling in Thailand.

*2. Medical tourists*

The study uses the term *"medical tourists"* as the target population. The term refers to international patients from developed and developing countries who travel to Thailand for the primary reason of obtaining medical services. Expatriates and ordinary tourists who became ill while travelling are excluded from the study, as are other forms of treatment related to *"health and wellness tourism"*, such as spas and massages.

The key specifications for medical tourist in this study include:

Foreign patients from developed and developing countries who travel to Thailand for the primary reason of obtaining medical services, and who are not employers or employees of public/private or domestic/international organizations in Thailand.

*3. Non-medical tourists*

The term "Non-medical tourists" in this study means ordinary international tourists or other tourists who come to Thailand for purposes other than to receive medical services.

*4. Being-ill tourists*

The term “Being-ill tourists” in this study means general international tourists who are unintentionally ill while travelling in Thailand.

*5. Domestic private patients*

The term “Domestic private patients” in this study means Thai patients who obtain medical care as out-patients or in-patients in the five targeted hospitals.

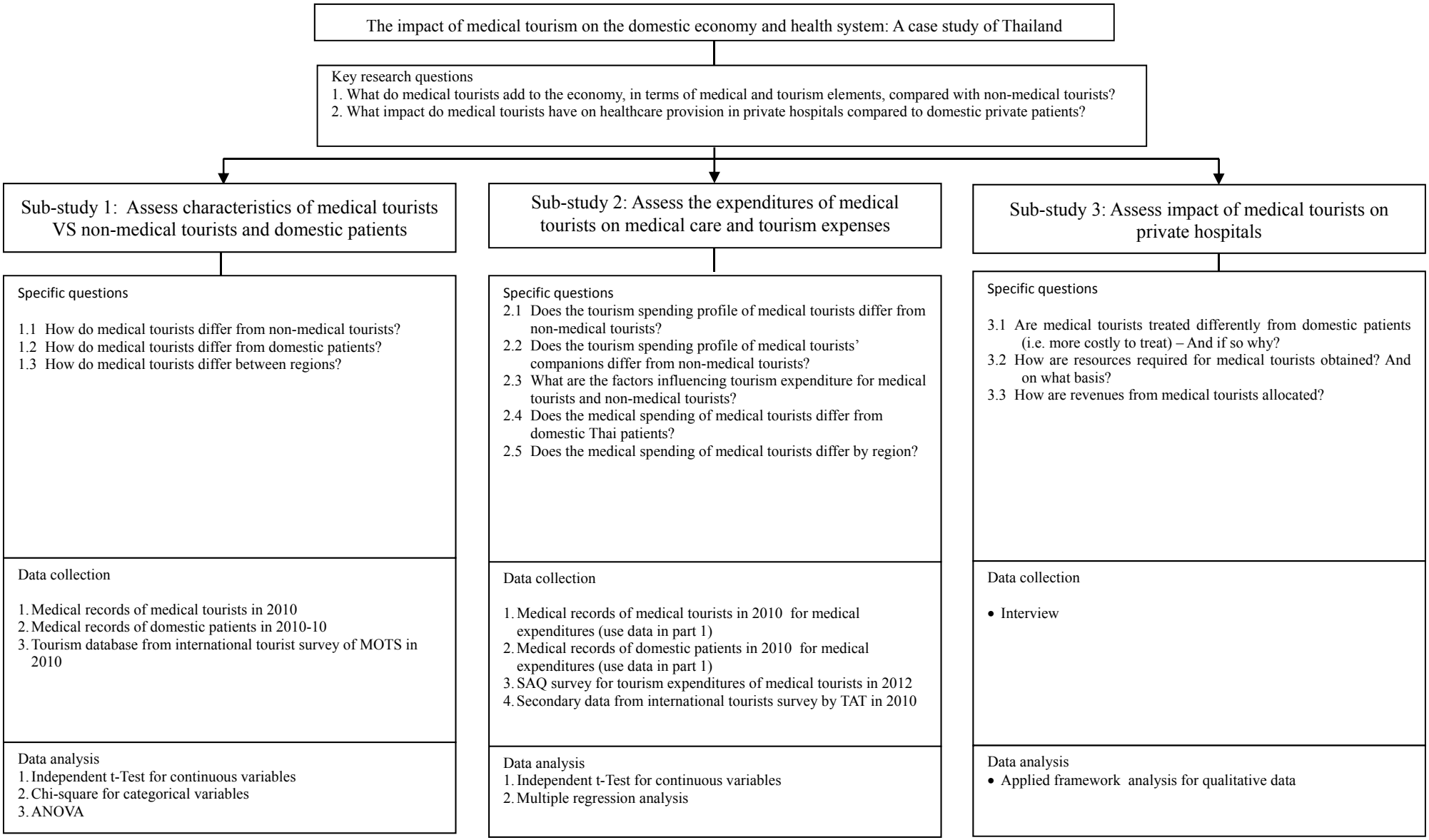
*6. Within-region*

The term “Within-region” in this study refers to people who come from the Asian mainland. This included Southeast Asia, East Asia, South Asia, Central Asia and the Middle East

*7. Long-haul regions*

The term “Long-haul regions” in this study refers to people who came from other continents apart from the Asian mainland. This includes North America, Central America, Latin America, Europe, Africa and, Australia and Oceania.

Figure 3.3: Overall framework of the research design



*3.3.4 Research methodology*

***1) Sub-study 1**: Assessing characteristics of medical tourists VS non-medical tourists and domestic patients*

*1) Specific research questions*

1 How do medical tourists differ from non-medical tourists? In terms of:
  1.1 Region of origin
  1.2 Gender
  1.3 Age
2 How do medical tourists differ from domestic patients? In terms of:
  2.1 Gender
  2.2 Age
  2.3 Type of diseases
  2.4 Type of procedures
  2.5 Length of stay
  2.6 Payment methods
3. How do medical tourists differ between regions? In terms of:
  3.1 Gender
  3.2 Age
  3.3 Type of diseases
  3.4 Type of procedures
  3.5 Length of stay
  3.6 Payment methods

*2) Study design and data source*

This sub-study conducts a cross sectional survey of all medical tourists who received medical treatment in the five private hospitals in 2010. It focuses on an explanatory analysis of the characteristics of medical tourists. To understand key characteristics of medical tourists obtaining medical services in Thailand and to compare their differences to domestic Thai private patients and non-medical tourists, two data

sources are used. First, medical tourist and domestic Thai patient data are provided in electronic medical records in five private hospitals. Second, data of non-medical tourists were provided by the Ministry of Tourism and Sports

*2.1 Medical tourist profiles and Thai private patient profiles*

A cross-sectional survey of all medical tourists in five hospitals in 2010 was undertaken. In order to access this data, this study needed ethical approval by each hospital ethics committee. As Bangkok Hospital, Bangkok Pattaya Hospital, Bangkok Phuket Hospital and Samitivej Hospitals are part of the same company, Bangkok Dusit Medical Center (BDMS), the ethical approval process was conducted only once for these hospitals, and then separately for Bumrungrad hospital. Given the commercial nature of these organisations, confidentiality was of particular concern and to ensure that this was maintained, several strategies were established. First, all information obtained from medical records is linkable but anonymous data. Each individual identification, such as name, hospital number and admission number was replaced with a new identification number for the purposes of this study only. Second, participant identifications were not collected in the survey. Third, all information given by interviewees was treated confidentially and anonymously. The process of obtaining ethical approval in Bumrungrad hospital began in May 2011 and approval was given in November 2011, while the process in BDMS began in May 2011 and approval was given in February 2012.

In each hospital, all patient data, including demographic and service profiles, are recorded in electronic-based systems. This study used selected variables from all medical tourists and domestic Thai private patients who visited the five hospitals in 2010. 324,906 records of medical tourists and 2,184,715 records of Thai private patients were retrieved for analysis.

*2.2 International tourist profiles*

This study used data on international tourists from “The survey for international tourist expenditure” conducted by the Ministry of Tourism and Sports (MOTS) in

2010. MOTS conducts this survey every year in order to monitor important tourism indicators, such as demographic characteristics, length of stay in Thailand, tourist spending behaviour and tourism expenditure. Some variables required for this study concerning international tourists were also retrieved for analysis. 28,013 records of international tourists surveyed in 2010 were used for analysis.

*3) Variables*

*3.1 Demographic profiles*

Three important variables of the demographic profile: country of origin, gender and age, were collected. These variables were adapted from the survey by MOTS to enable a comparison between medical tourists and non-medical tourists. Two variables, gender and age, were also employed for comparison between medical tourists and Thai patients. This comparison allowed understanding of the different characteristics of medical tourists compared to non-medical tourists and Thai private patients in terms of demography.

*3.2 Medical service profiles*

Five important variables, including diagnosis, type of operation, length of stay in hospital (in case of admission), total medical expenditure and type of payment were collected. Variables of type of diagnosis, type of procedure and length of stay in hospital were deliberately selected as these kinds of variables directly show patients' problems, the services required and the resources which would be used. These variables also assist in forecasting the future service demand for overseas patients, which might affect the domestic resource pool. To standardize patient diagnosis between hospitals, this study used the $10^{th}$ revision of the International Classification of Diseases (ICD-10) for coding diagnosis. To standardize procedures among hospitals, the ninth revision of the International Classification of Disease, Clinical modification (ICD-9 CM) was also used for coding procedures.

Meanwhile, variables of total medical expenditure and type of payment were also purposively selected, as they directly demonstrate how much treatment costs and the

methods used for payment, including self-pay, insurance and corporate contract. Medical expenditure shows the extent of the economic implications of health-related activities. However, the variable of medical expenditure is employed for analysis in the next chapter. Payment methods demonstrate more understanding of the way people are able to subsidize their medical costs when obtaining health services abroad. These findings could enable policy makers to fill the gaps in the knowledge necessary to promote the medical tourism industry.

*4) Regional selection to be compared*

This sub-study attempts to compare not only medical tourists, international tourists and Thai private patients, but also patients from different regions, providing information on whether there are differences among the various sub-groups. Seven regions: Europe, North America, Australia and Oceania, Southeast Asia, the Middle East, other Asian countries and Africa were selected for comparison (Table 3.2). In addition, all seven regions were categorized into two groups based on location. Within-regions refers to all regions in Asia, while long-haul regions refers to all other regions a.

Table 3.2: Number of medical tourists by region

| | Number of patients | % of total number |
|---|---|---|
| 1.Europe | 14,004 | 13.52 |
| 2.North America | 9,481 | 9.15 |
| 3.Australia | 3,949 | 3.81 |
| 4.Southeast Asia | 14,730 | 14.22 |
| 5. Middle East. | 40,554 | 39.15 |
| 6.Other parts of Asia | 16.869 | 16.29 |
| 7.Africa | 3,957 | 3,82 |
| Total | 103,578 | 100.00 |

Source: Medical records from the five hospitals

To understand the key characteristics of medical tourists obtaining medical services in Thailand and to compare their differences to domestic Thai patients and non-medical tourists, three databases are needed. Medical tourist and domestic private

patient data is provided from medical records in the five private hospitals. Regarding non-medical tourist data, this sub-study used data from MOTS survey.

*5) Analytical methods*

*5.1 Two independent samples T-Test*

Two independent samples T-Test is the most commonly used method to evaluate the differences in means between two groups, where samples are normally distributed. Though data on the age and the length of stay of medical tourists, international tourists and Thai private patients were non-normally distributed, the Central Limit Theorem was applied, as the samples in all compared groups were large enough [124]. Thus, for numerical variables on age and length of stay in specific question item 1.4, 2.2 and 2.4, the two independent samples T-Test was employed.

The null hypothesis is that there is no difference of means between two compared groups, medical tourists VS international tourists and medical tourists VS Thai private patients. The alternative hypothesis is that there is a difference between the two compared groups. The significance is tested at 95 confidence intervals.

*5.2 The Pearson Chi-square*

The Pearson Chi-square is the most commonly used test for significance in the relationship between categorical variables. Thus, for categorical variables on region, gender and payment method in specific questions item 1.1, 1.2, 1.3, 2.1, 2.3, 2.4, 2.6, *3.1, 3.3, 3.4 and 3.6* the Pearson chi-square was employed.

The hypothesis is that there is no difference in tested variables between medical tourists and non-medical tourists/domestic private patients, while the alternative hypothesis is that there is a difference between the two compared groups. The significance is tested at 95 confidence intervals.

*5.3 Analysis of variance (ANOVA)*

To investigate the difference of means in more than two populations, analysis of variance (ANOVA) is used. Though a normal distribution of samples is required for this technique, as mentioned above, the Central Limit Theorem was applied regarding the substantial number of compared samples. Thus, to compare means of age and the length of stay among regions and countries of medical tourists in specific research questions 3.2 and 3.5, ANOVA is employed.

The null hypothesis is that there are no differences of means in tested variables among regions and countries of medical tourists, while the alternative hypothesis is the group means are not the same.

***2) Sub-study 2:*** *Assessing the expenditures of medical tourists on medical care and tourism revenues*

*1) Specific research questions*

1. Does the tourism spending profile of medical tourists differ from that of non-medical tourists?
2. Does the tourism spending profile of medical tourists' companions differ from that of the companions of non-medical tourists?
3. What are the factors influencing tourism expenditure for medical tourists and non-medical tourists?
4. Does the medical spending of medical tourists differ from that of Thai patients?
5. Does the medical spending of medical tourists differ by region?

*2) Study design and data sources*

This sub-study focuses on an explanatory analysis of expenditure on tourism and medical elements by medical tourists and their companions. Furthermore, a comparison with non-medical tourists and Thai private patients is also employed, to

understand how much they differ from each other. To accomplish this, several data sources were used. First, the medical expenditures of medical tourists and Thai private patients are provided from the electronic medical records of the five hospitals, which are in the same database as referred to in the previous chapter. Second, tourism expenditure of non-medical tourists is provided by the tourism expenditure survey of the Ministry of Tourism and Sports, which is from the same database in previous chapter. These two databases provide data from the year 2010. Third, in order to assess the tourism expenditure of medical tourists and their companions, this study conducted a survey in five private hospitals in 2012 (Table 3.3).

Table 3.3: Data sources

| Expenditure | Group | Source |
|---|---|---|
| 1. Medical expenditures | Medical tourists | Medical records in 2010 |
| | Domestic private patients | Medical records in 2010 |
| 2. Tourism expenditures | Medical tourists and companion s | Medical tourist survey in 2012 |
| | Non-medical tourists | Survey of MOTS in 2010 |

Medical expenditure is compared between Thai patients and medical tourists to determine whether they spend differently. Moreover, comparison between source regions of medical tourists is also employed to demonstrate whether there are differences in spending among these groups.

In this chapter total expenditure and actual tourism expenditure are separately analysed. Actual tourism expenditure consists of the expenses from all elements of tourism, including local transportation, accommodation, food & drink, sight-seeing, shopping, entertainment and other expenses; medical expense is not included in this category. Actual tourism expenditure is established in order to compare real spending on these tourism elements between medical tourists and non-medical tourists. This allows more insight into how much revenue medical tourists add to the revenue generated by non-medical tourists. Furthermore, tourism spending profiles are also analysed. This shows in which categories medical tourists prefer to spend, and whether these differ from the categories in which non-medical tourists spend.

*2.1 Medical expenditure of medical tourists and Thai private patients*

Information on the medical expenditures of medical tourists and Thai private patients are recorded in patients' medical records in the five private hospitals. This chapter employs information on medical expenditures from the medical records in Chapter 4. Total medical expenditure is the total expenses incurred by each patient for their medical services. It includes doctors' fees, drugs, investigations, procedures, room fees and other related costs. This study uses data from the year 2010; the expenditure records of 104,830 medical tourists and 497,265 Thai patients were retrieved for analysis. As there are substantial differences between OP and IP expenses, this chapter analyses them separately.

*2.2 Tourism expenditure of non-medical tourists*

To assess the tourism expenditures of non-medical tourists, secondary data on international tourist expenditures from the MOTS 2010 survey was employed. Hence, this chapter used the same database mentioned in chapter 4. 28,013 records of non-medical tourists were employed for analysis.

*2.3 Tourism expenditure of medical tourists and their companions*

No previous study has specifically examined the tourism expenditure of medical tourists. To assess this expenditure, and that of these tourists' companions, a patient survey was conducted in four of the five selected hospitals; the other hospital did not wish to participate in this survey.

*3) Sample size*

To identify a sample size for a survey, three criteria usually need to be specified: the level of precision, the level of confidence of risk and the degree of variability in the attributes being measured [125]. The variability of variables in the study is considered a critical component. In the case of unknown variability, use of data from previous studies of the same or a similar population is recommended [126].

However, an appropriate sample size for a survey requires a balance between precision and cost [127].

As this study aims to assess the average expenditures of medical tourists, the formula for the sample size for continuous data was applied. The equation used to calculate sample size was [128]:

$$n_0 = \frac{N Z^2 \sigma^2}{N e^2 + Z^2 \sigma^2}$$

$n_0$ is the sample size
N is the number of medical tourists in 2010
Z is an interval of confidence
e is the desired level of precision
$\sigma^2$ is the variance of tourism expenditure of medical tourists

104,830 medical tourists were treated in the five hospitals in 2010. As a standard deviation (σ) of tourism expenditure of medical tourists has never been studied before, this survey employed a standard deviation of tourism expenditure from a survey carried out by the Ministry of Tourism and Sports instead. The standard deviation of tourism expenditure of non-medical tourists in 2010 was 2,594. A 95% confidential interval and 5% level of precision were employed in a formula. The appropriate sample in this survey was 578 patients.

As there were medical tourists from 55 countries visiting the five hospitals, it was too difficult to collect samples from all countries. Thus, the top 15 countries ranked by number of patients in 2010 were selected. Medical tourists from fifteen countries comprised the majority, accounting for 78%, of total medical tourists in 2010. This study applied a probability-proportional-to-size sampling technique to allocate all samples into two strata. The first stratum was countries, and the second stratum hospitals. A simple form of case selection from each stratum was also employed, as below. The sample size for each country is described in Table 3.4.

Table 3.4: Sample distribution

| | Country | Samples |
|---|---|---|
| 1 | U.A.E. | 151 |
| 2 | Bangladesh | 59 |
| 3 | USA | 55 |
| 4 | Myanmar | 53 |
| 5 | Oman | 50 |
| 6 | Qatar | 37 |
| 7 | United Kingdom | 28 |
| 8 | Other African countries | 27 |
| 9 | Cambodia | 27 |
| 10 | Australia | 24 |
| 11 | Kuwait | 22 |
| 12 | Japan | 14 |
| 13 | France | 12 |
| 14 | Germany | 11 |
| 15 | Canada | 10 |
| | **Total** | **580** |

*4) Sampling technique*

To achieve representativeness of a population, an appropriate sampling technique is needed. Medical tourists in the study were recruited by a consecutive case selection, such that all patients had the same probability of selection. With respect to ethics, all patients had to agree to participate in this study by signing a consent form. In the case of out-patient services, interviews were conducted at the cashier unit before patients left the hospital. In the case of in-patients, interviews were conducted before patients left the hospital. Interviewers collected all cases until they reached the required number in each hospital. The survey was conducted between June and September 2012. Due to time constraints, data was collected from 293 patients, accounting for 50.7% of the total desired sample. It seemed that most respondents fell into low-income groups; well-off patients were difficult to approach. Thus, the survey results are unlikely to represent the full scale of medical tourist experiences across the five hospitals. However, this number of patients is the largest sample among any survey on medical tourists conducted to date, and the bias towards to low-income groups may provide a minimum foundation to identify the likely revenues generated for the tourism sector, and the private hospitals. Differences in

case-mix between income groups may also lead to some misrepresentation of the full picture, but it is less straightforward to predict the direction this may take.

*5) Questionnaire*

To assess the tourism expenditures of medical tourists, a questionnaire was adapted from the one used by MOTS in a survey of the tourism expenditure of international tourists. This questionnaire was chosen because it enabled a comparison between the two sets of results, and because it is considered a standard survey. However, some questions were changed to make them more appropriate and relevant to this study. The adapted questionnaire was piloted before starting the survey in order to eliminate inconsistencies.

The questionnaire was designed to elicit general demographic and expenditure information concerning medical tourists, their relatives and companions. To determine the personal profiles, the questionnaire included key questions on (1) country of origin, (2) gender, (3) age, (4) occupation, (5) personal income and (6) length of stay in Thailand. The main categories of tourism spending profiles are (1) local transportation, (2) accommodation, (3) food & drink, (4) sightseeing (domestic tours), (5) shopping, (6) entertainment, leisure & sports activities and (7) other expenses. A question on the number of companions was also included. Questions on demography and tourism spending profiles were purposely selected in order to be compared with variables from the MOTS survey. Variables in tourism spending profiles allow understanding of the spending behaviour of medical tourists and their companions and whether they spend differently from non-medical tourists.

To elicit whether healthcare was the main reason for medical tourists to visit Thailand, or if they came as tourists but added some healthcare to their trip, a specific question on this issue was included in the questionnaire. To illustrate the importance of the medical element of a trip, all participants were asked a question on the relationship between the medical treatment and the purpose their visit; to answer it, participants had to choose the most appropriate statement from three options: 1) medical treatment was the only purpose, 2) medical treatment was the main purpose

and 3) medical treatment was added after planning a visit to Thailand. The questionnaire was available in three languages: English, Arabic and Japanese, in accordance with the fifteen source countries in the survey. All three languages versions of the questionnaire are included in Annex 3.

To avoid any possibility of incomplete information which might occur if the questionnaire was self-administered, the questionnaire was used as a guideline for interviewers to interview patients. Interviewers were selected from nurses and translators who were working in the hospitals. To standardize the interviewing skills and minimize data-collecting errors, all interviewers taking part in this survey attended a half-day training course in data collection, convened by the primary investigator of this study. Information on tourism expenses were obtained by asking patients to recall all their spending in each category. To enhance data accuracy, experts in the MOTS survey were consulted for technical support; this survey employed the same guidelines when asking about tourism expenditures in each category of the MOTS survey.

*6) Variables*

*6.1 Medical expenditure*

Medical expenditure was defined as the actual invoice patients paid upon leaving hospital. In this chapter it is analysed under two categories; out-patient expense and in-patient expense, as there are considerable differences in the resources needed in each category, resulting in significant differences in expense. Out-patient and in-patient expenditure is defined as expenditure per patient, not per visit or per admission; the annual expenditure by each individual for both out-patient and in-patient services.

*6.2 Tourism expenditure*

The main categories of tourism spending profiles are (1) local transportation, (2) accommodation, (3) food & drink, (4) sightseeing (domestic tours), (5) shopping, (6)

entertainment, leisure and sports activities, and (7) any other expenses (Table 3.5). Medical tourists were asked how much they spent in each category by all types of payment; cash, credit cards, debit cards and any other methods. They were also asked about the expenditure of their companions.

Table 3.5: Key variables on tourism expenditures

| **Profile** | **Variables** |
|---|---|
| *Personal profiles* | 1) Country of origin |
| | 2) Gender |
| | 3) Age |
| | 4) Occupation |
| | 5) Personal income |
| | 6) Length of stay in Thailand |
| *Spending profiles* | 1) Local transportation |
| | 2) Accommodation |
| | 3) Food & Beverage |
| | 4) Sightseeing |
| | 5) Shopping |
| | 6) Entertainment & Leisure |
| | 7) Others |

### *7) Data analysis*

This section aims to analyse the differences between the expenditures of medical tourists, non-medical tourists and domestic Thai patients. A comparative approach is used for data analysis in this sub-study.

#### *7.1 T- Test analysis for specific research questions 1,2,4 and 5*

Two independent samples T-Test is the most commonly used method to evaluate the differences in means between two groups, where samples are normally distributed. Though data on medical and tourism expenditure are non-normally distributed, the Central Limit Theorem is applied, as the samples in all the compared groups are big enough [124]. The null hypothesis is that there is no difference in expenditures between medical tourists and their companions, and non-medical tourists and domestic private patients. The alternative hypothesis is that there is a difference

between the two compared groups. The significance is tested at 95 confidence intervals.

### *7.2 Multiple regression model for specific research question 3*

Tourism has been considered an important industry in generating national income. Its economic impact is felt from small communities to the destination country as a whole [129]. Tourism, or travel, expenditure consists of all the expenses incurred while tourists stay in the destination area. Tourism expenditure is the main component of the travel economic impact model (TEIM), as it provides information to measure the economic impact of tourism [130]. In detail, it includes the cost of accommodation, local transportation, food & drink, sight-seeing tours, entertainment, shopping and the purchase of souvenirs. The factors which influence tourism expenditure are important to travel organizers and tourism policy makers [131], enabling marketing to specific groups in order to increase tourist spending and therefore revenue to destination countries [132]. In essence, factors influencing tourism expenditure are divided into two main groups: socio-economic and travel-related variables. Socio-economic variables include age, gender, income, and occupation, while travel-related variables include such elements as number of travel companions and length of stay. Marcussen, Cael H. conducted a meta-analysis of factors affected tourism spending and identified 18 significant variables [133]. These are: type of accommodation, length of stay, travel party size, destination, travel distance, origin market, travel purpose, mode of transportation, activities, age, packaging, income, purchase channel, information sources, gender, first time VS repeated visit, motivation and season [133].

In order to assess what factors influence tourism expenditures in Thailand, a model of total tourism spending as a function of factors was developed. Regarding data available, the variables postulated to affect this spending are: type of tourist, region of origin, gender, age, personal income and length of stay in Thailand. The variable on type of patients is included in the equation in order to determine whether being a medical tourist influences tourism expense. A normality of tourism expenditure was tested and was found to be not normally distributed. Thus, the natural log of tourism

expenditure is used and ordinary least squares (OLS) is also employed. All variables are combined in a multiple regression model as illustrated below:

$$LnExp = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$$

Where *Exp* is the tourism spending per day and $X_1$ - $X_6$ are the factors affecting spending, and their detail is demonstrated in Table 3.6. All six variables were categorized into attributes as described in Table 3.6. A multiple regression was used for data analysis.

Table 3.6: Explanation of each factor employed in a spending function

| ***Factor*** | ***Meaning*** | ***Attributes*** |
|---|---|---|
| $X_1$ | Type of tourist | 1. Non-medical tourists<br>2. Medical tourists |
| $X_2$ | Region of origin | 1. Long-haul<br>2. Within |
| $X_3$ | Gender | 1. Male<br>2. Female |
| $X_4$ | Age | 1. Less than 25<br>2. 25-34<br>3. 35-44<br>4. 45-54<br>5. 55-64<br>6. More than 65 |
| $X_5$ | Annual personal income | 1. Less than 20,000 USD<br>2. 20,000-39,999 USD<br>3. 40,000-59,999 USD<br>4. 60,000-79,999 USD<br>5. More than 80,000 USD |
| $X_6$ | Length of stay | 1. 1-3 days<br>2. 4-7 days<br>3. 8-14 days<br>4. 15-30 days<br>5. More than 30 days |

*8) Currency exchange*

All expenditures in this chapter are reported in the Thai Baht currency. To compare the figures to other international currencies, this study employed the 2013 exchange

rate of one US dollar to 30 Thai Baht, one Euro to 40 Thai Baht and one Pound Sterling to 50 Thai Baht.

***3) Sub-study 3:*** *Assessing the impact of medical tourists on private hospitals*

*1) Specific research questions*

1. Are medical tourists treated differently from domestic private patients? If so, why?
2. How are the resources required for medical tourists obtained? And on what basis?
3. How are revenues from medical tourists allocated?

The previous sub-study provided quantitative data on the impact of medical tourists on the national economy, through an understanding of their spending on medical and tourism elements of their travel. However, it could not provide information on the impact on the domestic health system, which is recognized as an important component in any conclusion on overall impact; in order to answer the three specific research questions above, alternative methods were required. Specifically, information was obtained from interviews in order to understand the medical tourism business in private hospitals, and also its impact on the domestic health system, specifically on private hospitals.

*2) Study design and data source*

- *Interviews*

Qualitative research relied on semi-structured interviews. An interview is a widely used approach for producing information in qualitative work [134]. It is a dialogue between a researcher and a participant which directly elicits responses to the study's key questions. The qualitative interview approach explores participants' views compared to those of others, to establish an understanding of the issues being studied. Semi-structured interviews are guided by an Interview Guide covering the

key themes the interviewer seeks to explore. Compared to structured interviews or surveys, it usually employs open-ended questions, to allow participants to express their views without being influenced by the prior assumptions of an interviewer, whose social interaction skills should include building rapport, listening, encouraging interviewees to continue and being friendly, in order to encourage participation [135]. Interviews can range from a structured interview: a conversation with strictly ordered questions, to an informal interview: a loose and incidental conversation. Structured interviews provide tightly controlled information with answers which can be compared to those of other participants, while informal interviews produce more diverse information. This section employs a semi-structured interview, which is somewhere between these two approaches. A semi-structured interview allows a researcher to establish guide topics included in the study, and a participant can then describe their experiences and perceptions freely and flexibly with regard to these topics.

In qualitative research, the number of respondents participating depends on the aims of the study. It differs from quantitative research in which sample size can be calculated according to population characteristics and levels of confidence. Each sample in quantitative research has an equal chance of being selected; this is probability sampling; most qualitative studies employ purposive sampling, in which participants with the potential to provide rich and useful information are purposely selected. Various sampling strategies are employed in purposive sampling, including deviant-case sampling, typical-case sampling and snowball sampling [135]. In some situations, political considerations are taken into account in sample selection in order to accomplish the aims of the study. In theoretical sampling as part of a grounded theory approach, an appropriate number of samples depends on data saturation – a stage where no new information is being generated. However, in practical terms, it is difficult to meet these criteria. With a well-designed and specific research question, most qualitative researchers suggest no new information will appear after interviewing 20 participants of one category. Participants should be selected from various groups, for example defined by gender, age, race, role in society and other categories according to the aims of the study, to ensure coverage of all aspects of the required information.

To ensure quality in qualitative research, good practice to increase reliability and validity is required [135]. Examples of good practice are transparency of methodology, identifying a clear analysis procedure, identifying how coding has been developed and a clear sampling method. To maximize validity, researchers should not interpret information according to their own presumptions. Investigating deviant information, rather than disregarding it and reporting only commonly-held views, would increase the validity of data [136]. Taking findings back to participants for their approval is a good way to ensure respondent validity. Reliability is also important in qualitative work; the same research work should produce similar themes. Accurate note taking, correct transcription and regular discussion coding with field colleagues are ways to increase reliability. Comparison among cases within the same data set ensures data regularity, while comparison data within a case provides contextual meanings of the information [135].

Reflexivity is another concern in a qualitative work. Reflexivity refers to the researcher's awareness that they can influence the research processes. Reflexivity is important in the processes of both data collection and data analysis [137]. This is because researchers are often influenced by their professional backgrounds, experiences and pre-perceived ideas during data interpretation. To be reflexive, researchers are encouraged to reflect on their interpretations. They should be reminded that the validity of their interpretation is dependent on being able to demonstrate how these interpretations were reached [138].

*3) Participants*

For sub-study 3, participants were purposively selected according to their roles in private hospitals to ensure adequate information was obtained to answer specific research questions. Participants were classified into two main groups, hospital executives and service providers. Hospital executives were considered to be best placed to provide information on hospital policy on serving medical tourists and other international patients; such as whether they have specific policies with regard to differences between foreign patients and local patients, how they obtain resources to serve foreign demand and how they allocate the revenues generated by foreign

patients (Table 3.7). Hospital executives include chief executive officers (CEO), hospital directors, medical directors, human resource directors and marketing directors. Chief executive officers and hospital directors are considered the best key informants to provide specific information on overall hospital policy and resource allocation. Medical directors, being responsible for managing physicians and dentists in most private hospitals, were selected to provide specific information on these two professions, while human resource directors were key informants on managing other health professions and office staff. Marketing directors were selected to provide information on overall hospital policy, in particular that concerning overseas customers, and how hospitals are coping with the emergence of foreign demand, particularly in terms of resource allocation. Representatives of each of these positions in each hospital were selected at the start of data collection.

Service providers were selected as participants in order to provide information on how services delivered to medical tourists differ from how they are delivered to Thais, Doctors and nurses were purposively selected for this category as they are in the best position to provide this information (Table 3.7). Doctors were asked to provide specific information on medical treatment, while nurses were asked to give information on nursing care and peripheral services not included in direct medical care. To ensure enough rich information, service providers had to have enough experience in servicing foreign patients, particularly in terms of how long they had been delivering these services. To ensure enough diversity of information, they were chosen from a variety of hospital departments. Thus, specific criteria for selection were established; details were as follows:

1. They had to be full-time staff serving both Thai and international patients
2. They should have worked in the same hospital for at least five year
3. They had to come from different departments.

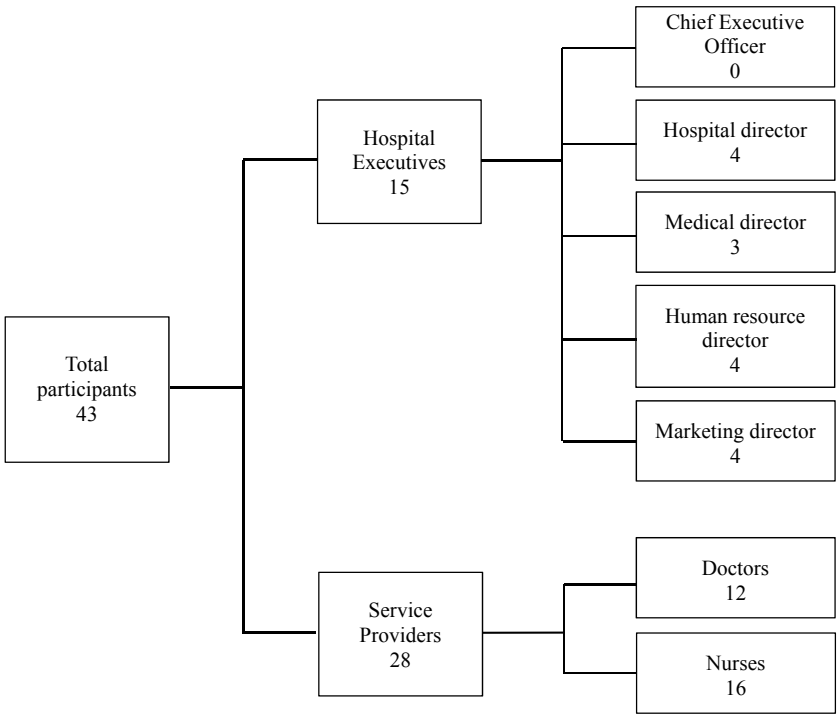
At each hospital, doctors and nurses who met these criteria were selected as participants. At the beginning of the interview phase, five doctors and five nurses in each hospital were initially required, although if the information elicited did not reach saturation point, more participants were recruited.

Table 3.7: Core information and key informants

| | Core information required | Key informants | |
|---|---|---|---|
| | | Hospital executives | Service provider |
| 1 | Overall hospital policy towards international patients | X | |
| 2 | Source of hospital resources | X | |
| 3 | Resource allocation within hospital (overseas VS domestic) | X | x |
| 4 | Revenue allocation | X | |
| 5 | Difference in delivery of services | | x |

Four hospitals, Bumrungrad Hospital, Bangkok Hospital, Bangkok Pattaya Hospital and Bangkok Phuket Hospital allowed interviews to be conducted in their hospitals; only one, Samitivej Hospital, refused permission. However, this hospital was also part of the Bangkok Dusit Medical Service Public Company, Limited (BDMS) which included Bangkok Hospital, Bangkok Pattaya Hospital and Bangkok Phuket Hospital, and they shared common policies in patient service. 18 hospital executives (2 CEOs, 4 hospital directors, 4 medical directors, 4 human resource directors and 4 marketing directors), 20 doctors, and 20 nurses, were initially selected from four private hospitals. Eventually, however, 15 hospital executives, 12 doctors and 16 nurses were interviewed (Figure 3.4).

Figure 3.4: Cascade of participants in four private hospitals




The sampling process presents some imbalances in the distribution of participants. First, no hospital chief executive officers (CEOs) participated in this study as they were unavailable for interview during the data collection period. There were actually only two CEOs between the four hospitals, as Bangkok, Bangkok Pattaya and Bangkok Phuket Hospital share the same CEO. Secondly, there are very few hospital executives representing each position. However, they engage at a high level of decision making on hospital policies and they are members of the hospital executive board. In terms of time limitations during the data collection period, 12 doctors participated in interviews. No new information was forthcoming towards the latter interviews, and the level of detail and richness of information from each interview was considered sufficient for the purposes of analysis. Sixteen nurses from four hospitals were also interviewed. As no new information emerged in the later interviews, further interviews were cancelled.

The interviews were conducted from May to August, 2012. Appointments for interviews with all participants were made in advance; these interviews took place in the hospital where the interviewee worked. To ensure privacy and confidentiality, interviews with hospital executives were conducted in their offices, and those with doctors and nurses in separate rooms. As the primary investigator is a government officer and also a medical doctor, it was challenging to remain reflexive throughout the processes of data collection and analysis. However, he tried to avoid guiding the answers, and to interpret the data as provided, without allowing his own experience to influence the analysis, as outlined earlier.

Prior to each interview, participants were informed about the background and objectives of the study and asked to read and sign the consent form. At the beginning of the interview, general questions on participants' responsibilities and an overall picture of the hospital were asked, to familiarise the process, followed by topic-guide questions in relation to specific research questions. During each interview, the primary investigator used open-ended questions without any presumptions, to allow free responses. To increase validity, information was always triangulated with information from prior participants and other data sources. Before starting the interview, literature and documents relating to servicing patients in private hospitals were reviewed to develop an initial understanding of the context of private hospitals. Informal discussions with the primary investigator's contacts practising in private hospitals also helped to set the scene. Deviant information was deliberately investigated by asking for more detail and re-checking understanding between participant and primary investigator. Although hospital executives tended to provide good, relevant information, it was still triangulated with service providers' information for examples of real practice. Service providers in this study were purposively selected by the hospitals themselves, which may have led to a selection bias, as they tended to give a positive perspective on serving foreign patients. During the interview, however, both positive and negative views of serving foreigners emerged from service providers participating in the study. Furthermore, it was found that some of the information they provided differed from that of the executives. The interviews lasted approximately one hour for hospital executives and 45 minutes for service providers.

All participants' responses were recorded on digital tapes, which were then transcribed. All participants were Thai, with one exception, so all transcriptions but one were in the Thai language.

*4) Guide questions*

Interviews were conducted in accordance with prepared agendas which included guide topics as prompts for asking the questions. Guide topics were aimed directly towards the three specific research questions of this study. Questions for hospital executives and service providers were different; those for hospital executives focused on hospital policies concerning foreign patients, routes for seeking resources, serving foreigners and how revenues were allocated; those for service providers emphasized how foreign patients were treated and whether there were any differences in services delivered to Thais and foreigners. The guide questions are described in Annex 5.

*5) Data analysis*

This study adopted a framework approach for data analysis. Framework analysis is a popular approach in health and social science research for policy formulation [135]. It is "a content analysis method which involves summarizing and classifying data within a thematic framework" [135]; hence more practical for generating policy-orientated findings. All data recorded in interviews were transcribed into text. Key topics related to the three specific research questions, such as type of services (direct medical services and peripheral services) and type of resources (infrastructure, medical equipment and human resources for health), were set up as the framework for analysis. Data was coded and managed by themes focusing each topic. Themes were categorized by comparing each participant with others. They were then interpreted to arrive at the conclusions. Information from medical record analysis in the previous chapter was used to triangulate interview information to increase the validity of the study. To further increase validity during data analysis, all information was interpreted based solely on the data as provided, and was double-checked

through conversations with supervisors to ensure that the primary investigator's prior experience and views influenced interpretation as little as possible, in line with the need for reflexivity as outlined earlier.

In the result section, quotes are annotated by a hospital code and their role in a hospital. The first alphabetical code (H) refers to the hospital - H1, H2, H3 and H4 refer to Bumrungrad, Bangkok, Bangkok Pattaya and Bangkok Phuket Hospital respectively (Table 3.8). The second alphabetical code refers to the hospital role – E as hospital executive, M as medical doctor and N as nurse (Table 3.8).

Table 38: Participant code

| | Code | Definition |
|---|---|---|
| First alphabetical code | H1 | Bumrungrad Hospital |
| | H2 | Bangkok Hospital |
| | H3 | Bangkok Pattaya Hospital |
| | H4 | Bangkok Phuket Hospital |
| Second alphabetical code | $E_x$ | Hospital executive |
| | $M_x$ | Medical doctor |
| | $N_x$ | Nurse |

## *3.4 Ethical consideration*

### *3.4.1 Ethical approval process*

An ethical application was submitted to the ethical committee of the London School of Hygiene and Tropical Medicine (LSHTM) and to the ethical committees of 2 private hospitals; Bumrungrad International Hospital and Bangkok Hospital. As Samitivej Hospital, Bangkok Pattaya Hospital and Bangkok Phuket Hospital are part of the same company as Bangkok Hospital, there was no need for a separate application. The study was approved by all the hospitals involved before the start of the data collection process.

### *3.4.2 Consent*

Informed consent was required for medical tourists participating in Sub-study 2 to ensure their voluntary participation. Likewise, regarding the interview process in Sub-study 3, informed consent was also obtained from all interviewees, which included giving them a brief introduction, and details of the data collection strategy and the overall objectives of the study. Before each interview, participants were asked to permit the use of a digital tape recorder; if this was refused, the primary investigator used hand-written notes.

### *3.4.3 Confidentiality and anonymity*

Anonymity and confidentiality were assured. All patient names and other identification, such as hospital number and admission number, in the medical records were changed to a specific code for this study to ensure that the primary investigator could not trace any participant. The study provided participants with the option to be identified or to remain anonymous. Names and other identifications were removed or changed to maintain confidentiality. All information concerning patients and hospitals will be kept securely by the primary investigator for 10 year, following the confidentiality policy of the London School of Hygiene and Tropical Medicine.

# Chapter Four

## Assessing characteristics of medical tourists

## VS non-medical tourists and Thai private patients

# Chapter 4

## Assessing the characteristics of medical tourists VS non-medical tourists and Thai private patients

It is estimated that 4 million international patients travel abroad every year, and of these, Thailand serves between 1.2 and 1.4 million [74]. In essence, information on international patients is always presented in aggregate. Moreover, most national data sources are highly heterogeneous, derived from different sources and using different definitions [77]. The reported number often includes expatriates and general tourists who require medical care while travelling [5]. In addition, some wellness services such as spas and massage may also be included.

In Thailand, an annual survey of international patients in private hospitals is carried out by the Department of Export Promotion, Ministry of Commerce [74]. Aggregate numbers of international patients, including their country of origin, are collected from each hospital serving these customers. However, this aggregated information provides little detail on other characteristics and service behaviours. Moreover, this information does not differentiate between patients who went abroad for medical services and expatriates and general tourists who happened to fall ill during their visit.

Consequently, there is a great lack of information concerning the characteristics of medical tourists, such as their demographic profiles, which would be required to analyze whether they differ from non-medical tourists, and enable us to understand whether there is something ‘unique’ about medical tourists. In terms of the medical care element, it is also important to understand their medical service profiles and investigate whether they represent different characteristics from domestic Thai private patients; again, establishing what may be ‘unique’ about medical tourists. This new knowledge would allow hospital executives and policy makers in both health and trade sectors to establish effective resource-utilization and market plans. By comparing demographic profiles, it should be possible to understand if there are

just general tourists who attach medical care to their trip, or if they are a specific type of foreigner. This would allow trade policy makers to bring tourism activities to these foreign patients, or to activate medical services for general international tourists. Comparing medical service profiles allows understanding of whether these patients visit hospital for the same services as Thais, if they compete for resources with local private patients, or if they receive special services that differ from those provided to Thais.

### *4.1 Aim and specific research questions*

The aim of this chapter is to assess the characteristics of medical tourists, non-medical tourists and Thai private patients. To do this several specific research questions are addressed:

1 How do medical tourists differ from non-medical tourists? In terms of:
Region of origin
1.1 Gender
1.2 Age

2 How do medical tourists differ from domestic patients? In terms of:
2.1 Gender
2.2 Age
2.3 Types of diseases
2.4 Types of procedures
2.5 Length of stay
2.6 Payment methods

3. How do medical tourists differ between regions? In terms of:
3.1 Gender
3.2 Age
3.3 Types of diseases
3.4 Types of procedures
3.5 Length of stay
3.6 Payment methods

*Results*

This section aims to assess the characteristics of medical tourists, by comparing them from many aspects with non-medical tourists and Thai private patients. This allows understanding of whether medical tourists are just tourists who receive medical care, or whether they differ significantly in other ways. Furthermore, if there are differences, how this information could help the trade and tourism sectors to modify their marketing strategies, and the health sector to prepare the necessary health resources.

### *4.2 Comparison between medical tourists and non-medical tourists*

Medical tourists have several different characteristics from non-medical tourists. They mostly come from the Middle East, Southeast Asia, Europe and South Asia while Southeast Asia, Europe and East Asia have the key market-share in non-medical tourists. In terms of gender, men are in the majority in both medical tourist and non-medical tourist categories. Medical tourists also tend to be older than non-medical tourists.

1. Numbers

In 2010, 236,885 international patients received medical services in the five private hospitals involved in this study, in the course of approximately 911,913 visits. In terms of numbers of patients, medical tourists are the largest group, accounting for 44.3% of the total. This was followed by foreigners living in Thailand (expatriates) and then by sick tourists: international tourists who fall ill while travelling in Thailand (Table 4.4). One patient may visit a hospital on more than one occasion. In terms of visits, the expatriates group is the largest, accounting for 39%, followed by medical tourists (35%) and sick tourists (25%). As expatriates are people living in Thailand, they tend to visit hospital more frequently than other groups, accounting for 4.80 visits per patient per year, while medical tourists visited the least, accounting for 3.10 visits per patient per year (Table 4.1).

Table 4.1: Number of international patients and visits by type of patient

| | Patients | | Visit | | Average visits per year |
|---|---|---|---|---|---|
| | **Frequency** | **%** | **Frequency** | **%** | |
| Medical tourists | 104,830 | 44.3 | 324,906 | 35.6 | 3.10 |
| Expatriates | 74,063 | 31.3 | 355,687 | 39.0 | 4.80 |
| Being ill tourists | 57,992 | 24.5 | 231,320 | 25.4 | 3.99 |
| Total | **236,885** | **100.0** | **911,913** | **100.0** | 3.85 |

## 2. Region

There are significant differences between medical tourists and non-medical tourists in terms of their region of origin. The Middle East, Southeast Asia, Europe and South Asia were key origins for medical tourists, while Southeast Asia, Europe and East Asia tended to be the point of origin of non-medical tourists. Patients from the Middle East were the largest group among medical tourists, accounting for almost 40%, whereas they comprised only 3.6% of international tourists (Table 4.2). In contrast, the largest group of non-medical tourists came from Southeast Asia, accounting for 28.5%. Patient numbers from Southeast Asia were still comparatively large, ranking second, accounting for 14.1%. Europe was the key player among both medical and non-medical tourists, representing the largest group of those from long-haul travel. They ranked third in terms of number, accounting for 13.4%; non-medical tourists from Europe were still the largest group among tourists from international origins. They ranked second in terms of number, accounting for 27.9%.

*"Regional effect"* influenced the travel choices of both medical tourists and non-medical tourists in Thailand. Medical tourists tended to have travelled from within-region rather than from out-of-region: approximately 70% and 30% respectively, whereas 60% of non-medical tourists came from within-region and 40% from out-of-region

Table 4.2: Regional distribution between medical tourists and non-medical tourists

| Rank in medical tourist | | Medical tourists | | Non-medical tourists | | Rank in non-medical tourist |
|---|---|---|---|---|---|---|
| | | Number | % | Number | % | |
| 1 | Middle East | 40,554 | 38.7 | 569,334 | 3.6 | 7 |
| 2 | Southeast Asia | 14,730 | 14.1 | 4,534,235 | 28.5 | 1 |
| 3 | Europe | 14,004 | 13.4 | 4,442,375 | 27.9 | 2 |
| 4 | South Asia | 12,703 | 12.1 | 995,321 | 6.2 | 4 |
| 5 | North America | 9,481 | 9.0 | 844,644 | 5.3 | 5 |
| 6 | East Asia | 4,166 | 4.0 | 3,632,929 | 22.8 | 3 |
| 7 | Africa | 3,957 | 3.8 | 127,930 | .8 | 8 |
| 8 | Australia | 3,949 | 3.8 | 789,632 | 5.0 | 6 |
| 9 | Unknown | 1,252 | 1.2 | 0 | .0 | |
| 10 | Other region | 34 | .0 | 0 | .0 | |
| | Total | 104,830 | 100.0 | 15,936,400 | 100.0 | |

In terms of country of origin, the pattern of medical tourists differs from that of non-medical tourists. The top 10 countries of origin for medical tourists were those in the Middle East, Southeast Asia and Europe (Table 4.3). Most of these, except the USA, the UK and Australia represented a very small proportion of the total numbers of non-medical tourists. The largest number of medical tourists in Thailand in 2010 came from the UAE, accounting for 20.6%, while only 0.66% of non-medical tourists came from this country (Table 4.3). On the other hand, most of the top10 countries of non-medical tourists were the source of a very small proportion of medical tourists. The largest number of non-medical tourists, 13%, came from Malaysia, while only 0.4% of medical tourists came from there. The UK, the USA and Australia were represented in the top 10 of both medical and non-medical tourists.

In summary, the characteristics of medical tourists and non-medical tourists in terms of region and country of origin were comparatively different. The Middle East, Southeast Asia, Europe and South Asia played the key roles in supplying medical tourists, whereas Southeast Asia, Europe and East Asia dominated among non-medical tourists. In terms of country, countries from the Middle East dominate in the top 10 group of medical tourists and countries from Southeast Asia and East Asia

dominate in the group non-medical tourists; the UK, USA and Australia dominate in both medical and non-medical tourists.

Table 4.3: Countries of origin of medical tourists compared to those of non-medical tourists

| Rank in medical tourists | Country | Medical tourists | | Non-medical tourists | | Rank in non-medical tourist |
|---|---|---|---|---|---|---|
| | | **Count** | **%** | **Count** | **%** | |
| 1 | U.A.E. | 21,567 | 20.6 | 105,162 | 0.66 | 31 |
| 2 | Bangladesh | 8,442 | 8.1 | 68,081 | 0.43 | 38 |
| 3 | USA | 7,854 | 7.5 | 611,792 | 3.84 | 10 |
| 4 | Myanmar | 7,569 | 7.2 | 90,179 | 0.57 | 33 |
| 5 | Oman | 7,096 | 6.8 | 281,706 | 1.77 | 19 |
| 6 | Qatar | 5,212 | 5.0 | ** | | |
| 7 | United Kingdom | 3,935 | 3.8 | 810,727 | 5.09 | 4 |
| 8 | Other African countries | 3,857 | 3.7 | 70,830 | 0.44 | 37 |
| 9 | Cambodia | 3,836 | 3.7 | 146,274 | 0.92 | 28 |
| 10 | Australia | 3,359 | 3.2 | 698,046 | 4.38 | 8 |
| 11 | Kuwait | 3,159 | 3.0 | 41,224 | 0.26 | 44 |
| 12 | Japan | 1,994 | 1.9 | 993,674 | 6.24 | 3 |
| 13 | France | 1,742 | 1.7 | 461,670 | 2.90 | 13 |
| 14 | Germany | 1,545 | 1.5 | 606,874 | 3.81 | 11 |
| 15 | Canada | 1,473 | 1.4 | 168,393 | 1.06 | 23 |
| 16 | Other | 1,343 | 1.3 | ** | | |
| 17 | Bahrain | 1,165 | 1.1 | ** | | |
| 18 | China | 1,127 | 1.1 | 1,122,219 | 7.04 | 2 |
| 19 | Other countries in South Asia | 1,067 | 1.0 | 23,339 | 0.15 | 48 |
| 20 | Other European countries | 952 | 0.9 | 373,534 | 2.34 | 32 |
| 21 | Sweden | 919 | 0.9 | 355,214 | 2.23 | 16 |
| 22 | India | 915 | 0.9 | 760,371 | 4.77 | 6 |
| 23 | Netherland | 903 | 0.9 | 196,994 | 1.24 | 22 |
| 24 | Other countries in the Middle East | 884 | 0.8 | ** | | |
| 25 | Switzerland | 805 | 0.8 | 155,761 | 0.98 | 25 |
| 26 | Vietnam | 710 | 0.7 | 380,368 | 2.39 | 14 |
| 27 | Italy | 644 | 0.6 | 168,203 | 1.06 | 24 |
| 28 | Singapore | 613 | 0.6 | 603,538 | 3.79 | 12 |
| 29 | Indonesia | 592 | 0.6 | 286,072 | 1.80 | 18 |
| 30 | New Zealand | 566 | 0.5 | 89,364 | 0.56 | 35 |
| 31 | Nepal | 545 | 0.5 | 28,621 | 0.18 | 46 |
| 32 | Denmark | 539 | 0.5 | 152,398 | 0.96 | 26 |
| 33 | Norway | 520 | 0.5 | 132,108 | 0.83 | 29 |
| 34 | Philippines | 506 | 0.5 | 246,430 | 1.55 | 20 |
| 35 | Hong Kong | 471 | 0.4 | 316,476 | 1.99 | 17 |
| 36 | Iran | 468 | 0.4 | ** | | |
| 37 | Russia | 461 | 0.4 | 644,678 | 4.05 | 9 |
| 38 | Saudi Arabia | 439 | 0.4 | 8,463 | 0.05 | 52 |
| 39 | Laos | 437 | 0.4 | 715,345 | 4.49 | 7 |
| 40 | South Korea | 403 | 0.4 | 805,445 | 5.05 | 5 |

Table 4.3: Countries of origin of medical tourists compared to those of non-medical tourists (continued)

| Rank in medical tourists | Country | Medical tourists | | Non-medical tourists | | Rank in non-medical tourist |
|---|---|---|---|---|---|---|
| | | **Count** | **%** | **Count** | **%** | |
| 41 | Malaysia | 394 | 0.4 | 2,058,956 | 12.92 | 1 |
| 42 | Pakistan | 337 | 0.3 | 65,171 | 0.41 | 40 |
| 43 | Egypt | 336 | 0.3 | 16,729 | 0.10 | 50 |
| 44 | Finland | 287 | 0.3 | 146,946 | 0.92 | 27 |
| 45 | Other American countries | 286 | 0.3 | 64,459 | 0.40 | 45 |
| 46 | Belgium | 260 | 0.2 | 80,000 | 0.50 | 36 |
| 47 | Israel | 228 | 0.2 | 116,050 | 0.73 | 30 |
| 48 | Austria | 191 | 0.2 | 90,026 | 0.56 | 34 |
| 49 | Spain | 170 | 0.2 | 67,242 | 0.42 | 39 |
| 50 | Taiwan | 129 | 0.1 | 369,220 | 2.32 | 15 |
| 51 | Sri Lanka | 110 | 0.1 | 49,738 | 0.31 | 43 |
| 52 | South Africa | 103 | 0.1 | 57,100 | 0.36 | 42 |
| 53 | Brunei | 66 | 0.1 | 7,073 | 0.04 | 53 |
| 54 | Other countries in Australia | 24 | 0.0 | 2,222 | 0.01 | 54 |
| 55 | Other countries in East Asia | 23 | 0.0 | 25,895 | 0.16 | 47 |
| | Total | 104,830 | 100 | 15,936,400 | 100 | |

Note: ** Other countries from Middle East regions

*Statistical analysis*

From table 4.2 and table 4.3, Pearson's Chi-square test was employed to find out whether there was any difference in region and country distribution between medical tourists and non-medical tourists. A statistically significant difference in regional distribution (p value < 0.0001) and in country distribution (p value < 0.0001) was found between medical tourists and non-medical tourists.

3. Gender

Overall, men dominate in both medical and non-medical tourist categories, accounting for 58% and 60% of the respective totals (Table 4.4). Men dominate in all regional categories among non-medical tourists. Men dominate among all regions for medical tourists except for Australia and Southeast Asia (Table 4.5).

Table 4.4: Gender comparison between medical tourists and non-medical tourists

| | Medical tourists | | Non-medical tourists | |
|---|---|---|---|---|
| | Count | % | Count | % |
| Male | 60,828 | 58.0 | 16,983 | 60.6 |
| Female | 43,982 | 42.0 | 11,030 | 41.4 |
| Total | 104,810 | 100 | 28,013 | 100 |

Table 4.5: Comparison of gender between medical and non-medical tourists

| | **Medical tourists** | | | | **Non-medical tourists** | | | |
|---|---|---|---|---|---|---|---|---|
| | Male | % | Female | % | Male | % | Female | % |
| Europe | 9,282 | 66.3 | 4,717 | 33.7 | 3,906 | 57.3 | 2,909 | 42.7 |
| North America | 6,112 | 64.5 | 3,367 | 35.5 | 1,212 | 57.4 | 898 | 42.6 |
| Australia | 2,045 | 51.8 | 1,904 | 48.2 | 916 | 59.1 | 635 | 40.9 |
| Southeast Asia | 6,234 | 42.3 | 8,491 | 57.7 | 3,545 | 57.1 | 2,665 | 42.9 |
| Middle East | 24,450 | 60.3 | 16,103 | 39.7 | 1,211 | 70.4 | 508 | 29.6 |
| Other Asia | 9,711 | 57.6 | 7,154 | 42.4 | 5,833 | 64.5 | 3,216 | 35.5 |
| Africa | 2,319 | 58.6 | 1,638 | 41.4 | 360 | 64.4 | 199 | 35.6 |
| **Overall** | **60,828** | **58.0** | **43,982** | **42.0** | **16,983** | **60.6** | **11,030** | **41.4** |

*Statistical analysis*

From table 4.4, Pearson's Chi-square test was employed to find out whether there was any difference in gender distribution between medical and non-medical tourists. A statistically significant difference in gender distribution (p value < 0.0001) was found between medical and non-medical tourists.

4. Age

Overall, medical tourists tended to be older than non-medical tourists. The largest group of medical tourists was in the age group 35-44, accounting for 22%, whereas the largest group of non-medical tourists was in the younger age group 25-34, accounting for almost 39% (Table 4.6). Moreover, the number of medical tourists aged over 45 is slightly higher than the number of non-medical tourists in this age group. Male medical tourists tended to be older than female; almost 50% of the men in this category were aged over 45, as opposed to 40% of the women. Similarly,

female non-medical tourists tended to be younger than male: almost 70% of the women in this category were under 35, as opposed to 50% of men.

Table 4.6: Age distribution between medical tourists and non-medical tourists

| | | Medical tourists | | Non-medical tourists | |
|---|---|---|---|---|---|
| | | Count | % | Count | % |
| Male | Less than 25 | 7,624 | 12.5 | 2,427 | 14.3 |
| | 25-34 | 10,415 | 17.1 | 6,108 | 36.0 |
| | 35-44 | 13,366 | 22.0 | 4,717 | 27.8 |
| | 45-54 | 13,469 | 22.1 | 2,561 | 15.1 |
| | 55-64 | 9,892 | 16.3 | 906 | 5.3 |
| | Over 65 | 6,050 | 9.9 | 264 | 1.6 |
| | **Total** | 60,816 | 100.0 | 16,983 | 100.0 |
| Female | Less than 25 | 7,711 | 17.5 | 2,782 | 25.2 |
| | 25-34 | 9,406 | 21.4 | 4,723 | 42.8 |
| | 35-44 | 9,425 | 21.4 | 2,017 | 18.3 |
| | 45-54 | 8,409 | 19.1 | 1,070 | 9.7 |
| | 55-64 | 5,792 | 13.2 | 381 | 3.5 |
| | Over 65 | 3,233 | 7.4 | 57 | 0.5 |
| | **Total** | 43,976 | 100.0 | 11,030 | 100.0 |
| Overall | Less than 25 | 15,338 | 14.6 | 5,209 | 18.6 |
| | 25-34 | 19,822 | 18.9 | 10,831 | 38.7 |
| | 35-44 | 22,796 | 21.7 | 6,734 | 24.0 |
| | 45-54 | 21,882 | 20.9 | 3,631 | 13.0 |
| | 55-64 | 15,689 | 15.0 | 1,287 | 4.6 |
| | Over 65 | 9,285 | 8.9 | 321 | 1.1 |
| | **Total** | 104,812 | 100.0 | 28,013 | 100.0 |

*Statistical analysis*

From table 4.6, Pearson's Chi-square test was employed to find out whether there was any difference in age distribution between medical and non-medical tourists overall. A statistically significant difference in age distribution (p value $< 0.0001$) was found between medical and non-medical tourists.

In summary, it is apparent that medical tourists differ from non-medical tourists in many ways. Patients from the Middle East region represent the largest market share in medical tourists, while there are very few non-medical tourists from this region. In contrast, tourists from East Asia visit Thailand a lot, but not as patients. Meanwhile,

people from Southeast Asia and Europe are common visitors as both medical tourists and non-medical tourists. Because of the increase in illness associated with age, medical tourists tend to be older while non-medical tourists, the back-packing generation, are significantly younger.

*4.3 Comparison between medical tourists and Thai private patients*

Thai patients dominate in the five private hospitals in this study, while international patients represent only 32%. However, of all international patients, medical tourists are the largest group, accounting for 44%. Medical tourists show characteristics which differentiate them from Thai patients: they are older and more predominantly male, while Thai patients are more likely to be younger and female. In essence, their health concerns are quite similar to those of Thais; Health check-ups are very common in both groups. However, medical tourists are more likely to be having operations, with the result that their hospital stays are longer than those of Thai patients.

1. Numbers

734,150 patients visited the five private hospitals in the study during 2010, making 3,096,628 separate visits (Table 4.7). Of these, Thai patients dominated, accounting for 68% of patients and approximately 70% of visits. However, international patients represented a sizeable minority: about 32% of the total number of patients. Among international patients, medical tourists were the largest group, accounting for 44%, followed by expatriates and sick tourists (Table 4.7). Thai patients tended to visit hospital more frequently than medical tourists. The utilization rates of Thai patients and medical tourists were 4.39 and 3.10 visits per patient, per year, respectively. Table 4.13 shows that the number of visits per Thai patient is much more than that of a medical tourist, accounting for a 7-fold difference. This means that domestic Thai patients are still the main customers in these private hospitals, though the hospitals present themselves as international hospitals for overseas patients.

Table 4.7: Number of patients and visits in the five hospitals in 2010, by types of patients

| | | Thai private patients | International patients | | | Total patients |
|---|---|---|---|---|---|---|
| | | | Medical tourists | Expatriates | Being ill tourists | |
| Number of patients | Count | 497,265 | 104,830 | 74,063 | 57,992 | 734,150 |
| | % | 67.7 | 14.3 | 10.1 | 7.9 | 100.0 |
| Number of visits | Count | 2,184,715 | 324,906 | 355,687 | 231,320 | 3,096,628 |
| | % | 70.6 | 10.5 | 11.5 | 7.5 | 100.0 |
| Utilization rate | | 4.39 | 3.10 | 4.80 | 3.99 | 4.22 |

2. Gender

The pattern of gender among medical tourists differed from that among Thai private patients. Males predominated among medical tourists, whereas females predominated among Thai patients (Table 4.8).

Table 4.8: Gender comparison between medical tourists and Thai private patients

| | Medical tourists | | Thai private patients | |
|---|---|---|---|---|
| | Count | % | Count | % |
| Male | 60,828 | 58.0 | 199,128 | 40.1 |
| Female | 43,982 | 42.0 | 297,829 | 59.9 |
| **Total** | 104,810 | 100.0 | 496,957 | 100.0 |

*Statistical analysis*

From table 4.8, Pearson's Chi-square test is employed to prove whether there is any difference in gender distribution between medical tourists and Thai private patients. A statistically significant difference in gender distribution (p value < 0.0001) was found between medical tourists and Thai private patients.

3. Age

Medical tourists tend to be older than Thai private patients. In the younger age group (under 35), 46% were Thai, while only 33% were medical tourists (Table 4.9). However, in the oldest age group (over 65), the proportions were equal,

approximately 9% of total patient number. The average age of a medical tourist was 41.7 year, while that of Thai patients was 37.2 year (Table 4.10). Male medical tourists were older than female medical tourists. Their average ages were 43.1 year and 39.7 year respectively (Table 4.10). In contrast, male Thai patients were slightly younger than female – with an average of 36.2 year and 38 year respectively. In general, medical tourists were older than Thai private patients.

Table 4.9: Age distribution between medical tourists and Thai private patients

| | | Medical tourists | | Thai private patients | |
|---|---|---|---|---|---|
| | | Count | % | Count | % |
| Overall | Less than 25 | 15,335 | 14.6 | 113,430 | 22.8 |
| | 25-34 | 19,821 | 18.9 | 117,144 | 23.6 |
| | 35-44 | 22,791 | 21.7 | 99,976 | 20.1 |
| | 45-54 | 21,878 | 20.9 | 72,352 | 14.6 |
| | 55-64 | 15,684 | 15.0 | 49,770 | 10.0 |
| | More than 65 | 9,283 | 8.9 | 44,284 | 8.9 |
| Total | | 104,792 | 100.0 | 496,956 | 100.0 |
| Male | Less than 25 | 7,624 | 12.5 | 54,168 | 27.2 |
| | 25-34 | 10,415 | 17.1 | 40,036 | 20.1 |
| | 35-44 | 13,366 | 22.0 | 37,932 | 19.0 |
| | 45-54 | 13,469 | 22.1 | 28,901 | 14.5 |
| | 55-64 | 9,892 | 16.3 | 20,529 | 10.3 |
| | More than 65 | 6,050 | 9.9 | 17,562 | 8.8 |
| Total | | 60,816 | 100.0 | 199,128 | 100.0 |
| Female | Less than 25 | 7,711 | 17.5 | 59,262 | 19.9 |
| | 25-34 | 9,406 | 21.4 | 77,108 | 25.9 |
| | 35-44 | 9,425 | 21.4 | 62,044 | 20.8 |
| | 45-54 | 8,409 | 19.1 | 43,451 | 14.6 |
| | 55-64 | 5,792 | 13.2 | 29,241 | 9.8 |
| | More than 65 | 3,233 | 7.4 | 26,722 | 9.0 |
| Total | | 43,976 | 100.0 | 297,828 | 100.0 |

Table 4.10: Average age of medical tourists and Thai private patients

| Type of patient | Gender | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|
| Medical tourists | Male | 43.15 | 60,816 | 17.01 | 0 | 101 | 44.00 |
| | Female | 39.76 | 43,976 | 17.09 | 0 | 106 | 40.00 |
| | Total | 41.73 | 104,792 | 17.12 | 0 | 106 | 42.00 |
| Thai patients | Male | 36.18 | 199,128 | 20.33 | 0 | 117 | 36.00 |
| | Female | 38.01 | 297,828 | 18.67 | 0 | 106 | 36.00 |
| | Total | 37.28 | 496,956 | 19.37 | 0 | 117 | 36.00 |

*Statistical analysis*

A two independent sample T-test was employed to find out whether there is any difference in the average age of medical tourists and Thai private patients. The null hypothesis was that there was no difference in age between the two groups. A statistically significant difference (p value < 0.0001) was found in the average age of medical tourists and Thai private patients.

## 4. Disease pattern

### 4.1 Male comparison

Diseases in the male medical tourist were slightly different to those in male Thai patients. Health check-ups, including medical counselling and treatment follow-up, were the most common reason for visiting hospital in each group, accounting for 34% of visits by medical tourists and 22.6% of those by Thai patients (Table 4.11). Digestive problems were the second commonest reason for male medical tourists to visit, while respiratory problems prompted the visits of male Thai patients. Male medical tourists tended to visit for neoplasm concerns, the treatment for these being more elective and less urgent, while Thai males were admitted for more urgent matters such as injuries and poisoning.

Table 4.11: Disease patterns among male medical tourists and male Thai private patients

| Rank in medical tourist | Male diagnosis (ICD-10 classification) | Medical tourists | | Thai private patients | | Rank in Thai patient |
|---|---|---|---|---|---|---|
| | | Count | % | Count | % | |
| 1 | Health examination, medical consultation and treatment follow-up | 54,946 | 33.9 | 146,675 | 22.6 | 1 |
| 2 | Diseases of the digestive system | 15,441 | 9.5 | 52,589 | 8.1 | 3 |
| 3 | Diseases of the circulatory system | 12,417 | 7.7 | 48,849 | 7.5 | 4 |
| 4 | Diseases of the musculo-skeletal system and connective tissue | 10,560 | 6.5 | 43,367 | 6.7 | 5 |
| 5 | Endocrine, nutritional and metabolic diseases | 9,754 | 6.0 | 32,814 | 5.1 | 6 |
| 6 | Diseases of the genito-urinary system | 9,507 | 5.9 | 20,131 | 3.1 | 12 |
| 7 | Neoplasms | 7,867 | 4.8 | 13,495 | 2.1 | 13 |
| 8 | Diseases of the skin and subcutaneous tissue | 7,447 | 4.6 | 31,139 | 4.8 | 9 |
| 9 | Diseases of the eye and adnexa | 6,486 | 4.0 | 22,601 | 3.5 | 10 |
| 10 | Infectious and parasitic diseases | 5,782 | 3.6 | 31,243 | 4.8 | 8 |
| 11 | Diseases of the respiratory system | 5,135 | 3.2 | 109,190 | 16.8 | 2 |
| 12 | Diseases of the nervous system | 4,228 | 2.6 | 11,536 | 1.8 | 15 |
| 13 | Mental and behavioral disorders | 3,883 | 2.4 | 12,544 | 1.9 | 14 |
| 14 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 3,575 | 2.2 | 20,166 | 3.1 | 11 |
| 15 | Diseases of the ear and mastoid process | 2,823 | 1.7 | 10,684 | 1.6 | 16 |
| 16 | Diseases of the blood and blood-forming organs and the immune mechanism | 950 | 0.6 | 2,544 | 0.4 | 18 |
| 17 | Congenital malformations, deformations and chromosomal abnormalities | 866 | 0.5 | 1,579 | 0.2 | 19 |
| 18 | Injury, poisoning and certain other consequences of external causes | 322 | 0.2 | 32,046 | 4.9 | 7 |
| 19 | Pregnancy, childbirth and the puerperium | 142 | 0.1 | 412 | 0.1 | 21 |
| 20 | Certain conditions originating in the perinatal period | 88 | 0.1 | 1,134 | 0.2 | 20 |
| 21 | External causes of morbidity and mortality | 68 | 0.0 | 3,313 | 0.5 | 17 |

*Statistical analysis*

From table 4.11, Pearson's Chi-square test was employed to find out whether there was any difference in disease patterns between male medical tourists and male Thai private patients. A statistically significant difference in disease pattern (p value < 0.0001) was found between male medical tourists and male Thai private patients.

4.2 Female comparisons

The disease pattern in females also differed between medical tourists and Thai private patients. The most common reason for visits was health check-ups, including

medical counselling and treatment follow-up (Table 4.12). 41% of female medical tourists visited hospitals for physical check-ups, compared to 26% of female Thais. However, the second reason female medical tourists visited hospital was for diseases of the genito-urinary system, while among female Thai patients these visits were prompted by diseases of the respiratory system. Like males, female medical tourists tended to visit for neoplasm problems and female Thai patients for problems associated with injuries and poisoning.

Table 4.12: Disease patterns among female medical tourists and female Thai private patients

| Rank in medical tourist | Female diagnosis (ICD-10 classification) | Medical tourists | | Thai private patients | | Rank in Thai patient |
|---|---|---|---|---|---|---|
| | | Count | % | Count | % | |
| 1 | Health examination, medical consultation and treatment follow-up | 54,553 | 41.0 | 271,258 | 25.9 | 1 |
| 2 | Diseases of the genito-urinary system | 11,559 | 8.7 | 57,130 | 5.5 | 6 |
| 3 | Diseases of the digestive system | 9,079 | 6.8 | 78,596 | 7.5 | 3 |
| 4 | Neoplasms | 8,744 | 6.6 | 31,675 | 3.0 | 13 |
| 5 | Diseases of the musculo-skeletal system and connective tissue | 8,615 | 6.5 | 76,215 | 7.3 | 4 |
| 6 | Endocrine, nutritional and metabolic diseases | 7,835 | 5.9 | 48,450 | 4.6 | 8 |
| 7 | Diseases of the skin and subcutaneous tissue | 6,866 | 5.2 | 66,709 | 6.4 | 5 |
| 8 | Diseases of the circulatory system | 5,166 | 3.9 | 48,652 | 4.6 | 7 |
| 9 | Diseases of the eye and adnexa | 3,895 | 2.9 | 38,643 | 3.7 | 11 |
| 10 | Infectious and parasitic diseases | 3,361 | 2.5 | 41,836 | 4.0 | 9 |
| 11 | Diseases of the respiratory system | 2,695 | 2.0 | 136,971 | 13.1 | 2 |
| 12 | Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified | 2,385 | 1.8 | 35,173 | 3.4 | 12 |
| 13 | Diseases of the nervous system | 2,162 | 1.6 | 18,893 | 1.8 | 14 |
| 14 | Diseases of the ear and mastoid process | 1,526 | 1.1 | 16,219 | 1.5 | 15 |
| 15 | Diseases of the blood and blood-forming organs and the immune mechanism | 1,395 | 1.0 | 6,158 | 0.6 | 17 |
| 16 | Mental and behavioural disorders | 1,073 | 0.8 | 15,848 | 1.5 | 15 |
| 17 | Pregnancy, childbirth and the puerperium | 1,029 | 0.8 | 9,171 | 0.9 | 16 |
| 18 | Congenital malformations, deformations and chromosomal abnormalities | 904 | 0.7 | 2,498 | 0.2 | 19 |
| 19 | Injury, poisoning and certain other consequences of external causes | 167 | 0.1 | 41,375 | 3.9 | 10 |
| 20 | Certain conditions originating in the perinatal period | 79 | 0.1 | 1,232 | 0.1 | 20 |
| 21 | External causes of morbidity and mortality | 71 | 0.1 | 5,193 | 0.5 | 18 |

*Statistical analysis*

From table 4.12, Pearson's Chi-square test was employed to find out whether there was any difference in disease patterns between female medical tourists and female Thai private patients. A statistically significant difference in disease patterns (p value < 0.0001) was found between female medical tourists and female Thai private patients.

In Tables 4.11 and 4.12 it can be seen that health check-ups, including medical consultations, are the most common reason for hospital visits among medical tourists and Thai patients. This kind of service needs less advanced and comprehensive medical equipment and does not usually need to be carried out by highly skilled professionals – particularly sub-specialists. Nevertheless, disease patterns among medical tourists and Thai patients were comparatively different.

5. Type of procedure

5.1 Male comparison

In 2010, 6,255 operations were performed in the five hospitals on male medical tourists and 9,955 on male Thai patients, with an operation rate of 10.29 and 5.00 procedures per 100 patients, respectively (Table 4.13). The pattern of procedures among male medical tourists and Thai patients was comparatively different. Heart-related procedures, procedures on the digestive system and orthopaedic procedures were the commonest among male medical tourists. Heart-related procedures represented 42% of the total procedures in male medical tourists, but only 24% of procedures in male Thai patients. The proportion of heart-related procedures is relatively high, because one of the hospitals in this study specialises in this area of treatment, and is well known for heart operations. Procedures on the digestive, orthopaedic and heart-related systems were the commonest among Thai male patients.

Table 4.13: Procedures in male medical tourists and male Thai private patients

| Rank in medical tourist | Male procedure (ICD-9 CM classification) | Medical tourists | | Thai private patients | | Rank in Thai patient |
|---|---|---|---|---|---|---|
| | | Count | % | Count | % | |
| 1 | Miscellaneous and therapeutic procedures (mostly cardiac catheter insertion) | 1,057 | 16.9 | 1,224 | 12.3 | 3 |
| 2 | Digestive system | 919 | 14.7 | 1,955 | 19.6 | 1 |
| 3 | Procedures and interventions, not classified elsewhere (mostly angio-cardiogram) | 728 | 11.6 | 521 | 5.2 | 7 |
| 4 | Cardiovascular system | 728 | 11.6 | 897 | 9.0 | 5 |
| 5 | Musculo-skeleton system | 617 | 9.9 | 1,488 | 14.9 | 2 |
| 6 | Integumentary system (mostly cosmetic surgery) | 399 | 6.4 | 400 | 4.0 | 11 |
| 7 | Eyes | 375 | 6.0 | 928 | 9.3 | 4 |
| 8 | Nose, mouth and pharynx | 312 | 5.0 | 394 | 4.0 | 12 |
| 9 | Male genitalia | 282 | 4.5 | 440 | 4.4 | 9 |
| 10 | Urinary system | 267 | 4.3 | 427 | 4.3 | 10 |
| 11 | Nervous system | 203 | 3.2 | 547 | 5.5 | 6 |
| 12 | Respiratory system | 202 | 3.2 | 495 | 5.0 | 8 |
| 13 | Haemic and lymphatic system | 77 | 1.2 | 77 | 0.8 | 14 |
| 14 | Ear | 38 | 0.6 | 51 | 0.5 | 15 |
| 15 | Endocrine system | 34 | 0.5 | 101 | 1.0 | 13 |
| 16 | Other diagnostic and therapeutic procedures | 16 | 0.3 | 8 | 0.1 | 16 |
| | Total | 6,255 | 100.0 | 9,955 | 100.0 | |
| | Operation rate (procedures per 100 patients) | 10.29 | | 5.00 | | |

*Statistical analysis*

From table 4.13, Pearson's Chi-square test was employed to find out whether there was any difference in procedure patterns between male medical tourists and male Thai private patients. A statistically significant difference in procedure pattern ($p$ value $< 0.0001$) was found between male medical tourists and male Thai private patients.

5.2 Female comparison

In 2010, there were 6,153 procedures in female medical tourists and 16,782 procedures in female Thai patients (Table 4.14). The procedure patterns among female medical tourists also differed from those in Thai patients. Cosmetic operations, gynaecological procedures and procedures on the digestive system were

the most common among female medical tourists, while gynaecological and obstetric procedures and procedures on the digestive system were more common among female Thai patients. Almost one third of the total number of procedures among female medical tourists was cosmetic-related, compared to only 9.4% among female Thai patients. Meanwhile, gynaecological procedures were the commonest procedure among female Thai patients.

Table 4.14: Procedures in female medical tourists and female Thai private patients

| Rank in medical tourist | Female procedure (ICD-9 CM classification) | Medical tourists | | Thai private patients | | Rank in Thai patient |
|---|---|---|---|---|---|---|
| | | Count | % | Count | % | |
| 1 | Integumentary system (mostly cosmetic surgery) | 1,950 | 31.7 | 1,580 | 9.4 | 5 |
| 2 | Gynaecological | 846 | 13.7 | 2,822 | 16.8 | 1 |
| 3 | Digestive system | 665 | 10.8 | 2,201 | 13.1 | 2 |
| 4 | Miscellaneous and therapeutic procedures (mostly cardiac catheter insertion) | 489 | 7.9 | 1,352 | 8.1 | 7 |
| 5 | Eyes | 416 | 6.8 | 1,429 | 8.5 | 6 |
| 6 | Musculo-skeleton system | 408 | 6.6 | 1,585 | 9.4 | 4 |
| 7 | Cardiovascular system | 272 | 4.4 | 685 | 4.1 | 9 |
| 8 | Nose, mouth and pharynx | 192 | 3.1 | 502 | 3.0 | 11 |
| 9 | Procedures and interventions, not elsewhere classified (mostly angio-cardiogram) | 167 | 2.7 | 203 | 1.2 | 14 |
| 10 | Endocrine system | 142 | 2.3 | 856 | 5.1 | 8 |
| 11 | Obstetrics | 139 | 2.3 | 1,998 | 11.9 | 3 |
| 12 | Respiratory system | 128 | 2.1 | 360 | 2.1 | 12 |
| 13 | Nervous system | 126 | 2.0 | 607 | 3.6 | 10 |
| 14 | Urinary system | 103 | 1.7 | 359 | 2.1 | 13 |
| 15 | Haemic and lymphatic system | 86 | 1.4 | 187 | 1.1 | 15 |
| 16 | Ear | 24 | 0.4 | 50 | 0.3 | 16 |
| 17 | Other diagnosis and therapeutic procedures | - | 0.0 | 3 | 0.0 | 17 |
| | Total | 6,153 | 100.0 | 16,782 | 100.0 | |
| Operation rate (procedures per 100 patients) | | 13.99 | | 5.63 | | |

*Statistical analysis*

From table 4.14, Pearson's Chi-square test was employed to find out whether there was any difference in procedure patterns between female medical tourists and female Thai private patients. A statistically significant difference in procedure pattern

(p value < 0.0001) was found between female medical tourists and female Thai private patients.

Though a large percentage of medical tourists visited Thailand for health check-ups, many visited for procedures. Heart-related procedures were most common among men and cosmetic-related procedures among women. Operation rates among medical tourists were higher than in Thai patients, in both men and women –2-fold and 2.5-fold, respectively.

6. Length of stay

The overall length of stay among medical tourists differed slightly from that among Thai private patients. The largest groups of medical tourists and Thai private patients stayed in hospital for 3 days or less; 62.6% and 59.7%, respectively (Table 4.15). The next largest groups in both categories stayed for up to a week. Among those who stayed in hospital for more than 2 weeks, a higher percentage was medical tourists than Thai patients, 8.7 and 5.2% respectively.

Regarding differences in disease patterns and types of procedure, medical tourists needing hospitalization tended to have more complex symptoms and require more specific procedures. The average length of stay among medical tourists was slightly longer than that of Thai private patients. The average duration among medical tourists was 6.6 days per patient, while among Thai private patients it was 5 days (Table 4.16).

Table 4.15: Length of stay of medical tourists and Thai private patients

| | | Medical tourists | | Thai private patients | |
|---|---|---|---|---|---|
| | | Count | % | Count | % |
| **Overall** | 1-3 days | 4,977 | 62.6 | 22,599 | 59.7 |
| | 4-7 days | 1,504 | 18.9 | 10,314 | 27.2 |
| | 8-14 days | 780 | 9.8 | 2,996 | 7.9 |
| | 15-30 days | 403 | 5.1 | 1,265 | 3.3 |
| | More than 30 days | 290 | 3.6 | 689 | 1.8 |
| | **Total** | 7,954 | 100.0 | 37,863 | 100.0 |
| Male | 1-3 days | 2,303 | 56.8 | 9,121 | 58.5 |
| | 4-7 days | 795 | 19.6 | 4,057 | 26.0 |
| | 8-14 days | 498 | 12.3 | 1,404 | 9.0 |
| | 15-30 days | 269 | 6.6 | 645 | 4.1 |
| | More than 30 days | 192 | 4.7 | 355 | 2.3 |
| | **Total** | 4,057 | 100.0 | 15,582 | 100.0 |
| Female | 1-3 days | 2,673 | 68.6 | 13,478 | 60.5 |
| | 4-7 days | 709 | 18.2 | 6,257 | 28.1 |
| | 8-14 days | 282 | 7.2 | 1,592 | 7.1 |
| | 15-30 days | 134 | 3.4 | 620 | 2.8 |
| | More than 30 days | 98 | 2.5 | 334 | 1.5 |
| | **Total** | 3,896 | 100.0 | 22,281 | 100.0 |

Table 4.16: Average length of stay of medical tourists and Thai private patients

| | | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|
| Medical tourists | Male | 7.76 | 4,057 | 17.043 | 1 | 360 | 3.00 |
| | Female | 5.39 | 3,896 | 14.012 | 1 | 352 | 2.00 |
| | Total | 6.60 | 7,953 | 15.676 | 1 | 360 | 3.00 |
| Thai patients | Male | 5.61 | 15,829 | 11.190 | 0 | 341 | 3.00 |
| | Female | 4.70 | 22,666 | 8.493 | 0 | 225 | 3.00 |
| | Total | 5.08 | 38,495 | 9.703 | 0 | 341 | 3.00 |

*Statistical analysis*

From Table 4.16, a two independent sample T-test was employed to find out whether there was any difference in average length of stay between medical tourists and Thai private patients. The null hypothesis was that there was no difference in length of stay between the two groups. A statistically significant difference (p value < 0.0001) was found between the average lengths of stay of medical tourists and Thai private patients.

7. Type of payment

The way medical tourists and Thai private patients paid for their treatment differed markedly. The vast majority of payments for medical expenditure in hospitals by medical tourists were by self-pay, accounting for 91% (Table 4.17). Though self-pay was also the most common payment method for Thai private patients, the proportion was only 54%. It seems that Thai private patients had more varied ways of paying. 29% used corporate contracts to subsidize these expenditures, compared to only 6.6% of medical tourists; in this study, this refers specifically to employer-financed schemes. Private insurance was another method used by Thai private patients for their medical expenses. 19% of Thais paid for their treatment with private insurance, compared to less than 2% of medical tourists.

Table 4.17: Types of payment of medical tourists and Thai private patients

| | Medical tourists | | Thai private patients | |
|---|---|---|---|---|
| | Count | % | Count | % |
| Self-pay | 268,524 | 91.5 | 1,168,194 | 53.8 |
| Insurance | 5,631 | 1.9 | 416,395 | 19.2 |
| Corporate contract | 19,273 | 6.6 | 586,296 | 27.0 |
| Total | 293,428 | 100.0 | 2,170,885 | 100.0 |

*Statistical analysis*

From table 4.17, Pearson's Chi-square test was employed to find out whether there was any difference in type of payment between medical tourists and Thai private patients. A statistically significant difference in type of payment (p value < 0.0001) was found between medical tourists and Thai private patients.

In summary, a majority of patients at the five private hospitals in the study are Thais. Medical tourists have a key market share among international patients, and have a different demographic profile to Thais. Service profiles also show somewhat different disease patterns. Health check-ups are the most common service for medical tourists, implying that the *"medical"* part of their trip may not be its major element, and Thailand may not need too many extra resources to deliver this.

However, some medical tourists are visiting Thailand for operations such as heart-related, orthopaedic and cosmetic procedures, which are considered comparatively expensive for the confined/restricted resources available in Thailand.

### *4.4 Regional comparison of medical tourists*

All medical tourists treated in the five hospitals were grouped by region of origin. Seven regions: Europe, North America, Australia and Oceania, Southeast Asia, the Middle East, and other countries in Asia and Africa were classified for the purpose of analysis, in order to describe demographic and service characteristics.

Medical tourists from long haul regions including Europe, North America and Australia tended to have similar characteristics, while those from Asian and African countries tended to share different characteristics. Patients from the Middle East were the largest group of medical tourists from all regions. Men predominated in all regions except Southeast Asia. Patients from long-haul regions tended to be older and stayed in hospital for a shorter time than those from within region.

1. Number

As previously mentioned, patients from the Middle East represented the largest percentage of medical tourists in the five hospitals, while those from Australia and Africa comprised the smallest group (Table 4.18). African patients visited hospital most frequently while European patients visited the least.

Table 4.18: Number of patients and visits of medical tourists by region

| | | Region | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa | |
| Patient | Count | 14,004 | 9,481 | 3,949 | 14,730 | 40,554 | 16,869 | 3,957 | 103,578 |
| | % | 13.52% | 9.15% | 3.81% | 14.22% | 39.15% | 16.29% | 3.82% | 100.00% |
| Visit | Count | 35,607 | 29,089 | 11,962 | 52,744 | 124,909 | 49,931 | 17,806 | 322,048 |
| | % | 11.06% | 9.03% | 3.71% | 16.38% | 38.79% | 15.50% | 5.53% | 100.00 |
| Utilization rate | | 2.54 | 3.07 | 3.03 | 3.58 | 3.08 | 2.96 | 4.50 | 3.11 |

2. Gender

In terms of gender, men predominated from all regions except Southeast Asia (Table 4.19). Patients from Australia had only a slightly higher percentage of men than women: 52% and 48% respectively. Southeast Asia was the only region that had more female patients than male.

Table 4.19: Gender distribution of medical tourists by region

| | | Region | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa | |
| Male | Count | 9,282 | 6,112 | 2,045 | 6,234 | 24,450 | 9,711 | 2,319 | 60,153 |
| | % | 66.3% | 64.5% | 51.8% | 42.3% | 60.3% | 57.6% | 58.6% | 58.1% |
| Female | Count | 4,717 | 3,367 | 1,904 | 8,491 | 16,103 | 7,154 | 1,638 | 43,374 |
| | % | 33.7% | 35.5% | 48.2% | 57.7% | 39.7% | 42.4% | 41.4% | 41.9% |
| **Total** | Count | 13,999 | 9,479 | 3,949 | 14,725 | 40,553 | 16,865 | 3,957 | 103,527 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.19, Pearson's Chi-square test was employed to find out whether there was any difference in gender distribution among medical tourists from seven regions. A statistically significant difference in gender distribution (p value < 0.0001) was found.

3. Age

Table 4.20 demonstrates the age distribution of medical tourists from each region. Unequal distribution was found in each age group. The largest groups from all regions fell in the 25-44 and 45-64 age groups. The largest group of patients in the 45-64 age group came from long-haul regions, including North America, Australia and Europe, while the largest group of patients in the younger age group came from within-region and Africa. Medical tourists from long-haul regions, except Africa, were older than those from within-region. The highest average age was 45.35 year

among patients from North America and the lowest was 39.2 year among patients from the Middle East (Table 4.21).

Table 4.20: Age distribution of medical tourists by regions

| | | Region | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa | |
| Less than 25 | Count | 1,450 | 1,013 | 427 | 1,921 | 7,381 | 2,507 | 456 | 15,158 |
| | % | 10.4% | 10.7% | 10.8% | 13.0% | 18.2% | 14.9% | 11.5% | 14.6% |
| 25-34 | Count | 2,254 | 1,325 | 712 | 2,367 | 9,306 | 2,792 | 825 | 19,587 |
| | % | 16.1% | 14.0% | 18.0% | 16.1% | 23.0% | 16.6% | 20.9% | 18.9% |
| 35-44 | Count | 2,866 | 1,720 | 865 | 3,450 | 8,501 | 4,108 | 986 | 22,505 |
| | % | 20.5% | 18.1% | 21.9% | 23.4% | 21.0% | 24.4% | 24.9% | 21.7% |
| 45-54 | Count | 3,091 | 2,257 | 925 | 3,271 | 7,525 | 3,721 | 812 | 21,609 |
| | % | 22.1% | 23.8% | 23.4% | 22.2% | 18.6% | 22.1% | 20.5% | 20.9% |
| 55-64 | Count | 2,604 | 2,177 | 741 | 2,275 | 4,733 | 2,404 | 564 | 15,503 |
| | % | 18.6% | 23.0% | 18.8% | 15.4% | 11.7% | 14.3% | 14.3% | 15.0% |
| More than 65 | Count | 1,734 | 989 | 279 | 1,446 | 3,099 | 1,334 | 313 | 9,198 |
| | % | 12.4% | 10.4% | 7.1% | 9.8% | 7.6% | 7.9% | 7.9% | 8.9% |
| Total | Count | 13,999 | 9,481 | 3,949 | 14,730 | 40,545 | 16,866 | 3,956 | 103,560 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 4.21: Average age of medical tourists by region

| Region | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| Europe | 45.10 | 13,999 | 16.76 | 0 | 99 | 46.00 |
| North America | 45.35 | 9,481 | 17.02 | 0 | 95 | 48.00 |
| Australia | 43.59 | 3,949 | 14.93 | 0 | 88 | 44.00 |
| Southeast Asia | 43.02 | 14,730 | 16.93 | 0 | 95 | 43.00 |
| Middle East | 39.19 | 40,545 | 17.24 | 0 | 106 | 39.00 |
| Other Asia | 41.43 | 16,866 | 17.12 | 0 | 100 | 42.00 |
| Africa | 41.81 | 3,956 | 16.12 | 0 | 91 | 41.00 |

*Statistical analysis*

Analysis of variance (ANOVA) test was employed to find out whether there was any difference in average age among medical tourists from the seven regions. The null hypothesis was that the average age of medical tourists from all regions was the same. A statistically significant difference (p value < 0.0001) was found in average age among medical tourists from the seven regions. Statistical analysis also found

that the average age of medical tourists from Europe was very similar to that of those from North America (p value > 0.99) and also of that of those from other Asian and African countries (p value > .999)

## 4. Disease patterns

### 4.1 Male comparison

Health check-ups and diseases of the digestive and circulatory systems were common reasons for the hospital visits of male medical tourists from all regions (Table 4.22). Disease patterns tended to be similar among male medical tourists from long-haul regions, and among those from within region, except for Southeast Asia. Health check-ups, including medical consultations, were the most common procedures for patients from all regions: 30%-40% of the total. Infectious diseases and neoplasms were common among male patients from Southeast Asia, while diseases of the genito-urinary system and neoplasms were common in those from Africa.

Table 4.22: Disease patterns in male medical tourists by region

| Male diagnosis | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| Health examination, medical | Count | 7,508 | 6,832 | 2,001 | 5,970 | 21,492 | 7,450 | 2,965 |
| consultation and treatment follow-up | % | 35.5% | 40.0% | 40.9% | 31.0% | 33.6% | 29.3% | 32.5% |
| Diseases of the digestive system | Count | 2,716 | 1,873 | 706 | 1,488 | 5,579 | 2,224 | 758 |
| | % | 12.8% | 11.0% | 14.4% | 7.7% | 8.7% | 8.8% | 8.3% |
| Diseases of the circulatory system | Count | 1,497 | 1,041 | 251 | 1,893 | 4,319 | 2,528 | 845 |
| | % | 7.1% | 6.1% | 5.1% | 9.8% | 6.8% | 10.0% | 9.3% |
| Diseases of the musculo-skeletal | Count | 1,248 | 1,107 | 259 | 672 | 4,878 | 1,723 | 605 |
| system and connective tissue | % | 5.9% | 6.5% | 5.3% | 3.5% | 7.6% | 6.8% | 6.6% |
| Endocrine, nutritional and metabolic | Count | 719 | 651 | 170 | 1,347 | 4,187 | 2,045 | 590 |
| diseases | % | 3.4% | 3.8% | 3.5% | 7.0% | 6.5% | 8.0% | 6.5% |
| Diseases of the genito-urinary system | Count | 1,160 | 748 | 222 | 950 | 4,116 | 1,463 | 792 |
| | % | 5.5% | 4.4% | 4.5% | 4.9% | 6.4% | 5.8% | 8.7% |
| Neoplasms | Count | 813 | 648 | 153 | 1,733 | 2,525 | 1,307 | 660 |
| | % | 3.8% | 3.8% | 3.1% | 9.0% | 3.9% | 5.1% | 7.2% |
| Diseases of the skin and subcutaneous | Count | 984 | 939 | 296 | 503 | 3,183 | 1,208 | 203 |
| tissue | % | 4.6% | 5.5% | 6.1% | 2.6% | 5.0% | 4.8% | 2.2% |
| Diseases of the eye and adnexa | Count | 952 | 689 | 216 | 623 | 2,566 | 978 | 414 |
| | % | 4.5% | 4.0% | 4.4% | 3.2% | 4.0% | 3.8% | 4.5% |
| Infectious and parasitic diseases | Count | 911 | 605 | 161 | 1,896 | 1,101 | 803 | 262 |
| | % | 4.3% | 3.5% | 3.3% | 9.9% | 1.7% | 3.2% | 2.9% |
| Diseases of the respiratory system | Count | 590 | 429 | 123 | 616 | 2,221 | 949 | 173 |
| | % | 2.8% | 2.5% | 2.5% | 3.2% | 3.5% | 3.7% | 1.9% |
| Diseases of the nervous system | Count | 378 | 364 | 49 | 348 | 2,065 | 776 | 223 |
| | % | 1.8% | 2.1% | 1.0% | 1.8% | 3.2% | 3.1% | 2.4% |
| Mental and behavioural disorders | Count | 507 | 422 | 71 | 301 | 1,801 | 607 | 159 |
| | % | 2.4% | 2.5% | 1.5% | 1.6% | 2.8% | 2.4% | 1.7% |
| Symptoms, signs and abnormal clinical | Count | 379 | 282 | 72 | 427 | 1,650 | 568 | 176 |
| and laboratory findings | % | 1.8% | 1.7% | 1.5% | 2.2% | 2.6% | 2.2% | 1.9% |
| Diseases of the ear and mastoid | Count | 622 | 292 | 89 | 171 | 1,140 | 381 | 110 |
| process | % | 2.9% | 1.7% | 1.8% | .9% | 1.8% | 1.5% | 1.2% |
| Diseases of the blood and the immune | Count | 84 | 83 | 11 | 137 | 435 | 113 | 81 |
| mechanism | % | .4% | .5% | .2% | .7% | .7% | .4% | .9% |
| Congenital malformations, and | Count | 36 | 32 | 24 | 100 | 440 | 138 | 91 |
| chromosomal abnormalities | % | .2% | .2% | .5% | .5% | .7% | .5% | 1.0% |
| Injury, poisoning and certain other | Count | 49 | 16 | 10 | 26 | 186 | 26 | 10 |
| consequences of external causes | % | .2% | .1% | .2% | .1% | .3% | .1% | .1% |
| Pregnancy, childbirth and the | Count | 6 | 4 | 0 | 8 | 36 | 84 | 4 |
| puerperium | % | .0% | .0% | .0% | .0% | .1% | .3% | .0% |
| Certain conditions originating in the | Count | 3 | 18 | 0 | 16 | 24 | 25 | 2 |
| perinatal period | % | .0% | .1% | .0% | .1% | .0% | .1% | .0% |
| External causes of morbidity and | Count | 14 | 4 | 5 | 7 | 27 | 8 | 2 |
| mortality | % | .1% | .0% | .1% | .0% | .0% | .0% | .0% |
| **Total** | Count | 21,176 | 17,079 | 4,889 | 19,232 | 63,971 | 25,404 | 9,125 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.22, Pearson's Chi-square test was employed to find out whether there was any difference in disease patterns among male medical tourists from the seven regions. A statistically significant difference in disease pattern (p value < 0.0001) was found.

## 4.2 Female comparison

Similarly to men, health check-ups (including medical consultation and cosmetic-related problems) and diseases of the genito-urinary system were common reasons for female medical tourists from all regions to seek treatment (Table 4.23). Female patients from long-haul regions, except Africa, tended to show somewhat similar disease patterns, while those from within region also tended to show similar patterns to each other. Health check-ups, including medical consultations and cosmetic-related issues, were the most common reason for female medical tourists from all regions to seek treatment – ranging from 63.2% in patients from Australia, the highest figure, to 35.7% in patients from other Asian countries, the lowest figure. Diseases of the musculo-skeletal system, metabolic diseases and neoplasms were common problems in female patients from within regions. Diseases of the skin or subcutaneous tissue, and musculo-skeletal diseases, were common problems in those from long-haul regions.

Table 4.23: Disease patterns in female medical tourists by region

| Female diagnosis | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| Health examination, medical | Count | 5,164 | 5,133 | 3,453 | 10,744 | 19,193 | 7,482 | 2,583 |
| consultation and treatment follow-up | % | 45.1% | 51.1% | 63.2% | 39.1% | 38.9% | 35.7% | 36.7% |
| Diseases of the genito-urinary system | Count | 864 | 670 | 249 | 2,750 | 3,967 | 2,211 | 793 |
| | % | 7.5% | 6.7% | 4.6% | 10.0% | 8.0% | 10.5% | 11.3% |
| Diseases of the digestive system | Count | 1,181 | 839 | 477 | 1,429 | 3,329 | 1,236 | 529 |
| | % | 10.3% | 8.4% | 8.7% | 5.2% | 6.8% | 5.9% | 7.5% |
| Neoplasms | Count | 428 | 412 | 88 | 2,747 | 2,856 | 1,491 | 678 |
| | % | 3.7% | 4.1% | 1.6% | 10.0% | 5.8% | 7.1% | 9.6% |
| Diseases of the musculo-skeletal | Count | 478 | 413 | 103 | 1,221 | 4,420 | 1,401 | 536 |
| system and connective tissue | % | 4.2% | 4.1% | 1.9% | 4.4% | 9.0% | 6.7% | 7.6% |
| Endocrine, nutritional and metabolic | Count | 321 | 405 | 158 | 1,848 | 3,195 | 1,469 | 410 |
| diseases | % | 2.8% | 4.0% | 2.9% | 6.7% | 6.5% | 7.0% | 5.8% |
| Diseases of the skin and subcutaneous | Count | 561 | 573 | 290 | 787 | 2,980 | 1,248 | 271 |
| tissue | % | 4.9% | 5.7% | 5.3% | 2.9% | 6.0% | 6.0% | 3.9% |
| Diseases of the circulatory system | Count | 432 | 234 | 83 | 1,303 | 1,906 | 888 | 278 |
| | % | 3.8% | 2.3% | 1.5% | 4.7% | 3.9% | 4.2% | 4.0% |
| Diseases of the eye and adnexa | Count | 454 | 334 | 159 | 687 | 1,407 | 580 | 190 |
| | % | 4.0% | 3.3% | 2.9% | 2.5% | 2.9% | 2.8% | 2.7% |
| Infectious and parasitic diseases | Count | 297 | 164 | 48 | 1,574 | 631 | 463 | 162 |
| | % | 2.6% | 1.6% | .9% | 5.7% | 1.3% | 2.2% | 2.3% |
| Diseases of the respiratory system | Count | 281 | 186 | 85 | 433 | 1,081 | 480 | 131 |
| | % | 2.5% | 1.9% | 1.6% | 1.6% | 2.2% | 2.3% | 1.9% |
| Symptoms, signs and abnormal clinical | Count | 162 | 126 | 29 | 515 | 1,030 | 396 | 114 |
| and laboratory findings | % | 1.4% | 1.3% | .5% | 1.9% | 2.1% | 1.9% | 1.6% |
| Diseases of the nervous system | Count | 111 | 101 | 25 | 353 | 1,096 | 372 | 96 |
| | % | 1.0% | 1.0% | .5% | 1.3% | 2.2% | 1.8% | 1.4% |
| Diseases of the ear and mastoid | Count | 253 | 110 | 42 | 184 | 614 | 257 | 51 |
| process | % | 2.2% | 1.1% | .8% | .7% | 1.2% | 1.2% | .7% |
| Diseases of the blood and the immune | Count | 54 | 40 | 13 | 258 | 714 | 238 | 78 |
| mechanism | % | .5% | .4% | .2% | .9% | 1.4% | 1.1% | 1.1% |
| Mental and behavioural disorders | Count | 155 | 96 | 38 | 232 | 260 | 232 | 34 |
| | % | 1.4% | 1.0% | .7% | .8% | .5% | 1.1% | .5% |
| Pregnancy, childbirth and the | Count | 140 | 149 | 30 | 182 | 171 | 303 | 54 |
| puerperium | % | 1.2% | 1.5% | .5% | .7% | .3% | 1.4% | .8% |
| Congenital malformations, and | Count | 67 | 43 | 55 | 167 | 374 | 162 | 32 |
| chromosomal abnormalities | % | .6% | .4% | 1.0% | .6% | .8% | .8% | .5% |
| Injury, poisoning and certain other | Count | 32 | 5 | 27 | 25 | 42 | 32 | 4 |
| consequences of external causes | % | .3% | .0% | .5% | .1% | .1% | .2% | .1% |
| Certain conditions originating in the | Count | 8 | 4 | 0 | 29 | 13 | 20 | 5 |
| perinatal period | % | .1% | .0% | .0% | .1% | .0% | .1% | .1% |
| External causes of morbidity and | Count | 14 | 4 | 15 | 13 | 14 | 8 | 3 |
| mortality | % | .1% | .0% | .3% | .0% | .0% | .0% | .0% |
| **Total** | Count | 11,457 | 10,041 | 5,467 | 27,481 | 49,293 | 20,969 | 7,032 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.23, Pearson's Chi-square test was employed to find out whether there was any difference in disease patterns among female medical tourists from the seven regions. A statistically significant difference in disease pattern (p value < 0.0001) was found.

## 5. Procedures

In 2010, 12,400 procedures were performed on medical tourists in the five private hospitals (Table 4.24); 6,253 on male and 6,147 on female patients. In terms of gender, among patients from Europe, the Middle East, Africa and other Asian countries, higher numbers of procedures were carried on male than on female patients. By contrast, among patients from Australia, the number of procedures carried out on female patients was substantially higher than that of procedures on males: 81%.

Table 4.24: Number of procedures among medical tourists in the five private hospitals, in 2010, by region

| | Male | % within region | Female | % within region | Total | % between regions |
|---|---|---|---|---|---|---|
| Europe | 842 | 57.4 | 625 | 42.6 | 1,467 | 11.83 |
| North America | 597 | 49.1 | 620 | 50.9 | 1,217 | 9.81 |
| Australia and Oceania | 262 | 18.6 | 1,150 | 81.4 | 1,412 | 11.39 |
| Southeast Asia | 988 | 47.1 | 1,110 | 52.9 | 2,098 | 16.92 |
| Middle East | 2,163 | 58.1 | 1,561 | 41.9 | 3,724 | 30.03 |
| Other parts of Asia | 891 | 54.4 | 746 | 45.6 | 1,637 | 13.20 |
| Africa | 510 | 60.4 | 335 | 39.6 | 845 | 6.81 |
| Total | 6,253 | 50.4 | 6,147 | 49.6 | 12,400 | 100.00 |

## 5.1 Male comparison

Patterns of procedures among male patients from long-haul regions were comparatively similar, while patterns among in those from within regions and Africa were also comparatively similar (Table 4.25). Heart-related procedures and procedures on the digestive system were two of the most common procedures among male patients from within-region and Africa. Heart-related procedures, including cardiac catheterization, coronary angiograms and other cardiac operations were the largest category of procedure among patients from these regions, accounting for almost half of all procedures. Cosmetic, heart-related, orthopaedic and digestive procedures were common operations in male patients from long-haul regions. Orthopaedic procedures were the most common in those from North America, cosmetic procedures were most frequent in those from Australia, and digestive operations were most frequent in those from Europe.

Table 4.25: Type of procedure in male medical tourists by regions

| Male procedure | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| Miscellaneous and therapeutic procedures (mostly cardiac catheter insertion) | Count | 100 | 72 | 25 | 203 | 362 | 198 | 97 |
| | % | 11.9% | 12.1% | 9.5% | 20.5% | 16.7% | 22.2% | 19.0% |
| Digestive system | Count | 151 | 61 | 31 | 152 | 290 | 159 | 75 |
| | % | 17.9% | 10.2% | 11.8% | 15.4% | 13.4% | 17.8% | 14.7% |
| Procedures and interventions, not elsewhere classified (mostly angio-cardiogram) | Count | 58 | 19 | 8 | 144 | 330 | 130 | 39 |
| | % | 6.9% | 3.2% | 3.1% | 14.6% | 15.3% | 14.6% | 7.6% |
| Cardiovascular system | Count | 69 | 34 | 8 | 165 | 258 | 106 | 88 |
| | % | 8.2% | 5.7% | 3.1% | 16.7% | 11.9% | 11.9% | 17.3% |
| Musculo-skeleton system | Count | 118 | 140 | 28 | 50 | 173 | 69 | 39 |
| | % | 14.0% | 23.5% | 10.7% | 5.1% | 8.0% | 7.7% | 7.6% |
| Integumentary system (mostly cosmetic surgery) | Count | 76 | 107 | 69 | 17 | 111 | 11 | 8 |
| | % | 9.0% | 17.9% | 26.3% | 1.7% | 5.1% | 1.2% | 1.6% |
| Eyes | Count | 105 | 54 | 37 | 29 | 89 | 28 | 33 |
| | % | 12.5% | 9.0% | 14.1% | 2.9% | 4.1% | 3.1% | 6.5% |
| Nose, mouth and pharynx | Count | 28 | 26 | 28 | 45 | 151 | 28 | 6 |
| | % | 3.3% | 4.4% | 10.7% | 4.6% | 7.0% | 3.1% | 1.2% |
| Male genitalia | Count | 35 | 41 | 13 | 22 | 106 | 34 | 31 |
| | % | 4.2% | 6.9% | 5.0% | 2.2% | 4.9% | 3.8% | 6.1% |
| Urinary system | Count | 36 | 9 | 3 | 47 | 110 | 31 | 31 |
| | % | 4.3% | 1.5% | 1.1% | 4.8% | 5.1% | 3.5% | 6.1% |
| Respiratory system | Count | 21 | 8 | 5 | 42 | 54 | 53 | 19 |
| | % | 2.5% | 1.3% | 1.9% | 4.3% | 2.5% | 5.9% | 3.7% |
| Nervous system | Count | 29 | 13 | 3 | 40 | 69 | 22 | 25 |
| | % | 3.4% | 2.2% | 1.1% | 4.0% | 3.2% | 2.5% | 4.9% |
| Haemic and lymphatic system | Count | 6 | 4 | 0 | 15 | 33 | 10 | 9 |
| | % | .7% | .7% | .0% | 1.5% | 1.5% | 1.1% | 1.8% |
| Ear | Count | 1 | 0 | 3 | 8 | 16 | 7 | 3 |
| | % | .1% | .0% | 1.1% | .8% | .7% | .8% | .6% |
| Endocrine system | Count | 5 | 2 | 0 | 7 | 10 | 5 | 5 |
| | % | .6% | .3% | .0% | .7% | .5% | .6% | 1.0% |
| Other diagnostic and therapeutic procedures | Count | 4 | 7 | 1 | 1 | 1 | 0 | 2 |
| | % | .5% | 1.2% | .4% | .1% | .0% | .0% | .4% |
| **Total** | Count | 842 | 597 | 262 | 988 | 2,163 | 891 | 510 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.25, Pearson's Chi-square test was employed to find out whether there was any difference in patterns of procedure among male medical tourists from the seven regions. A statistically significant difference in procedure pattern (p value < 0.0001) was found.

## 5.2 Female comparison

Similar to picture among male medical tourists, patterns of procedure in female patients from long-haul regions were comparatively similar, while patterns among those from within-region and Africa were also comparatively similar (Table 4.26). Cosmetic-related procedures, including skin and eye operations, were dominated by female patients from long-haul regions, particularly those from Australia – approximately 90% of total procedures. Gynaecological, digestive, heart-related and cosmetic procedures were common among patients from within-region and Africa.

In conclusion, types of procedures among medical tourists can be classified into two groups: those from Europe, North America and Australia and those from Asian countries and Africa. Heart-related procedures dominate in male patients from Asia and Africa, while cosmetic-related procedures dominate in female patients from long-haul regions.

Table 4.26: Type of procedure in female medical tourists by region

| **Female procedure** | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| Integumentary system (mostly cosmetic surgery) | Count | 266 | 290 | 902 | 203 | 162 | 88 | 34 |
| | % | 42.6% | 46.8% | 78.4% | 18.3% | 10.4% | 11.8% | 10.1% |
| Gynaecological | Count | 77 | 76 | 24 | 193 | 280 | 129 | 67 |
| | % | 12.3% | 12.3% | 2.1% | 17.4% | 17.9% | 17.3% | 20.0% |
| Digestive system | Count | 24 | 36 | 12 | 173 | 268 | 101 | 51 |
| | % | 3.8% | 5.8% | 1.0% | 15.6% | 17.2% | 13.5% | 15.2% |
| Miscellaneous and therapeutic procedures (mostly cardiac catheter insertion) | Count | 28 | 17 | 13 | 130 | 170 | 93 | 38 |
| | % | 4.5% | 2.7% | 1.1% | 11.7% | 10.9% | 12.5% | 11.3% |
| Eyes | Count | 85 | 81 | 132 | 37 | 47 | 11 | 23 |
| | % | 13.6% | 13.1% | 11.5% | 3.3% | 3.0% | 1.5% | 6.9% |
| Musculo-skeleton system | Count | 31 | 32 | 11 | 75 | 166 | 67 | 26 |
| | % | 5.0% | 5.2% | 1.0% | 6.8% | 10.6% | 9.0% | 7.8% |
| Cardiovascular system | Count | 15 | 1 | 5 | 82 | 102 | 43 | 24 |
| | % | 2.4% | .2% | .4% | 7.4% | 6.5% | 5.8% | 7.2% |
| Nose, mouth and pharynx | Count | 28 | 16 | 28 | 26 | 50 | 31 | 12 |
| | % | 4.5% | 2.6% | 2.4% | 2.3% | 3.2% | 4.2% | 3.6% |
| Procedures and interventions, not classified elsewhere (mostly angio-cardiogram) | Count | 14 | 3 | 6 | 26 | 76 | 28 | 14 |
| | % | 2.2% | .5% | .5% | 2.3% | 4.9% | 3.8% | 4.2% |
| Endocrine system | Count | 17 | 23 | 10 | 24 | 30 | 32 | 6 |
| | % | 2.7% | 3.7% | .9% | 2.2% | 1.9% | 4.3% | 1.8% |
| Obstetrics | Count | 10 | 25 | 1 | 45 | 7 | 37 | 14 |
| | % | 1.6% | 4.0% | .1% | 4.1% | .4% | 5.0% | 4.2% |
| Respiratory system | Count | 14 | 7 | 5 | 35 | 47 | 15 | 5 |
| | % | 2.2% | 1.1% | .4% | 3.2% | 3.0% | 2.0% | 1.5% |
| Nervous system | Count | 4 | 4 | 1 | 17 | 64 | 26 | 10 |
| | % | .6% | .6% | .1% | 1.5% | 4.1% | 3.5% | 3.0% |
| Urinary system | Count | 8 | 4 | 0 | 28 | 39 | 16 | 8 |
| | % | 1.3% | .6% | .0% | 2.5% | 2.5% | 2.1% | 2.4% |
| Haemic and lymphatic system | Count | 4 | 3 | 0 | 13 | 41 | 23 | 2 |
| | % | .6% | .5% | .0% | 1.2% | 2.6% | 3.1% | .6% |
| Ear | Count | 0 | 2 | 0 | 3 | 12 | 6 | 1 |
| | % | .0% | .3% | .0% | .3% | .8% | .8% | .3% |
| **Total** | Count | 625 | 620 | 1,150 | 1,110 | 1,561 | 746 | 335 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.26, Pearson's Chi-square test was employed to find out whether there was any difference in patterns of procedure among female medical tourists from the

seven regions. A statistically significant difference in procedure pattern (p value < 0.0001) was found.

6. Length of stay

Medical tourists from each region differed slightly in the pattern of length of stay. The largest group, from all regions, stayed in hospital for 3 days or less (Table 4.27). Patients from the Middle East and Africa were more likely to stay for longer than 30 days, compared to those from other regions. Australian medical tourists made the shortest stays, approximately 2.32 days per patient, while those from the Middle East stayed the longest, approximately 10.53 days per patient (Table 4.28).

Table 4.27: Length of stay of medical tourists by region

| | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| 1-3 days | Count | 631 | 577 | 781 | 811 | 1,264 | 649 | 255 |
| | % | 59.2% | 74.5% | 87.8% | 57.0% | 57.2% | 59.0% | 53.1% |
| 4-7 days | Count | 229 | 128 | 77 | 318 | 408 | 236 | 108 |
| | % | 21.5% | 16.5% | 8.7% | 22.3% | 18.5% | 21.5% | 22.5% |
| 8-14 days | Count | 122 | 38 | 16 | 178 | 230 | 130 | 66 |
| | % | 11.4% | 4.9% | 1.8% | 12.5% | 10.4% | 11.8% | 13.8% |
| 15-30 days | Count | 60 | 20 | 15 | 86 | 122 | 65 | 35 |
| | % | 5.6% | 2.6% | 1.7% | 6.0% | 5.5% | 5.9% | 7.3% |
| More than 30 days | Count | 24 | 12 | 1 | 30 | 187 | 20 | 16 |
| | % | 2.3% | 1.5% | .1% | 2.1% | 8.5% | 1.8% | 3.3% |
| **Total** | Count | 1,066 | 775 | 890 | 1,423 | 2,211 | 1,100 | 480 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 4.28: Average length of stay of medical tourists by region

| Region New 2 | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| Europe | 5.36 | 1,066 | 7.56 | 1 | 87 | 3.00 |
| North America | 3.75 | 775 | 7.17 | 1 | 111 | 2.00 |
| Australia | 2.32 | 890 | 2.90 | 1 | 32 | 2.00 |
| Southeast Asia | 5.87 | 1,423 | 9.61 | 1 | 138 | 3.00 |
| Middle East | 10.53 | 2,211 | 24.54 | 1 | 360 | 3.00 |
| Other Asia | 5.49 | 1,100 | 8.13 | 1 | 87 | 3.00 |
| Africa | 8.55 | 480 | 22.80 | 1 | 352 | 3.00 |
| Total | 6.60 | 7,945 | 15.68 | 1 | 360 | 3.00 |

*Statistical analysis*

From table 4.28, an analysis of variance (ANOVA) test was employed to find out whether there was any difference in the average length of stay among medical tourists from the seven regions. The null hypothesis was that the average length of stay of medical tourists from all regions was the same. A statistically significant difference (p value < 0.0001) was found: therefore the average length of stay of medical tourists from the seven regions was not the same. Statistical analysis also found that the average length of stay among medical tourists from Europe was very similar to that of patients from other Asian countries (p value > 0.999) and those from Southeast Asia (p value > .95)

7. Type of payment

Type of payment used by medical tourists from all regions was reasonably similar. Most of them used self-pay (4.29). Private insurance and corporate contract were alternative sources of payment, but they were used infrequently.

Table 4.29: Type of payment by medical tourist by region

| | | Region | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Europe | North America | Australia | Southeast Asia | Middle East | Other Asia | Africa |
| Self-pay | Count | 28,683 | 22,757 | 8,329 | 43,618 | 108,386 | 40,585 | 13,856 |
| | % | 89.4% | 85.7% | 86.7% | 91.8% | 95.0% | 89.5% | 89.2% |
| Insurance | Count | 1,584 | 1,614 | 296 | 423 | 151 | 1,414 | 84 |
| | % | 4.9% | 6.1% | 3.1% | .9% | .1% | 3.1% | .5% |
| Corporate contract | Count | 1,828 | 2,193 | 981 | 3,459 | 5,545 | 3,366 | 1,597 |
| | % | 5.7% | 8.3% | 10.2% | 7.3% | 4.9% | 7.4% | 10.3% |
| **Total** | Count | 32,095 | 26,564 | 9,606 | 47,500 | 114,082 | 45,365 | 15,537 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.29, Pearson's Chi-square test was employed to find out whether there was any difference in type of payment among medical tourists from the seven

regions. A statistically significant difference in type of payment (p value < 0.0001) was found.

It is apparent that medical tourists from western regions tend to have similar medical problems to those from Asia, including those from Africa. Long-haul patients usually come with digestive and circulatory problems, while Asian patients come with a variety of diseases. Asian patients usually visit hospitals for heart procedures while Western patients are more likely to receive cosmetic procedures. A difference in disease patterns in the two regions, and the ways in which hospitals promote their services to each country contribute to these differences.

*4.5 Discussion and conclusion*

This section presents a summary of research findings, general discussion on findings concerning various aspects of the characteristics of medical tourists, a discussion on data limitations in the analysis, and the conclusion.

- *Summary of research findings*

Medical tourists have significantly different characteristics from non-medical tourists from many aspects. They travel mostly from the Middle East, Southeast Asia, Europe and South Asia, accounting for 66% of the total number of medical tourists, while Southeast Asia, Europe and East Asia are the key markets for non-medical tourists, accounting for 80% of the total. Patients from the Middle East represent the largest market share among medical tourists: almost 40%. In terms of gender, men predominate among both medical and non-medical tourists. Because of the nature of their diseases, medical tourists tend to be older than non-medical tourists.

Thai patients predominate in the five private hospitals in this study, accounting for 68% of total patient numbers, while only 32% are international patients. Of all international patients, 44% are medical tourists; this is considered to be the largest group, the others being expatriates and sick tourists. Medical tourists have some characteristics that differentiate them from Thai private patients. They are older and predominantly male, while Thais tend to be younger and predominantly female. Their disease patterns are also quite different to those of Thais. Health check-ups are the most common reason for hospital visits, around 34% in men and 41% in women, followed by digestive, circulatory and musculo-skeletal problems. It is apparent that they visit Thailand for operations, heart-related, orthopaedic and cosmetic procedures being the most common. They stay in hospitals for longer periods than Thais, approximately 6.60 and 5.08 days per patient, respectively. Most medical tourists, around 90%, use out-of-pocket payment for their medical expenses.

Medical tourists are not a homogeneous group; their characteristics differ between regions. Those from long haul regions including Europe, North America and

Australia tend to have similar characteristics, while those from Asian countries and Africa tend to share characteristics. Patients from the Middle East are the largest group (40%) while those from Australia are the smallest (3.8%). Men predominate in all regions except Southeast Asia. Patients from long-haul regions tend to be older and stay in hospitals for a shorter time than those from within-region. Patients from long-haul regions usually visit hospitals with digestive and circulatory problems, while those from Asia and Africa come with a larger variety of problems. Cosmetic operations, followed by heart-related operations are the most popular for long-haul patients. Heart-related operations followed by digestive operations are the most popular among Asian and African patients.

In conclusion, this study clearly shows the characteristics of medical and non-medical tourists. The typical medical tourist in Thailand can be categorised into three groups. The first and largest group is a middle-aged male patient from the Middle East seeking heart procedures. The second group is a middle-aged female patient from Southeast Asia traveling for cosmetic or gynaecological procedures. The last would be a middle-aged European male patient travelling for digestive and orthopaedic procedures. In contrast, typical non-medical tourists are younger men from Southeast Asia, East Asia and Europe.

- *General discussion*

As discussed in Chapter Three, there is a shortage of evidence concerning medical tourists in terms of their demography and service behaviours. This information, being mostly in the private sector, has been difficult to access due to business confidentiality. Because of the lack of detail given and the comparatively low response from private hospitals, the only existing data sources are the Survey of the Department of Foreign Export, Ministry of Commerce (MOC) and the 5-yearly private hospital survey carried out by the Thai National Statistical Office. However, both data sources usually have only aggregated numbers of patients and have difficulty in differentiating medical tourists from other international patients. Hence, this study has tried to establish empirical evidence concerning medical tourists within their demographic and service profiles.

The research findings show that there were 104,830 medical tourists making 324,906 separate visits, to the top-five private hospitals well-recognized for serving international patients. This actual number of medical tourists extends our previous existing knowledge of their numbers obtained from government trade and health policy makers. For a long period Thai society has recognised that 1.5-2 million foreign patients visit Thailand each year. This substantial number has made Thailand the foremost provider of medical tourism in the region. This perceived number has also led to many arguments from health and trade spokespeople about the possible impact on the country.

It could be argued that this study examined only five private hospitals, while there are more than 50 such hospitals in Thailand serving international patients. However, these five hospitals were selected as the top five, based on data from the Ministry of Commerce in 2007, having 65% of the market share of all international patients in that year. This study also shows that two of the five treat a large proportion of all medical tourists, accounting for 57% and 49% of the total number of international patients in each hospital, while the other three treat comparatively smaller numbers, accounting for 30%, 15% and 13% of their total numbers of international patients. In addition, 90% of the medical tourists covered by this study were treated at these two hospitals. This implies that, actually, there are very few hospitals engaging with the medical tourist industry in Thailand, serving instead, in the main, the expatriate community.

Currently, there is a clear understanding of the number of international patients, as reported in the MOC survey. The actual number of patients is smaller than the 1.5-2 million per year quoted, as hospitals report their data in terms of the number of separate visits, not in terms of patient numbers. Based on figures from this study, medical tourists account for approximately 35% of the total visits of international patients, and they make an average of 3.1 visits per year; so the estimated numbers of medical tourists visiting Thailand annually should be between 172,000 to 223,000. .From this it can be seen that medical tourists represent a small minority of

total patient numbers in Thailand, and are perhaps not the cause for concern – or celebration – that they have been.

This study also shows that the number of medical tourists small when compared to ordinary international tourists and Thai patients. The number of medical tourists was one fifth of the number of Thai patients in the five hospitals in 2010. They represented only 14% of the total number, compared to 68% of Thai patients and 18% of other international patients. Numbers of medical tourists were marginal compared to numbers of international tourists, accounting for only 0.6% of the total. Furthermore, this figure is similar to the findings from the MOTS survey on "the main purpose of visit". Data from this survey indicated that only 0.5% of international tourists cited medical treatment as the main purpose of their visit to Thailand.

Analysis of the characteristics and behaviours of medical tourists and non-medical tourists shows differences from all aspects. The reasons may be connected with the issue mentioned above – i.e., that medical tourists are a very small group within the larger population of ordinary international tourists. However, some interesting points are raised by the analysis of regional distribution between medical tourists and international tourists. It shows that tourists from the Middle East, Southeast Asia and Europe include the highest numbers of medical tourists, while tourists from Southeast Asia, Europe and East Asia are key sources of all international tourists. Southeast Asia and Europe are already represented in both industries, while East Asia and Middle East are not, but some people from these two regions are still in Thailand as either ordinary or medical tourists. Thus, it would be possible that the tourism industry could increase its activities in the Middle East to increase the volume of business. The medical tourism industry could market itself in East Asia to increase participation in the health element of tourism.

The analysis of disease patterns among medical tourists shows that approximately 34% of male and 41% of female medical tourists visited hospitals for health check-ups. This information challenges the existing belief in Thailand that medical tourists come there for advanced and sophisticated care, such as cardiac and orthopaedic

treatment, and that they compete with domestic patients in access to these health services. Health check-ups need less sophisticated medical equipment and fewer highly-skilled health personnel to operate it. This finding can perhaps lessen Thai concerns on the negative impact medical tourists have on domestic private patients.

Findings from the analysis of the patterns of procedures shows that although the total number of procedures among medical tourists is less than among Thai private patients, the ratio is per patient is double, accounting for 11.84 and 5.38 procedures per 100 patients. This implies that medical tourists visiting Thailand for some procedures, particularly cosmetic, intend to get the maximum benefit from their travel costs. The study shows that Australian female represent a majority of those undergoing cosmetic procedures. This finding is supported by most Australian media content concerning medical tourism; additionally, there is considerable promotion of cosmetic surgery in low- and middle-income countries particularly [139]. It is also noted that the only procedure carried out on more medical tourists than on Thai private patients is cardiac catheterization; however, even in this case, it is difficult to assert that medical tourists divert resources from local patients, as most Thais are treated in public hospitals and the level of resources needed for cardiac catheterization is much less than in open-chest surgery.

Analysis of procedures between source regions shows that long-haul patients tend to seek cosmetic and heart-related procedures, which are comparatively expensive and are not covered by national health insurance schemes in their countries. Meanwhile, patients from Asian and African regions, considered to have somewhat less developed healthcare facilities than Western countries, tend to visit Thai hospitals for heart-related, digestive and orthopaedic procedures due to lack of provision in their own countries. This knowledge enables Thailand to market itself to specific regions as a medical tourism destination.

Analysis on the length of stay of medical tourists reveals that 3.6% stayed in hospitals for more than 30 days, the largest proportion of this group being from the Middle East. 30 days is the maximum period foreign tourists are allowed to stay in Thailand. This regulation has been regarded as a barrier to the growth of medical

tourism, and the government is currently considering extending it, specifically for patients from the Middle East. However, the findings of this study suggest the current limit may not be as significant a barrier as current media and policy discourse suggests.

- *Conclusion*

This is the first empirical in-depth study of the characteristics of medical tourists visiting Thailand. It has identified the ways in which they differ demographically from non-medical tourists, particularly in their regions of origin. This difference allows trade sectors to market tourism and health activities to tourists who would not necessarily have come to Thailand principally for these activities. This would be a positive addition to the national economy. The ways in which medical tourists differ from Thai private patients have also been identified. The study found that they come for certain procedures in particular, such as heart-related, cosmetic, orthopaedic and digestive operations, which would affect domestic patients particularly, as the fields of heart and orthopaedic treatment have limited resources in Thailand. In order to support the medical tourism industry and mitigate its implications for the domestic health system, health sectors need an effective plan to produce more health professionals. However, this chapter focuses specifically on the characteristics of medical tourists; an understanding of their impact on the economy of Thailand is described in the next chapter.

# Chapter Five

## Assessing the expenditure of medical tourism on medical care and tourism revenues

# Chapter 5

## Assessing the expenditure of medical tourism on medical care and tourism revenues

As demonstrated in the conceptual framework, medical tourists spent money on medical goods and services such as physicians, medical staff, medications and medical devices. However, in terms of the tourism element of their spending, it has been well documented that this expenditure has a substantial economic impact on destination economies [140], directly impacting on primary tourism sectors such as accommodation, restaurants, entertainment and retail shops; other sectors are also impacted, but less directly [141]. Bumrungrad International Hospital is a good example of the considerable contribution of international patients to hospital revenue; in 2009 the income from international customers contributed around 55% of total revenue [142].

In terms of the literature, the study by Lautier (2008) of international patients in Tunisia used face-to-face interviews with key informants in private and government organizations to estimate the average length of stay and average spending. Johnson and Garman (2010) estimated import and export revenues of medical travel in the US, using well-systematized secondary data from a variety of organizations, including telephone interviews with domestic healthcare organizers.

In Thailand, NaRanong et al (2011) estimated the economic impact of international patients by using secondary data from the DEP survey, with additional assumptions. This study estimates a medical service revenue of around 46,000-52,000 million THB and a tourism revenue of around 12,000-13,000 million THB. Many other organizations have tried to estimate medical tourism revenues. The Ministry of Public Health estimated that the revenue from international patients in 2007 was around 32,900 million THB, while Kasikorn Research Centre and the Ministry of Commerce estimated these revenues at around 36,000 and 41,000 million THB respectively [143]. However, there is ambiguity in the detail of their estimation concerning whether a tourism spending component was included, and whether

spending by patients' companions was taken into account. Furthermore, all information based on secondary data is from diverse sources giving less detail in their spending profiles.

Concerning the tourism industry in Thailand, systematic data collection on international tourists has been established. An annual survey of international tourists is conducted by the Ministry of Tourism and Sports (MOTS). Many detailed questions about tourist profiles, their activities and spending patterns are included in the questionnaire. Sampling of international tourists is via interviews at airports when leaving the country.

In order to understand the economic contributions of medical tourism, this chapter focuses on analysing the medical and tourism elements of the spending profiles of medical tourists, compared with international tourist expenditures reported by MOTS. It is crucial to determine the expenditure which would have occurred had medical care not been part of the visit, and to identify the specific revenue contribution of medical tourism to overall tourist revenue that would otherwise not have occurred.

*5.1 Aim and specific research questions*

The aim of this chapter is to assess the expenditure of medical tourists on medical care and tourism. A comparison with non-medical tourists and medical tourists' companions is also made to illustrate how much they differ from each other. An understanding of how much medical tourists and their companions spend on tourism elements allows estimation of their actual additional economic impact separately from their medical spending. These findings will help policy makers establish strategies for enhancing the benefit to the country. To do this, several specific research questions are addressed:

1. Does the tourism spending profile of medical tourists differ from that of non-medical tourists?
2. Does the tourism spending profile of medical tourists' companions differ from that of non-medical tourists?
3. What are the factors influencing the tourism expenditure of medical and non-medical tourists?
4. Does the medical spending of medical tourists differ from that of domestic Thai private patients?
5. Does the medical spending of medical tourists differ by region of origin?

## *5.2 Tourism behaviours of medical tourists*

### 1. Demographic profiles

#### *1.1 Region of origin*

293 medical tourists from six regions participated in the survey. 200 patients were from within the region, accounting for 68% of the total number, whereas 93 patients were from long-haul regions (Table 5.1). In terms of region, the largest group of participants was from the Middle East, whereas the smallest groups were those from Europe and North America. In addition, all six regions were categorized into two groups based on the location. Within-regions referred to all regions in Asia including Southeast, South and East Asia and the Middle East, while long-haul regions comprise Europe, North America, Australia and Oceania.

Table 5.1: Region and country of origin of participants

| Region group | Region | Country | Number of participants | % |
|---|---|---|---|---|
| Long-haul regions (93, 31.7%) | Europe (18, 6.1%) | United Kingdom | 7 | 2.4 |
| | | France | 6 | 2.0 |
| | | Germany | 5 | 1.7 |
| | North America (18, 6.1%) | USA | 16 | 5.5 |
| | | Canada | 2 | 0.7 |
| | Australia and Oceania (57, 19.5%) | Australia | 57 | 19.5 |
| Within regions (200, 68.3%) | Southeast Asia (19, 6.5%) | Myanmar | 16 | 5.5 |
| | | Cambodia | 3 | 1.0 |
| | Middle East (125, 42.7%) | U.A.E. | 51 | 17.4 |
| | | Oman | 36 | 12.3 |
| | | Qatar | 15 | 5.1 |
| | | Kuwait | 23 | 7.8 |
| | Other parts of Asia (56, 19.1%) | Bangladesh | 53 | 18.1 |
| | | Japan | 3 | 1.0 |
| | Total participants | | 293 | 100.0 |

*1.2 Gender and age*

Men predominated overall, approximately 58% of the total (Table 5.2), and also in the within-region category; however, women predominated in the long-haul region category. Gender distribution of participants is comparatively different from that of medical tourists in the previous section, where men predominated in all regional categories. This is because many Australian patients participated in this survey, the majority of whom were females, usually visiting for cosmetic treatments. Most participants were in the 35-54 age-group, which accounted for 46% (Table 5.3). Participants from within-region were older than those from long-haul regions; the average ages being 46 and 36 years old respectively (Table 5.4).

Table 5.2: Gender of participants by region

| | **Long-haul regions** | | **Within region** | | **Total** | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Male | 18 | 19.4 | 151 | 75.5 | 169 | 57.7 |
| Female | 75 | 80.6 | 49 | 24.5 | 124 | 42.3 |
| Total | 93 | 100.0 | 200 | 100.0 | 293 | 100.0 |

Table 5.3: Age group of participants by region

| | **Long-haul regions** | | **Within region** | | **Total** | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Less than 25 yrs | 17 | 18.3 | 12 | 6.0 | 29 | 9.9 |
| 25-34 yrs | 34 | 36.6 | 25 | 12.5 | 59 | 20.1 |
| 35-44 yrs | 19 | 20.4 | 53 | 26.5 | 72 | 24.6 |
| 45-54 yrs | 12 | 12.9 | 53 | 26.5 | 65 | 22.2 |
| 55-64 yrs | 9 | 9.7 | 39 | 19.5 | 48 | 16.4 |
| More than 65 yrs | 2 | 2.2 | 18 | 9.0 | 20 | 6.8 |
| Total | 93 | 100.0 | 200 | 100.0 | 293 | 100.0 |

Table 5.4: Average age of participants by region

| **Region** | **Mean** | **N** | **Std. Deviation** | **Minimum** | **Maximum** | **Median** |
|---|---|---|---|---|---|---|
| Long-haul | 36.08 | 93 | 13.043 | 19.00 | 79.00 | 32.00 |
| Within region | 46.28 | 200 | 13.336 | 15.00 | 83.00 | 46.00 |
| Total | 43.04 | 293 | 14.051 | 15.00 | 83.00 | 42.00 |

*1.3 Occupation and income*

The majority of participants were agricultural workers, administrative/managerial employees, retired/unemployed and other occupations, accounting for 66% of total participants (Table 5.5). Agricultural workers, administrative/managerial employees and professionals were the main occupations of participants from long-haul regions. Agricultural workers, administrative/managerial employees and retired/unemployed were the main occupations of those from within region. With respect to their occupations, approximately 40% of participants earned a comparatively low annual income of less than 20,000 USD; only 5% earned more than 80,000 USD (Table 5.6).

Table 5.5: Occupation of participants by region

| | **Long-haul regions** | | **Within region** | | **Total** | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Professionals | 15 | 16.1 | 15 | 7.6 | 15 | 5.2 |
| Administrative and Managerial | 17 | 18.3 | 34 | 17.2 | 51 | 17.5 |
| Government and Military | 11 | 11.8 | 9 | 4.5 | 20 | 6.9 |
| Clerical, salesman and commercial | 1 | 1.1 | 28 | 14.1 | 29 | 10.0 |
| Housewife and unpaid family workers | 1 | 1.1 | 0 | 0.0 | 1 | 0.3 |
| Student or child | 0 | 0.0 | 2 | 1.0 | 2 | 0.7 |
| Labourer | 3 | 3.2 | 13 | 6.6 | 16 | 5.5 |
| Agricultural worker | 23 | 24.7 | 31 | 15.7 | 54 | 18.6 |
| Retired and unemployed | 6 | 6.5 | 33 | 16.7 | 39 | 13.4 |
| Other | 19 | 20.4 | 33 | 16.7 | 49 | 16.8 |
| Total | 93 | 100.0 | 198 | 100.0 | 291 | 100.0 |

Table 5.6: Income of participants by region

| | **Long-haul regions** | | **Within region** | | **Total** | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Less than 20,000 USD | 23 | 32.4 | 71 | 39.9 | 94 | 37.8 |
| 20,000-39,999 USD | 31 | 43.7 | 53 | 29.8 | 84 | 33.7 |
| 40,000-59,000 USD | 10 | 14.1 | 30 | 16.9 | 40 | 16.1 |
| 60,000-79,999 USD | 5 | 7.0 | 14 | 7.9 | 19 | 7.6 |
| More than 80,000 USD | 2 | 2.8 | 10 | 5.6 | 12 | 4.8 |
| Total | 71 | 100.0 | 178 | 100.0 | 249 | 100.0 |

2. Tourism behaviour

*2.1 Medical purpose of the visit*

Approximately 34% of participants intended to visit Thailand exclusively for medical purposes (Table 5.7). Almost half had medical treatment as their main purpose together with other purposes. This means they had another reason for travelling but it was less important than obtaining medical care. Only 16% decided to visit Thailand and added medical services to their trip later. Participants from within region tended to visit Thailand for the specific purpose of seeking medical care, compared to those from long-haul regions: 45% and 16% respectively. Data from this survey illustrates that most participants intended to receive medical services in Thailand, even though they may have had other reasons for their trip as well.

Table 5.7: Level of importance of medical service for visit

| | **Long-haul regions** | | **Within region** | | **Total** | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Main purpose | 48 | 60.0 | 54 | 40.6 | 102 | 47.9 |
| Only one purpose | 13 | 16.3 | 59 | 44.4 | 72 | 33.8 |
| Included later | 19 | 23.8 | 20 | 15.0 | 39 | 18.3 |
| Total | 80 | 100.0 | 133 | 100.0 | 213 | 100.0 |

*2.2 Revisit for medical treatment*

Approximately 40% had never received medical services in Thailand before (Table 5. 8). Nevertheless, almost 40% of them had come for medical treatment over several visits. Most participants from long-haul regions were new customers to the hospitals, while most of those from within region, had visited hospitals in Thailand before. Half of them had received medical services in Thailand on more than three occasions.

Table 5.8: History of medical services in Thailand by region

| | Long-haul regions | | Within region | | Total | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Never before | 66 | 71.7 | 47 | 25.0 | 113 | 40.4 |
| Once or twice | 15 | 16.3 | 37 | 19.7 | 52 | 18.6 |
| More than 3 times | 11 | 12.0 | 104 | 55.3 | 115 | 41.1 |
| Total | 92 | 100.0 | 188 | 100.0 | 280 | 100.0 |

*2.3 Medical service package*

The majority of participants, accounting for 70% of the total, had organised their medical trip themselves (Table 5.9). However, participants from within versus long-haul regions showed definite differences in the arrangements for their visit. Those from long-haul regions tended to use medical service packages, while those from within region tended to be self-organised.

Table 5.9: Type of medical service preparation by region

| | Long-haul regions | | Within region | | Total | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| Yes | 80 | 86.0 | 6 | 3.0 | 86 | 29.4 |
| No | 13 | 14.0 | 194 | 97.0 | 207 | 70.6 |
| Total | 93 | 100.0 | 200 | 100.0 | 293 | 100.0 |

*2.4 Total length of stay in Thailand*

The largest group of participants, accounting for 44% of the total, stayed in Thailand for between 8-14 days (Table 5.10). Participants from long-haul regions stayed for a longer period than those from within region, approximately 12.8 and 11.9 days respectively (Table 5.11).

Table 5.10: Length of stay of participants by region

| | Long-haul regions | | Within region | | Total | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| 1-3 days | 1 | 1.1 | 19 | 9.5 | 20 | 6.8 |
| 4-7 days | 10 | 10.8 | 66 | 33.0 | 76 | 25.9 |
| 8-14 days | 68 | 73.1 | 61 | 30.5 | 129 | 44.0 |
| 15-30 days | 12 | 12.9 | 48 | 24.0 | 60 | 20.5 |
| More than 30 days | 2 | 2.2 | 6 | 3.0 | 8 | 2.7 |
| Total | 93 | 100.0 | 200 | 100.0 | 293 | 100.0 |

Table 5.11: Average length of stay of participants by region

| | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| Long-haul | 12.88 | 93 | 10.956 | 2.00 | 105.00 | 10.00 |
| Within region | 11.96 | 200 | 11.102 | 1.00 | 90.00 | 10.00 |
| Total | 12.25 | 293 | 11.045 | 1.00 | 105.00 | 10.00 |

### *2.5 Number of companions*

On their current trip, almost 50% of participants were travelling alone (Table 5.12). A quarter was travelling with one companion. Participants from within region tended to have more companions than those from long-haul regions.

Table 5.12: Number of companions by regions

| | Long-haul regions | | Within region | | Total | |
|---|---|---|---|---|---|---|
| | Count | % | Count | % | Count | % |
| No companion | 44 | 47.3 | 98 | 49.0 | 142 | 48.5 |
| 1 person | 25 | 26.9 | 49 | 24.5 | 74 | 25.3 |
| 2 persons | 17 | 18.3 | 26 | 13.0 | 43 | 14.7 |
| 3 persons | 2 | 2.2 | 14 | 7.0 | 16 | 5.5 |
| More than 3 persons | 5 | 5.4 | 13 | 6.5 | 18 | 6.1 |
| Total | 93 | 100.0 | 200 | 100.0 | 293 | 100.0 |

*5.3 Tourism expenditure*

Numbers of international tourists have increased consistently with an average annual increase of 7.51% [144]. The number of international tourists has increased from 11.5 million in 2005 to 22.3 million in 2012 [144]. This increase was as a result of the growth of international tourists around the world and potential tourism infrastructures in Thailand. International tourists have contributed a lot to the Thai economy. Their revenues increased from 547.8 billion THB in 2007 to 983.9 billion THB in 2012 (Table 5.13). Tourists from East Asia and Southeast Asia generated the highest revenue, approximately 395.4 billion THB, followed by tourists from Europe, Oceania and North America [144].

Table 5.13: Revenue from international tourists visiting Thailand from 2007-2012

| Year | Average expenditure per tourist per day (THB) | Total revenue (Billion THB) | Total revenue (Billion USD) |
|---|---|---|---|
| 2007 | 4,120.95 | 547.7 | 15.8 |
| 2008 | 4,141.30 | 574.5 | 17.2 |
| 2009 | 4,011.21 | 510.3 | 14.8 |
| 2010 | 4,078.67 | 592.8 | 18.7 |
| 2011 | 4,178.12 | 776.2 | 25.4 |
| 2012 | 4,392.81 | 983.9 | 31.6 |

Source: MOTS

*5.3.1 Tourism expenditures of medical tourists, their companions, and non-medical tourists.*

*1. Overall tourism expenditure*

*1.1 Actual tourism expenditure*

Actual tourism expenditure in this section means all expenditures derived from tourism activities, excluding health-related services. Medical tourists and their companions tended to spend more on average on tourism elements than non-medical tourists. The largest group of non-medical tourists, medical tourists and companions,

spent between 10,000-50,000 THB per visit, accounting for 75%, 34% and 50% respectively (Table 5.14). Average actual tourism expenditure per medical tourist visit was 2.6 times greater than the expenditure per visit of non-medical tourists, approximately 82,520 THB and 31,970 THB respectively (Table 5.15). The average expenditure of medical tourists' companions was slightly lesser than that of the medical tourists themselves, approximately 80,351 THB per visit (Table 5.15).

Table 5.14: Tourism expenditure of non-medical tourists, medical tourists and companions

| | | Non-medical tourist | | Medical tourist | | Companion | |
|---|---|---|---|---|---|---|---|
| | | Count | % | Count | % | Count | % |
| Actual tourism expenditure | Less than 5,000 THB | 558 | 2.0 | 28 | 9.7 | 4 | 3.2 |
| | 5,001-10,000 THB | 1,913 | 6.8 | 19 | 6.6 | 7 | 5.6 |
| | 10,001-50,000 THB | 21,100 | 75.3 | 99 | 34.4 | 50 | 39.7 |
| | 50,000-100,000 THB | 3,820 | 13.6 | 57 | 19.8 | 29 | 23.0 |
| | 100,001-500,000 THB | 617 | 2.2 | 82 | 28.5 | 34 | 27.0 |
| | 500,000-1,000,000 THB | - | 0.0 | 3 | 1.0 | 2 | 1.6 |
| | More than 1,00,000 THB | - | 0.0 | 0 | 0.0 | 0 | 0.0 |
| | Total | 28,008 | 100.0 | 288 | 100.0 | 126 | 100.0 |
| Total expenditure | Less than 5,000 THB | 549 | 2.0 | 12 | 4.2 | 6 | 4.7 |
| | 5,001-10,000 THB | 1,895 | 6.8 | 6 | 2.1 | 5 | 3.9 |
| | 10,001-50,000 THB | 21,045 | 75.1 | 43 | 14.9 | 47 | 36.4 |
| | 50,000-100,000 THB | 3,869 | 13.8 | 65 | 22.6 | 31 | 24.0 |
| | 100,001-500,000 THB | 650 | 2.3 | 152 | 52.8 | 35 | 27.1 |
| | 500,000-1,000,000 THB | - | 0.0 | 7 | 2.4 | 4 | 3.1 |
| | More than 1,00,000 THB | - | 0.0 | 3 | 1.0 | 1 | 0.8 |
| | Total | 28,008 | 100.0 | 288 | 100.0 | 129 | 100.0 |

Table 5.15: Average tourism expenditure of non-medical tourists, medical tourists and companions

| | Type of patient | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|
| Actual tourism expenditure | Non-medical tourist | 31,973.57 | 28,013 | 24,373.14 | 500.00 | 404,525.00 | 25,562.03 |
| | Medical tourist | 82,522.92 | 288 | 94,843.29 | - | 702,000.00 | 49,110.00 |
| | Companion | 80,351.92 | 126 | 83,923.77 | 86.00 | 517,500.30 | 52,150.00 |
| Total expenditure | Non-medical tourist | 32,285.84 | 28,013 | 24,968.49 | 500.00 | 404,525.00 | 25,700.00 |
| | Medical tourist | 160,622.20 | 288 | 183,362.73 | 500.00 | 1,550,000.00 | 129,985.00 |
| | Companion | 104,111.19 | 129 | 148,124.73 | 86.00 | 1,155,000.00 | 56,250.00 |

*1.2 Total expenditure (including medical expenses)*

Including medical spending under the heading of tourism expenditure altered expenditure patterns (Table 5.14), increasing the largest category of expenditure of medical tourists from between 10,000-50,000 THB to between 100,000-500,000 THB. The average expenditure of medical tourists increased from 82,522 THB to 160,622 THB (Table 5.15). Adding medical spending also affected the average expenses of their companions, increasing it from 80,351 THB to 104,111 THB. Non-medical tourists obviously spent less on healthcare services, so the inclusion of medical spending made an insignificant increase to their average expenditure, from 31,970 THB to 32,280 THB (Table 5.15).

*2. Regional comparison*

*2.1 Non-medical tourists*

Tourists from long-haul regions spent more on tourism activities than those from within the region (Table 5.16). Their average tourism expenditure per visit was 43,240 THB while the average of within region tourists was 24,920 THB (Table 5.17). Including medical spending in their overall expenditure didn't change this pattern, as tourists from both regions spent almost nothing on health services (Table 5.17).

Table 5.16: Tourism expenditure between non-medical tourists, medical tourists and companion by regions

| | | | Non-medical tourist | | Medical tourist | | Companion | |
|---|---|---|---|---|---|---|---|---|
| | | | Long-haul | Within | Long-haul | Within | Long-haul | Within |
| Actual tourism expense | Less than 5,000 THB | Count | 91 | 463 | 2 | 26 | 1 | 3 |
| | | % | 0.9% | 2.7% | 2.2% | 13.2% | 2.7% | 3.4% |
| | 5,001-10,000 THB | Count | 289 | 1,596 | 5 | 14 | 1 | 6 |
| | | % | 2.8% | 9.4% | 5.5% | 7.1% | 2.7% | 6.7% |
| | 10,001-50,000 THB | Count | 6,982 | 13,682 | 46 | 53 | 17 | 33 |
| | | % | 66.7% | 80.6% | 50.5% | 26.9% | 45.9% | 37.1% |
| | 50,000-100,000 THB | Count | 2,646 | 1,095 | 25 | 32 | 8 | 21 |
| | | % | 25.3% | 6.5% | 27.5% | 16.2% | 21.6% | 23.6% |
| | 100,001-500,000 THB | Count | 467 | 138 | 12 | 70 | 10 | 24 |
| | | % | 4.5% | 0.8% | 13.2% | 35.5% | 27.0% | 27.0% |
| | 500,000-1,000,000 THB | Count | 0 | 0 | 1 | 2 | 0 | 2 |
| | | % | 0.0% | 0.0% | 1.1% | 1.0% | 0.0% | 2.2% |
| | More than 1,00,000 THB | Count | 0 | 0 | 0 | 0 | 0 | 0 |
| | | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | Count | 10,475 | 16,974 | 91 | 197 | 37 | 89 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| Total expense | Less than 5,000 THB | Count | 90 | 455 | 1 | 11 | 1 | 5 |
| | | % | 0.9% | 2.7% | 1.1% | 5.6% | 2.7% | 5.4% |
| | 5,001-10,000 THB | Count | 285 | 1,582 | 1 | 5 | 1 | 4 |
| | | % | 2.7% | 9.3% | 1.1% | 2.5% | 2.7% | 4.3% |
| | 10,001-50,000 THB | Count | 6,939 | 13,673 | 11 | 32 | 17 | 30 |
| | | % | 66.2% | 80.5% | 12.1% | 16.2% | 45.9% | 32.6% |
| | 50,000-100,000 THB | Count | 2,670 | 1,117 | 15 | 50 | 8 | 23 |
| | | % | 22.5% | 6.6% | 16.5% | 25.4% | 21.6% | 25.0% |
| | 100,001-500,000 THB | Count | 490 | 148 | 60 | 92 | 10 | 25 |
| | | % | 4.7% | 0.9% | 65.9% | 46.7% | 27.0% | 27.2% |
| | 500,000-1,000,000 THB | Count | 0 | 0 | 2 | 5 | 0 | 4 |
| | | % | 0.0% | 0.0% | 2.2% | 2.5% | 0.0% | 4.3% |
| | More than 1,00,000 THB | Count | 0 | 0 | 1 | 2 | 0 | 1 |
| | | % | 0.0% | 0.0% | 1.1% | 1.0% | 0.0% | 1.1% |
| | Total | Count | 10,474 | 16,975 | 91 | 197 | 37 | 92 |
| | | % | 1.0 | 1.0 | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.17: Average tourism expenditure between non-medical tourists, medical tourists and companions by region

| | Type of patient | Region | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|---|
| Actual tourism expenditure | Non-medical tourist | Long-haul | 43,244.15 | 10,476 | 28,814.15 | 765.00 | 366,000.00 | 36,568.30 |
| | | Within | 24,919.08 | 16,978 | 17,976.98 | 500.00 | 404,525.00 | 20,590.07 |
| | Medical tourist | Long-haul | 64,285.49 | 91 | 71,897.14 | 2,220.00 | 520,800.00 | 45,450.00 |
| | | Within | 90,947.31 | 197 | 102,821.43 | 0.00 | 702,000.00 | 54,500.00 |
| | Companion | Long-haul | 71,620.95 | 37 | 63,676.43 | 1,950.00 | 349,250.00 | 49,650.00 |
| | | Within | 83,981.66 | 89 | 91,106.70 | 86.00 | 517,500.30 | 53,500.00 |
| Total expenditure | Non-medical tourist | Long-haul | 43,716.97 | 10,476 | 29,561.84 | 765.00 | 366,000.00 | 36,870.00 |
| | | Within | 25,132.86 | 16,978 | 18,439.94 | 500.00 | 404,525.00 | 20,700.00 |
| | Medical tourist | Long-haul | 179,273.41 | 91 | 179,485.48 | 2,880.00 | 1,450,800.00 | 155,460.00 |
| | | Within | 152,006.67 | 197 | 184,941.39 | 500.00 | 1,550,000.00 | 102,656.40 |
| | Companion | Long-haul | 72,320.68 | 37 | 64,145.61 | 1,950.00 | 349,250.00 | 49,650.00 |
| | | Within | 116,896.50 | 92 | 169,286.80 | 86.00 | 1,155,000.00 | 62,325.00 |

*2.2 Medical tourists*

In contrast, medical tourists from within-region tended to spend more on tourism than those from long-haul regions; spending of between 100,000-500,000 THB representing their biggest category of tourism expenses, while the largest for long-haul patients was between 10,000-50,000 THB (Table 5.16). Average tourism expenditure per trip of within-region patients was 90,950 THB, while for long-haul patients it was 64,280 THB (Table 5.17). Adding medical expenditure to tourism expenditure meant that medical tourists from long-haul regions had higher average expenditure. The average expenditure, including medical spending, of long-haul patients was 179,280 THB, while the average for within-region patients was 152,000 THB (Table 5.17). Average medical spending per trip of patients from long-haul regions in this survey was 115,000 THB, whilst that of within region patients was 61,000 THB.

*2.3 Companions*

Similarly to the medical tourists, their companions from within region spent more on tourism compared to companions from long-haul regions. The largest group of the

two regions spent between 10,000-50,000 THB per visit (Table 5.16). However, average tourism expenditure per trip for companions from within region was 83,980 THB, while that for companions from long-haul regions was 71,620 THB (Table 5.17). In contrast to medical tourists, companions from within region tended to spend more on healthcare services. An average expenditure including medical spending of within-region companions was 166,900 THB, while that of long-haul companions was 72,320 THB (Table 5.17). Average medical spending per trip of companions from within region in this survey was 32,920 THB, while one from long-haul region was much lower – approximately 700 THB.

3. Gender comparison

*3.1 Non-medical tourists*

There was very little difference in tourism expenditure and medical expenditure between men and women among non-medical tourists (Table 5.18). Average actual tourism expenditure for men and women was 32,400 THB and 31,320 THB respectively (Table 5.19). Including spending on medical care had no influence on these spending patterns. The average total expenditure for both men and women slightly increased to 32,730THB and 31,605 THB respectively (Table 5.19).

Table 5.18: Tourism expenditure of non-medical and medical tourists, by gender

| | | | Non-medical tourist | | Medical tourist | |
|---|---|---|---|---|---|---|
| | | | Male | Female | Male | Female |
| Actual tourism expenditure | Less than 5,000 THB | Count | 345 | 213 | 15 | 13 |
| | | % | 2.0% | 1.9% | 8.9% | 10.8% |
| | 5,001-10,000 THB | Count | 1,170 | 743 | 8 | 11 |
| | | % | 6.9% | 6.7% | 4.8% | 9.2% |
| | 10,001-50,000 THB | Count | 12,698 | 8,402 | 46 | 53 |
| | | % | 74.8% | 76.2% | 27.4% | 44.2% |
| | 50,000-100,000 THB | Count | 2,338 | 1,482 | 29 | 28 |
| | | % | 13.8% | 13.4% | 17.3% | 23.3% |
| | 100,001-500,000 THB | Count | 429 | 188 | 69 | 13 |
| | | % | 2.5% | 1.7% | 41.1% | 10.8% |
| | 500,000-1,000,000 THB | Count | 0 | 0 | 1 | 2 |
| | | % | 0.0% | 0.0% | 0.6% | 1.7% |
| | More than 1,00,000 THB | Count | 0 | 0 | 0 | 0 |
| | | % | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | Count | 16,980 | 11,028 | 168 | 120 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |
| Total expenditure | Less than 5,000 THB | Count | 342 | 207 | 7 | 5 |
| | | % | 2.0% | 1.9% | 4.2% | 4.2% |
| | 5,001-10,000 THB | Count | 1,156 | 739 | 3 | 3 |
| | | % | 6.8% | 6.7% | 1.8% | 2.5% |
| | 10,001-50,000 THB | Count | 12,663 | 8,382 | 27 | 16 |
| | | % | 74.6% | 76.0% | 16.1% | 13.3% |
| | 50,000-100,000 THB | Count | 2,365 | 1,504 | 37 | 28 |
| | | % | 13.9% | 13.6% | 22.0% | 23.3% |
| | 100,001-500,000 THB | Count | 453 | 197 | 89 | 63 |
| | | % | 2.7% | 1.8% | 53.0% | 52.5% |
| | 500,000-1,000,000 THB | Count | 0 | 0 | 3 | 4 |
| | | % | 0.0% | 0.0% | 1.8% | 3.3% |
| | More than 1,00,000 THB | Count | 0 | 0 | 2 | 1 |
| | | % | 0.0% | 0.0% | 1.2% | 0.8% |
| | Total | Count | 16,979 | 11,029 | 168 | 120 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.19: Average tourism expenditure between non-medical tourists and medical tourists by gender

| | Type of patient | Gender | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|---|
| Actual tourism expenditure | Non-medical tourist | Male | 32,396.60 | 16,983 | 25,259.98 | 600.00 | 366,000.00 | 25,606.67 |
| | | Female | 31,322.21 | 11,030 | 22,926.61 | 500.00 | 404,525.00 | 25,521.23 |
| | Medical tourist | Male | 98,872.52 | 168 | 97,077.91 | 0.00 | 702,000.00 | 68,478.75 |
| | | Female | 59,633.48 | 120 | 86,967.06 | 500.00 | 576,000.00 | 39,450.00 |
| Total expenditure | Non-medical tourist | Male | 32,727.77 | 16,983 | 25,969.75 | 600.00 | 366,000.00 | 25,781.60 |
| | | Female | 31,605.39 | 11,030 | 23,327.82 | 500.00 | 404,525.00 | 25,599.49 |
| | Medical tourist | Male | 165,064.41 | 168 | 191,685.66 | 500.00 | 1,550,000.00 | 126,656.25 |
| | | Female | 154,403.11 | 120 | 171,630.33 | 1,550.00 | 1,450,800.00 | 129,985.00 |

### *3.2 Medical tourists*

In contrast, there were noticeable differences in the spending levels of male and female medical tourists. Male medical tourists spent more on tourism elements than females (Table 5.18). The average tourism expenditure of the men was 98,870 THB, while that of women was 59,630 THB – that of men being approximately 65% higher (table5.19). The spending pattern between men and women also differed slightly when medical spending was included (Table 5.18). The average total expenditure of men and women was closer, approximately 165,060 THB and 154,400 THB respectively – an approximately 7% difference (Table 5.19). The average medical spending of female patients in this survey was 94,800 THB per patient per trip, while that of male patients was 66,200 THB – almost 40% higher.

*Summary for tourism expenditure*

Medical tourists engage not only in medical activities, but also considerably in tourism. In terms of total expenditure per trip, they and their companions spent a lot on these activities. Because the main purpose of their visits was medical care, they spend much more on it when compared to non-medical tourists, as would be expected. Yet they also spent far more than non-medical tourists on tourism elements. Non-medical tourists from long-haul region spent more than those from within region, but medical tourists and their companions from within region spent

more than those from long-haul regions. Male patients tended to spend more on tourism elements, while female patients spent more on medical elements. In contrast, gender did not influence the spending patterns of non-medical tourists.

### *5.3.2 Tourism spending profiles*

Seven categories of spending, namely local transportation, accommodation, food & drink, sightseeing, shopping, entertainment and other, were compared between non-medical tourists, medical tourists and their respective companions. All categories were adjusted to give the average spending per actual tourism day for the purposes of comparison.

#### *1. Overall tourism spending profiles*

Medical tourists and their companions spent much more on tourism-related elements compared to non-medical tourists. Average actual tourism expenditure per tourism day of medical tourists was 8,440 THB, while that of their companions was 9,080 THB (Table 5.20); the actual tourism spending of non-medical tourists was 4,190 THB –around half that of the spending of medical tourists (Table 5.20). This implies that medical tourists may be wealthier than non-medical tourists. Accommodation, food & drink, and shopping accounted for most of the spending in all groups. These three categories accounted for 70% of total expenses during stays in Thailand. The average tourism expenditure of medical tourists' companions was slightly greater than that of the medical tourists themselves. They spent more on accommodation, food and drink than medical tourists; the reason for this being that some of the medical tourists' expenditure on accommodation and food was included in their medical expenses, while all that of the companions would come under the heading of tourism expenditure. However, medical tourists spent more on shopping and entertainment than their companions.

*2. Regional comparison*

*2.1 Non-medical tourists*

Tourism spending per day of tourists from within region was slightly more than that of those from long-haul regions: 4,330 THB and 3,930 THB respectively (Table 5.21). In the main, they spent more in each category, particularly shopping.

*2.2 Medical tourists and their companions*

Medical tourists from within region had higher tourism expenditures than long-haul patients: 9,480 THB and 6,200 THB respectively (Table 5.21). They also spent more in all categories except accommodation. Similarly to medical tourists, companions from within region spent more than those from long haul regions, accounting for 10,210 THB and 6,340 THB respectively (Table 5.21). The tourism spending profile of companions was similar to that of medical tourists. Companions from within the region spent more on all categories except accommodation.

*3. Gender comparison*

The tourism spending profiles of male and female non-medical tourists were comparatively similar. Male tourists spent slightly more than female: 4,230 THB and 4,120 THB respectively (Table 5.22); but comparatively similar amounts in each category. In the medical tourist category, males spent much more than females; average tourism spending by men was 9,910 THB, approximately 50% more than the 6,400 THB spent by women (Table 5.22). Male patients tended to spend more in all categories except accommodation.

Table 5.20: Tourism spending profiles per tourism day by non-medical tourists, medical tourists and companions

| Type of patient | | Local transport/day | Accommodation/day | Food & Beverage/day | Sight-seeing/day | Shopping/day | Entertainment/ day | Other/day | Actual tourism expense/day |
|---|---|---|---|---|---|---|---|---|---|
| Non-medical tourist | Mean | 417.14 | 1,220.15 | 770.49 | 176.55 | 1,088.39 | 429.18 | 86.35 | 4,188.24 |
| | N | 28,013 | 28,013 | 28,013 | 28,013 | 28,013 | 28,013 | 28,013 | 28,013 |
| | Std. Deviation | 396.90 | 1,034.21 | 591.59 | 282.27 | 1,371.85 | 584.81 | 142.12 | 2,570.37 |
| | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 174.69 |
| | Maximum | 12,500.00 | 49,500.00 | 12,000.00 | 7,234.36 | 30,000.00 | 12,120.00 | 4,950.00 | 67,420.83 |
| Medical tourist | Mean | 671.46 | 2,467.14 | 1,211.53 | 415.69 | 2,119.45 | 933.19 | 168.18 | 8,443.58 |
| | N | 287 | 287 | 287 | 287 | 287 | 287 | 287 | 287 |
| | Std. Deviation | 949.97 | 3,959.99 | 1,264.87 | 714.71 | 3,155.09 | 4,770.22 | 955.33 | 9,743.52 |
| | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 96.88 |
| | Maximum | 10,600.00 | 52,080.00 | 10,000.00 | 5,625.00 | 21,428.57 | 78,571.43 | 15,150.00 | 89,428.57 |
| Companion | Mean | 740.55 | 2,526.33 | 1,675.32 | 556.95 | 1,680.25 | 483.87 | 310.98 | 9,082.24 |
| | N | 127 | 127 | 127 | 127 | 127 | 127 | 127 | 127 |
| | Std. Deviation | 905.85 | 2,406.83 | 4,559.34 | 922.77 | 2,433.65 | 1,268.88 | 1,546.72 | 12,799.98 |
| | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 86.00 |
| | Maximum | 4,178.57 | 11,025.00 | 50,000.00 | 5,357.14 | 16,000.00 | 11,551.35 | 15,727.00 | 102,428.57 |

Table 5.21: Tourism spending profiles per tourism day by non-medical tourists, medical tourists and companions, by region

| Type of patient | Region | | Local transport/day | Accommodation/day | Food & Beverage/day | Sight-seeing/day | Shopping/day | Entertainment /day | Other/day | Actual tourism expense/day |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-medical tourist | Long-haul | Mean | 441.86 | 1,197.51 | 783.85 | 171.04 | 853.90 | 415.88 | 67.92 | 3,931.96 |
| | | N | 10,476 | 10,476 | 10,476 | 10,476 | 10,476 | 10,476 | 10,476 | 10,476 |
| | | Std. Deviation | 379.09 | 977.15 | 610.09 | 255.22 | 1,198.64 | 593.19 | 128.66 | 2,507.88 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 174.69 |
| | | Maximum | 5,656.88 | 14,000.00 | 10,000.00 | 3,134.55 | 29,750.00 | 9,566.67 | 4,120.00 | 38,150.00 |
| | Within | Mean | 401.54 | 1,233.52 | 761.59 | 180.62 | 1,220.37 | 439.41 | 97.59 | 4,334.64 |
| | | N | 16,978 | 16,978 | 16,978 | 16,978 | 16,978 | 16,978 | 16,978 | 16,978 |
| | | Std. Deviation | 407.94 | 1,073.82 | 580.12 | 298.22 | 1,434.50 | 581.18 | 148.94 | 2,594.40 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 192.86 |
| | | Maximum | 12,500.00 | 49,500.00 | 12,000.00 | 7,234.36 | 30,000.00 | 12,120.00 | 4,950.00 | 67,420.83 |
| Medical tourist | Long-haul | Mean | 313.67 | 3,140.71 | 755.93 | 221.45 | 1,477.78 | 278.42 | 20.62 | 6,208.58 |
| | | N | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| | | Std. Deviation | 539.83 | 5,604.41 | 681.51 | 354.96 | 2,514.12 | 499.94 | 99.09 | 6,433.27 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 240.00 |
| | | Maximum | 4,132.50 | 52,080.00 | 3,333.33 | 1,875.00 | 21,000.00 | 3,099.00 | 600.00 | 52,080.00 |
| | Within | Mean | 837.58 | 2,154.42 | 1,423.06 | 505.87 | 2,417.37 | 1,237.19 | 236.69 | 9,481.26 |
| | | N | 196 | 196 | 196 | 196 | 196 | 196 | 196 | 196 |
| | | Std. Deviation | 1,049.57 | 2,862.32 | 1,410.78 | 815.64 | 3,376.60 | 5,741.57 | 1,148.55 | 10,803.91 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 96.88 |
| | | Maximum | 10,600.00 | 22,500.00 | 10,000.00 | 5,625.00 | 21,428.57 | 78,571.43 | 15,150.00 | 89,428.57 |
| Companion | Long-haul | Mean | 400.27 | 3,213.74 | 778.61 | 488.35 | 1,116.22 | 302.10 | 36.86 | 6,336.15 |
| | | N | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| | | Std. Deviation | 628.72 | 2,581.14 | 627.70 | 691.32 | 1,140.07 | 385.30 | 139.11 | 3,992.89 |
| | | Minimum | 0.00 | 0.00 | 43.04 | 0.00 | 0.00 | 0.00 | 0.00 | 325.00 |
| | | Maximum | 3,262.11 | 11,025.00 | 2,500.00 | 3,333.33 | 5,812.50 | 1,427.14 | 600.00 | 17,525.00 |
| | Within | Mean | 880.44 | 2,243.72 | 2,043.97 | 585.16 | 1,912.13 | 558.60 | 423.67 | 10,211.18 |
| | | N | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| | | Std. Deviation | 966.38 | 2,286.71 | 5,366.42 | 1,004.71 | 2,769.93 | 1,483.24 | 1,826.20 | 14,868.75 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 86.00 |
| | | Maximum | 4,178.57 | 10,442.86 | 50,000.00 | 5,357.14 | 16,000.00 | 11,551.35 | 15,727.00 | 102,428.57 |

Table 5.22: Tourism spending profiles per tourism day by non-medical tourists and medical tourists by gender

| Type of patient | Gender | | Local transport/day | Accommodation/day | Food & Beverage/day | Sight-seeing/day | Shopping/day | Entertainment/day | Other/day | Actual tourism expense/day |
|---|---|---|---|---|---|---|---|---|---|---|
| Non-medical tourist | Male | Mean | 421.11 | 1,242.91 | 786.26 | 169.12 | 1,065.04 | 458.68 | 85.98 | 4,229.10 |
| | | N | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 |
| | | Std. Deviation | 407.53 | 995.18 | 609.72 | 289.94 | 1,411.05 | 646.66 | 142.04 | 2,594.69 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 174.69 |
| | | Maximum | 12,500.00 | 20,000.00 | 12,000.00 | 7,234.36 | 30,000.00 | 12,120.00 | 3,032.00 | 38,150.00 |
| | Female | Mean | 411.02 | 1,185.12 | 746.20 | 187.99 | 1,124.34 | 383.75 | 86.91 | 4,125.32 |
| | | N | 11,030 | 11,030 | 11,030 | 11,030 | 11,030 | 11,030 | 11,030 | 11,030 |
| | | Std. Deviation | 379.91 | 1,090.70 | 561.70 | 269.64 | 1,308.46 | 470.47 | 142.25 | 2,531.29 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 192.86 |
| | | Maximum | 9,654.17 | 49,500.00 | 9,400.00 | 3,910.20 | 22,750.00 | 6,666.67 | 4,950.00 | 67,420.83 |
| Medical tourist | Male | Mean | 939.44 | 2,245.91 | 1,561.42 | 611.66 | 2,629.79 | 1,008.20 | 280.34 | 9,914.48 |
| | | N | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 |
| | | Std. Deviation | 1,092.62 | 2,929.52 | 1,459.81 | 855.71 | 3,238.08 | 1,532.22 | 1,240.48 | 9,417.17 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| | | Maximum | 10,600.00 | 22,500.00 | 10,000.00 | 5,625.00 | 16,666.67 | 6,750.00 | 15,150.00 | 64,265.05 |
| | Female | Mean | 298.52 | 2,775.02 | 724.61 | 142.96 | 1,409.22 | 828.81 | 12.09 | 6,396.58 |
| | | N | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| | | Std. Deviation | 512.40 | 5,054.94 | 679.35 | 278.08 | 2,902.40 | 7,169.01 | 68.48 | 9,858.74 |
| | | Minimum | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 96.88 |
| | | Maximum | 4,132.50 | 52,080.00 | 3,333.33 | 1,392.86 | 21,428.57 | 78,571.43 | 600.00 | 89,428.57 |

*4. Statistical analysis*

Two independent sample T-tests were employed to test whether there was any statistically significant difference in the average expenditure in each spending category between non-medical tourists VS medical tourists and non-medical tourists VS medical tourists' companions. The null hypothesis was that there is no difference in spending between the two groups. Considerable difference (p value < 0.0001) in average expenditure was found in all categories except those of entertainment and 'other expenses', between non-medical tourists and medical tourists (Table 5.23). Comparisons between non-medical tourists and companion show a substantial difference (p value < 0.0001) in spending on local transportation, accommodation and sightseeing, while there was difference in spending on food (p value = 0.027) and shopping (p value 0.007) (Table 5.24). Meanwhile, there was no difference in spending on entertainment (p value = 0.628) or in the 'other spending' category (p value = 0.104) (Table 5.24).

Table 5.23: Comparison of expenditure by non-medical tourists and medical tourists, by tourism spending item

| | **Type of patient** | **N** | **Mean** | **95% CI** | | **p value** |
|---|---|---|---|---|---|---|
| | | | | Lower | Upper | |
| Local transport | Medical tourist | 287 | 671.46 | 143.86 | 364.79 | < 0.0001 |
| | Non-medical tourist | 28,013 | 417.14 | | | |
| Accommodation | Medical tourist | 287 | 2,467.14 | 786.74 | 1,707.24 | < 0.0001 |
| | Non-medical tourist | 28,013 | 1,220.15 | | | |
| Food | Medical tourist | 287 | 1,211.53 | 293.93 | 588.17 | < 0.0001 |
| | Non-medical tourist | 28,013 | 770.49 | | | |
| Sightseeing | Medical tourist | 287 | 415.69 | 156.04 | 322.24 | < 0.0001 |
| | Non-medical tourist | 28,013 | 176.55 | | | |
| Shopping | Medical tourist | 287 | 2,119.45 | 664.13 | 1,397.98 | < 0.0001 |
| | Non-medical tourist | 28,013 | 1,088.39 | | | |
| Entertainment | Medical tourist | 287 | 933.19 | -50.25 | 1,058.28 | 0.075 |
| | Non-medical tourist | 28,013 | 429.18 | | | |
| Other expense | Medical tourist | 287 | 168.18 | -29.17 | 192.84 | 0.148 |
| | Non-medical tourist | 28,013 | 86.35 | | | |
| Actual tourism expense | Medical tourist | 287 | 8,443.58 | 3,122.90 | 5,387.79 | < 0.0001 |
| | Non-medical tourist | 28,013 | 4,188.24 | | | |

Table 5.24: Comparison of expenditure by non-medical tourists and medical tourist's companions, by tourism item

| | Type of patient | N | Mean | 95% CI | | p value |
|---|---|---|---|---|---|---|
| | | | | Lower | Upper | |
| Local transport | Companion | 127 | 740.55 | 164.28 | 482.55 | < 0.0001 |
| | Non-medical tourist | 28,013 | 417.14 | | | |
| Accommodation | Companion | 127 | 2,526.33 | 883.35 | 1,729.00 | < 0.0001 |
| | Non-medical tourist | 28,013 | 1,220.15 | | | |
| Food | Companion | 127 | 1,675.32 | 104.16 | 1,705.51 | 0.027 |
| | Non-medical tourist | 28,013 | 770.49 | | | |
| Sightseeing | Companion | 127 | 556.95 | 218.33 | 542.48 | < 0.0001 |
| | Non-medical tourist | 28,013 | 176.55 | | | |
| Shopping | Companion | 127 | 1,680.25 | 164.20 | 1,019.52 | 0.007 |
| | Non-medical tourist | 28,013 | 1,088.39 | | | |
| Entertainment | Companion | 127 | 483.87 | -168.23 | 277.62 | 0.628 |
| | Non-medical tourist | 28,013 | 429.18 | | | |
| Other expense | Companion | 127 | 310.98 | -46.99 | 496.25 | 0.104 |
| | Non-medical tourist | 28,013 | 86.35 | | | |
| Actual tourism expense | Companion | 127 | 9,082.24 | 2,646.06 | 7,141.94 | < 0.0001 |
| | Non-medical tourist | 28,013 | 4,188.24 | | | |

*5.3.3 Influencing factors on actual tourism expenditure*

Tourism is very important to destination economies, through spending on a variety of tourism elements, as described in the previous section. To increase tourism revenues, many strategies have been established, in order to increase the number of tourists and lengthen their periods of stay. Increasing tourism spending per day is one of the elements taken into account by tourism policy makers. Many contributing factors affect tourist spending, such as age, gender, and type of accommodation.

To assess the influencing factors on actual tourism expenditure per day, variables related to socio-demographic and travel-related elements are postulated as an equation. Socio-demographic variables include gender, region of origin, age and annual income, whereas travel-related variables include length of stay in Thailand. The interest is in whether being medical tourist influences tourism expenditure, and to what extent, compared to other factors. Thus, a variable reflecting the fact of being a medical tourist is posited in the equation as well.

When the six predictor variables were modelled together, all variables were significant (Table 5.25). Five of the variables: being a medical tourist, region, age, income level and length of stay in Thailand were highly significant (p value < 0.0001) while gender was significant at p value 0.005. The R squared of overall formula is 0.154.

Being a medical tourist, region of origin, gender, age, income level and length of stay are contributing factors to actual tourism spending per day. Being a medical tourist, being a traveller from a long-haul region, and being female all tend to increase actual tourism expenditure per day. Older travellers and those with a higher income level also tend to spend more. However, the longer the length of stay, the less spent per day. Of all the variables, being a medical tourist has the strongest influence on tourism expenditure per day (Table 5.25).

Table 5.25: Influencing factors on tourism expenditure

| Variable | Category | N | Means | Standard deviation | Co-efficient | 95% CI | | Overall p value |
|---|---|---|---|---|---|---|---|---|
| | | | | | | lower | upper | |
| 1. Type of tourists | | | | | | | | < 0.0001 |
| | Non-medical tourist * | 28,013 | 4,188.24 | 2,570.367 | 0.245 | 0.216 | 0.274 | |
| | Medical tourist | 293 | 8,270.68 | 9,717.011 | | | | |
| 2. Region | | | | | | | | < 0.0001 |
| | Long-haul | 10,569 | 3,950.82 | 2,575.607 | 0.022 | 0.016 | 0.029 | |
| | Within * | 17,178 | 4,392.35 | 2,877.662 | | | | |
| 3. Gender | | | | | | | | 0.005 |
| | Male | 17,152 | 4,283.96 | 2,799.681 | -0.008 | -0.014 | -0.002 | |
| | Female * | 11,154 | 4,148.27 | 2,726.598 | | | | |
| 4. Age group | | | | | | | | < 0.0001 |
| | Less than 25 * | 5,238 | 3,713.76 | 2,483.363 | | | | |
| | 25-34 | 10,890 | 4,185.67 | 2,590.874 | 0.024 | 0.016 | 0.032 | |
| | 35-44 | 6,806 | 4,489.43 | 2,922.576 | 0.035 | 0.026 | 0.044 | |
| | 45-54 | 3,696 | 4,539.62 | 2,749.067 | 0.032 | 0.021 | 0.042 | |
| | 55-64 | 1,335 | 4,458.20 | 3,197.221 | 0.037 | 0.022 | 0.051 | |
| | More than 65 | 341 | 4,189.38 | 5,449.398 | 0.010 | -0.016 | 0.036 | |
| 5. Annual income | | | | | | | | < 0.0001 |
| | Less than 20,000 USD * | 10,582 | 3,861.83 | 2,633.260 | | | | |
| | 20,000-39,999 USD | 9,492 | 4,210.84 | 2,613.287 | 0.037 | 0.030 | 0.044 | |
| | 40,000-59,999 USD | 4,618 | 4,526.66 | 2,869.719 | 0.073 | 0.065 | 0.082 | |
| | 60,000-79,999 USD | 1,828 | 4,719.11 | 3,048.752 | 0.096 | 0.084 | 0.109 | |
| | More than 80,000 USD | 1,742 | 5,282.07 | 3,334.900 | 0.132 | 0.120 | 0.144 | |
| 6. Length of stay in Thailand | | | | | | | | < 0.0001 |
| | 1-3 days * | 3,554 | 5,177.20 | 3,671.795 | | | | |
| | 4-7 days | 13,265 | 4,600.29 | 2,694.529 | -0.019 | -0.027 | -0.010 | |
| | 8-14 days | 7,175 | 3,909.14 | 2,343.065 | -0.114 | -0.124 | -0.104 | |
| | 15-31 days | 3,820 | 2,937.72 | 2,074.438 | -0.249 | -0.261 | -0.238 | |
| | More than 30 days | 492 | 2,145.39 | 2,546.977 | -0.398 | -0.420 | -0.376 | |
| R square = 0.154 | | | | | | | | |

## *5.4 Medical expenditure*

### *5.4.1Comparison between medical tourists and Thai private patients*

1. *Overall medical expenditure*

The individual medical expenditure of medical tourists was higher than that of Thai private patients. For out-patient expenses, the largest group of medical tourists, approximately 44%, spent between 10,000 and 50,000 THB, while the largest group of Thai patients, approximately 50%, spent less than 5,000 THB (Table 5.26). Medical tourist spend for OP expenses was around 24,520 THB on average, approximately 60% higher than the 15,280 THB spent by Thai private patients (Table 5.27). Medical tourists and Thai patients spent much more on in-patient care than on out-patient expenses. Nearly 60% of medical tourists spent between 100,000-500,000 THB on in-patient care, while 54% of Thai patients spent between 10,000-50,000 THB (Table 5.26). The average IP expenses of medical tourists were 353,460 THB – 14-times greater than their OP expenses (Table 5.27). Average IP expenses for Thai patients were 120,880 THB.

Though foreign patients tended to spend more than Thais, domestic patients still generated more revenue in total. In 2010, total revenue from Thai private patients in the five hospitals was 13.7 billion THB, while medical tourists generated revenues of 5.2 billion THB – approximately 2.6 times less (Table 5.28). Among foreign patients, medical tourists generated more revenue than other categories.

Table 5.26: Medical expenditure by medical tourists and Thai private patients

| | | OP expense | | IP expense | | Total expense | |
|---|---|---|---|---|---|---|---|
| | | Medical tourists | Thai private patients | Medical tourists | Thai patients | Medical tourists | Thai patients |
| Less than 5,000 THB | Count | 32,284 | 248,977 | 29 | 366 | 29,809 | 237,132 |
| | % | 31.1% | 50.8% | .3% | .7% | 28.5% | 47.7% |
| 5,001-10,000 THB | Count | 14,598 | 83,114 | 20 | 1359 | 13,861 | 77,370 |
| | % | 14.0% | 17.0% | .2% | 2.6% | 13.3% | 15.6% |
| 10,001-50,000 THB | Count | 45,651 | 129,029 | 964 | 27,646 | 43,741 | 131,664 |
| | % | 43.9% | 26.3% | 11.5% | 53.4% | 41.9% | 26.5% |
| 50,001-100,000 THB | Count | 8,177 | 19,148 | 1,159 | 9,434 | 8,068 | 26,869 |
| | % | 7.9% | 3.9% | 13.8% | 18.2% | 7.7% | 5.4% |
| 100,001-500,000 THB | Count | 3,105 | 9,549 | 4,913 | 10,732 | 7,492 | 21,012 |
| | % | 3.0% | 1.9% | 58.5% | 20.7% | 7.2% | 4.2% |
| 500,001-1,000,000 THB | Count | 89 | 363 | 818 | 1,435 | 981 | 2,126 |
| | % | .1% | .1% | 9.7% | 2.8% | .9% | .4% |
| More than 1,000,000 THB | Count | 17 | 122 | 492 | 810 | 522 | 1,092 |
| | % | .0% | .0% | 5.9% | 1.6% | .5% | .2% |
| **Total** | Count | 103,921 | 490,302 | 8,395 | 51,782 | 104,474 | 497,265 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.27: Average medical expenditure by medical tourists and Thai private patients

| | **Type of patient** | **Mean** | **N** | **Std. Deviation** | **Minimum** | **Maximum** | **Median** |
|---|---|---|---|---|---|---|---|
| OP expense | Medical tourists | 24,519.73 | 103,921 | 45,127.13 | 0 | 3,186,743 | 12,853.00 |
| | Thai patients | 15,276.39 | 490,302 | 62,837.61 | 0 | 29,091,814 | 4,876.00 |
| IP expense | Medical tourists | 353,462.21 | 8,395 | 752,515.02 | 0 | 20,327,593 | 188,007.00 |
| | Thai patients | 120,875.70 | 51,782 | 337,739.59 | 0 | 15,845,296 | 40,801.90 |
| Total expense | Medical tourists | 50,410.27 | 104,474 | 216,325.90 | 0 | 17,218,794 | 15,519.00 |
| | Thai patients | 27,649.71 | 497,265 | 137,233.32 | 0 | 29,091,814 | 5,552.45 |

Table 5.28: Total revenue by type of patient in the five hospitals in 2010

| **Type of patients** | **Number of patients** | **Total revenue** | **%** |
|---|---|---|---|
| Thai | 497,265 | 13,749,231,765.78 | 53.44 |
| Medical tourists | 104,474 | 5,266,562,054.95 | 20.47 |
| Expatriates | 73,976 | 3,509,505,659.19 | 13.64 |
| Sick foreign travellers | 57,626 | 3,201,036,218.36 | 12.44 |
| Total | 733,341 | 25,726,335,698.00 | 100.0 |

*2. Gender comparison*

*2.1 Out-patient (OP) expense*

There was similar pattern in OP expenditure between men and women among medical tourists and Thai patients (Table 5.29). The largest group of male and female medical tourists paid between 10,000-50,000 THB, while the largest group of Thai patients paid less than 5,000 THB (Table 5.29). Average OP expenditure of female medical tourists was slightly higher than that of male medical tourists – approximately 25,490 THB and 23,820 THB respectively (Table 5.30). Average OP expense of female and male Thai patients was a comparatively similar amount – approximately 15,280 THB and 15,180 THB respectively (Table 5.34).

*2.2 In-patient (IP) expense*

There was more difference between male and female spending on IP expenses than on OP expenses. Most male and female medical tourists paid between 100,000 and 500,000 THB, while most Thai patients paid between 10,000 and 50,000 THB (Table 5.29). Male patients in both medical tourist and Thai groups spent more than female patients in regards to services required and longer stays in hospital. Average IP expenditure of male medical tourists was 387,100 THB - 20% greater than that of females (Table 5.30). The average IP expenditure of male Thai patients was 141,440 THB – approximately 30% greater than that of females (Table 5.30).

Table 5.29: Medical expenditure by medical tourists and Thai private patients by gender

| | | | Medical tourists | | Thai private patients | |
|---|---|---|---|---|---|---|
| | | | Male | Female | Male | Female |
| OP expenditure | Less than 5,000 THB | Count | 19,008 | 13,267 | 102,205 | 146,642 |
| | | % | 31.6% | 30.4% | 52.1% | 49.9% |
| | 5,001-10,000 THB | Count | 8,425 | 6,170 | 32,448 | 50,623 |
| | | % | 14.0% | 14.1% | 16.5% | 17.2% |
| | 10,001-50,000 THB | Count | 26,621 | 19,024 | 49,756 | 79,199 |
| | | % | 44.2% | 43.6% | 25.4% | 26.9% |
| | 50,001-100,000 THB | Count | 4,428 | 3,749 | 7,571 | 11,543 |
| | | % | 7.4% | 8.6% | 3.9% | 3.9% |
| | 100,001-500,000 THB | Count | 1,693 | 1,410 | 3,900 | 5,629 |
| | | % | 2.8% | 3.2% | 2.0% | 1.9% |
| | 500,001-1,000,000 THB | Count | 47 | 42 | 150 | 208 |
| | | % | 0.1% | 0.1% | 0.1% | 0.1% |
| | More than 1,000,000 | Count | 8 | 9 | 50 | 70 |
| | THB | % | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | Count | 60,230 | 43,671 | 196,080 | 293,914 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |
| IP expenditure | Less than 5,000 THB | Count | 16 | 13 | 129 | 237 |
| | | % | 0.4% | 0.3% | 0.6% | 0.8% |
| | 5,001-10,000 THB | Count | 8 | 12 | 561 | 798 |
| | | % | 0.2% | 0.3% | 2.7% | 2.6% |
| | 10,001-50,000 THB | Count | 581 | 383 | 11,000 | 16,644 |
| | | % | 13.6% | 9.3% | 53.2% | 53.5% |
| | 50,001-100,000 THB | Count | 657 | 502 | 3,683 | 5,751 |
| | | % | 15.4% | 12.1% | 17.8% | 18.5% |
| | 100,001-500,000 THB | Count | 2,186 | 2,726 | 4,106 | 6,622 |
| | | % | 51.3% | 66.0% | 19.9% | 21.3% |
| | 500,001-1,000,000 THB | Count | 479 | 339 | 742 | 693 |
| | | % | 11.2% | 8.2% | 3.6% | 2.2% |
| | More than 1,000,000 | Count | 334 | 158 | 459 | 351 |
| | THB | % | 7.8% | 3.8% | 2.2% | 1.1% |
| | Total | Count | 4,261 | 4,133 | 20,680 | 31,096 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.30: Average medical expenditure by medical tourists and Thai private patients, by gender

| | Gender | Type of patient | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|---|
| OP expenditure | Medical tourist | Male | 23,815.58 | 60,230 | 43,380.07 | - | 3,027,182 | 12,700.00 |
| | | Female | 25,489.83 | 43,671 | 47,412.97 | - | 3,186,743 | 13,237.00 |
| | Thai patients | Male | 15,184.17 | 196,080 | 82,538.12 | - | 29,091,814 | 4,602.90 |
| | | Female | 15,283.70 | 293,914 | 43,399.89 | - | 4,353,816 | 5,025.00 |
| IP expenditure | Medical tourist | Male | 387,096.51 | 4,261 | 783,418.38 | - | 17,192,393.80 | 177,939.73 |
| | | Female | 318,846.77 | 4,133 | 717,799.99 | - | 20,327,593.30 | 193,033.00 |
| | Thai patients | Male | 141,439.02 | 20,680 | 388,737.02 | - | 9,402,831.00 | 40,520.03 |
| | | Female | 107,203.23 | 31,096 | 298,305.97 | - | 15,845,295.95 | 40,953.50 |

### *3. Age group comparison*

#### *3.1 Out-patient (OP) expense*

Table 5.31 shows that the older patients were, the more they paid. The average OP expense of patients aged under 25 in both medical tourist and Thai patient categories was approximately 10,000 THB per patient (Table 5.31). OP expenditure increased to 35,000 THB per patient among those aged over 65. The expenditure of medical tourists was higher than Thai patients in every age group. However, expenditure in both groups became closer in patients over 65 (Table 5.32).

#### *3.2 In-patient (IP) expense*

The distribution of IP expenditure among age groups was fairly similar in medical tourists and Thai patients (Table 5.33). Table 5.33 shows that the older patients were, the more they paid, as with OP expenditure. The range of medical tourist IP expenditures was between 231,500 THB in patients under 25 and 610,620 THB in patients over 65 – approximately 2.6 times more (Table 5.34). IP expense in Thai patients was much lower than that of medical tourists but covered a greater range. The lowest average expense was 54,620 THB in patients under 25, while the highest was 272,700 THB in patients over 65 – approximately 5 times more (Table 5.34).

Thai patients had greater cost flexibility than medical tourists, as they generally had less serious diseases requiring less intensive care.

In terms of age group, the older patients were the more they paid in both OP and IP expenditure categories. Medical tourists spent more than Thai patients on OP services in every age group, but the average expenditure became closer in patients over 65. Medical tourists also spent more than Thai patients on IP services in every age group.

Table 5.31: Out-patient expenditure by medical tourists and Thai private patients, by age group

| | | Age group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Medical tourists | | | | | | Thai private patients | | | | | |
| | | Less than 25 | 25-34 | 35-44 | 45-54 | 55-64 | More than 65 | Less than 25 | 25-34 | 35-44 | 45-54 | 55-64 | More than 65 |
| Less than 5,000 THB | Count | 7,679 | 7,224 | 6,252 | 5,142 | 3,716 | 2,261 | 63,354 | 69,730 | 50,786 | 31,313 | 19,130 | 14,663 |
| | % | 50.5% | 36.7% | 27.6% | 23.7% | 23.9% | 25.0% | 56.8% | 60.3% | 51.3% | 43.7% | 38.9% | 33.8% |
| 5,001-10,000 THB | Count | 2,951 | 3,216 | 3,177 | 2,542 | 1,723 | 985 | 20,727 | 19,479 | 17,604 | 11,984 | 7,423 | 5,897 |
| | % | 19.4% | 16.3% | 14.0% | 11.7% | 11.1% | 10.9% | 18.6% | 16.8% | 17.8% | 16.7% | 15.1% | 13.6% |
| 10,001-50,000 THB | Count | 4,076 | 8,153 | 11,133 | 11,055 | 7,310 | 3,920 | 25,150 | 23,499 | 25,896 | 22,425 | 16,823 | 15,236 |
| | % | 26.8% | 41.4% | 49.1% | 50.9% | 47.1% | 43.4% | 22.6% | 20.3% | 26.2% | 31.3% | 34.2% | 35.1% |
| 50,001-100,000 THB | Count | 370 | 790 | 1,574 | 2,230 | 1,969 | 1,244 | 1,831 | 2,243 | 3,263 | 3,955 | 3,675 | 4,181 |
| | % | 2.4% | 4.0% | 6.9% | 10.3% | 12.7% | 13.8% | 1.6% | 1.9% | 3.3% | 5.5% | 7.5% | 9.6% |
| 100,001-500,000 THB | Count | 141 | 309 | 535 | 736 | 781 | 603 | 388 | 758 | 1,342 | 1,812 | 2,029 | 3,220 |
| | % | 0.9% | 1.6% | 2.4% | 3.4% | 5.0% | 6.7% | 0.3% | 0.7% | 1.4% | 2.5% | 4.1% | 7.4% |
| 500,001-1,000,000 THB | Count | 3 | 8 | 15 | 20 | 32 | 11 | 9 | 16 | 36 | 64 | 81 | 157 |
| | % | 0.0% | 0.0% | 0.1% | 0.1% | 0.2% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.2% | 0.4% |
| More than 1,000,000 THB | Count | - | 1 | 3 | 8 | 3 | 2 | 6 | 3 | 10 | 23 | 20 | 60 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% |
| Total | Count | 15,220 | 19,701 | 22,689 | 21,733 | 15,534 | 9,026 | 111,465 | 115,728 | 98,937 | 71,576 | 49,181 | 43,414 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.32: Average out-patient expenditure by medical tourists and Thai private patients, by age group

| | Age group | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|
| Medical tourists | Less than 25 | 11,463.55 | 15,220 | 23,363.51 | 0 | 837,708 | 4,911.00 |
| | 25-34 | 17,712.83 | 19,701 | 31,379.93 | 0 | 1,213,605 | 8,821.00 |
| | 35-44 | 24,045.73 | 22,689 | 42,246.48 | 0 | 3,186,743 | 15,300.00 |
| | 45-54 | 29,423.56 | 21,733 | 50,958.21 | 0 | 2,318,569 | 18,766.00 |
| | 55-64 | 33,399.01 | 15,534 | 57,976.64 | 0 | 3,027,182 | 20,479.50 |
| | More than 65 | 35,530.62 | 9,026 | 56,121.68 | 0 | 1,293,485 | 20,218.90 |
| | **Total** | **24,522.79** | **103,903** | **45,130.27** | **0** | **3,186,743** | **12,860.00** |
| Thai private patients | Less than 25 | 9,249.78 | 111,465 | 92,323.16 | 0 | 29,091,814 | 3,908.00 |
| | 25-34 | 9,276.31 | 115,728 | 22,520.82 | 0 | 2,658,768 | 3,465.05 |
| | 35-44 | 13,192.72 | 98,937 | 32,595.12 | 0 | 2,405,099 | 4,781.20 |
| | 45-54 | 18,741.78 | 71,576 | 49,484.93 | 0 | 3,732,679 | 6,487.00 |
| | 55-64 | 24,170.72 | 49,181 | 56,295.01 | 0 | 2,251,681 | 8,376.00 |
| | More than 65 | 35,703.70 | 43,414 | 102,876.85 | 0 | 7,418,924 | 11,279.31 |
| | **Total** | **15,276.42** | **490,301** | **62,837.67** | **0** | **29,091,814** | **4,876.00** |

Table 5.33: In-patient expenditure by medical tourists and Thai private patients, by age group

| | | Age group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Medical tourists | | | | | | Thai private patients | | | | | |
| | | Less than 25 | 25-34 | 35-44 | 45-54 | 55-64 | More than 65 | Less than 25 | 25-34 | 35-44 | 45-54 | 55-64 | More than 65 |
| Less than 5,000 THB | Count | 17 | 4 | - | 6 | 1 | 1 | 106 | 72 | 60 | 40 | 38 | 50 |
| | % | 1.6% | 0.3% | 0.0% | 0.4% | 0.1% | 0.1% | 0.7% | 0.8% | 0.8% | 0.6% | 0.7% | 0.6% |
| 5,001-10,000 THB | Count | 7 | 3 | 2 | 2 | 5 | 1 | 786 | 209 | 139 | 93 | 69 | 63 |
| | % | 0.6% | 0.2% | 0.1% | 0.1% | 0.3% | 0.1% | 5.2% | 2.3% | 1.8% | 1.5% | 1.3% | 0.7% |
| 10,001-50,000 THB | Count | 244 | 129 | 144 | 170 | 147 | 130 | 10,479 | 5,105 | 3,995 | 2,978 | 2,274 | 2,815 |
| | % | 22.4% | 10.3% | 10.4% | 10.5% | 9.6% | 8.6% | 69.6% | 56.3% | 50.8% | 48.2% | 43.9% | 33.3% |
| 50,001-100,000 THB | Count | 212 | 179 | 214 | 243 | 165 | 146 | 2,308 | 1,790 | 1,608 | 1,210 | 966 | 1,552 |
| | % | 19.4% | 14.3% | 15.5% | 15.0% | 10.7% | 9.7% | 15.3% | 19.8% | 20.5% | 19.6% | 18.6% | 18.4% |
| 100,001-500,000 THB | Count | 536 | 879 | 905 | 957 | 883 | 753 | 1,244 | 1,797 | 1,903 | 1,561 | 1,428 | 2,799 |
| | % | 49.2% | 70.0% | 65.5% | 59.1% | 57.5% | 49.8% | 8.3% | 19.8% | 24.2% | 25.3% | 27.5% | 33.2% |
| 500,001-1,000,000 THB | Count | 42 | 46 | 94 | 162 | 221 | 253 | 88 | 60 | 109 | 196 | 287 | 695 |
| | % | 3.9% | 3.7% | 6.8% | 10.0% | 14.4% | 16.7% | 0.6% | 0.7% | 1.4% | 3.2% | 5.5% | 8.2% |
| More than 1,000,000 THB | Count | 32 | 16 | 23 | 80 | 114 | 227 | 48 | 30 | 44 | 98 | 122 | 468 |
| | % | 2.9% | 1.3% | 1.7% | 4.9% | 7.4% | 15.0% | 0.3% | 0.3% | 0.6% | 1.6% | 2.4% | 5.5% |
| **Total** | **Count** | **1,090** | **1,256** | **1,382** | **1,620** | **1,536** | **1,511** | **15,059** | **9,063** | **7,858** | **6,176** | **5,184** | **8,442** |
| | **%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** | **100.0%** |

Table 5.34: Average in-patient expenditure by medical tourists and Thai private patients, by age group

| Age group | Type of patient | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|
| Medical tourists | Less than 25 | 231,458.86 | 1,090 | 636,720.53 | 0 | 13,150,029.70 | 118,630.75 |
| | 25-34 | 207,892.77 | 1,256 | 299,546.94 | 0 | 6,228,379.00 | 166,274.50 |
| | 35-44 | 238,244.93 | 1,382 | 324,344.53 | 5,667.00 | 5,908,664.00 | 173,894.50 |
| | 45-54 | 339,636.45 | 1,620 | 638,379.36 | 0 | 9,365,116.00 | 190,623.50 |
| | 55-64 | 424,344.08 | 1,536 | 840,533.44 | 608.00 | 16,735,084.24 | 220,111.00 |
| | More than 65 | 610,624.57 | 1,511 | 1,190,626.04 | 0 | 20,327,593.30 | 293,849.60 |
| | **Total** | 353,462.21 | 8,395 | 752,515.02 | 608.00 | 20,327,593.30 | 188,007.00 |
| Thai patients | Less than 25 | 54,625.20 | 15,059 | 167,238.59 | 0 | 6,750,146.59 | 27,646.00 |
| | 25-34 | 74,540.28 | 9,063 | 138,041.28 | 0 | 4,223,883.31 | 38,745.70 |
| | 35-44 | 95,534.21 | 7,858 | 252,563.00 | 0 | 10,810,010.50 | 44,917.67 |
| | 45-54 | 135,067.23 | 6,176 | 331,416.04 | 0 | 8,432,491.02 | 49,456.97 |
| | 55-64 | 168,596.43 | 5,184 | 368,867.82 | 0 | 8,469,350.00 | 57,598.64 |
| | More than 65 | 272,700.68 | 8,442 | 608,925.24 | 0 | 15,845,295.95 | 88,339.34 |
| | **Total** | 120,875.70 | 51,782 | 337,739.59 | 0 | 15,845,295.95 | 40,801.90 |

*4. Statistical analysis*

A two independent sample T-test was employed to test whether there was any difference in average OP and IP expenditures between medical tourists and Thai private patients. The null hypothesis was that there was no difference between the two groups. There was a considerable significant difference (p value < 0.0001) in both OP and IP expenditures between medical tourists and Thai patients (Table 5.35).

In order to test for differences in expenditure according to the gender of medical tourists, a two independent sample T-test was also employed. The null hypothesis was that there is no difference in expenditure between genders of medical tourists. A considerable significant difference (p value < 0.0001) was found in both OP and IP expenditure between the genders of medical tourists (Table 5.36).

Table 5.35: Comparison of medical expenditure by medical tourists and Thai private patients

| | | **Means** | **N** | **95% CI** | | **p value** |
|---|---|---|---|---|---|---|
| | | | | Lower | Upper | |
| Total OP expenditure | Medical tourists | 24,519.73 | 103,921 | 8,840.95 | 9,645.72 | < 0.0001 |
| | Thai private patients | 15,276.39 | 490,302 | | | |
| Total IP expenditure | Medical tourists | 353,462.21 | 8,395 | 222,880.50 | 242,292.52 | < 0.0001 |
| | Thai private patients | 120,875.70 | 51,782 | | | |

Table 5.36: Comparison of medical expenditure by medical tourists, by gender

| | | **Means** | **N** | **95% CI** | | **p value** |
|---|---|---|---|---|---|---|
| | | | | Lower | Upper | |
| Total OP expense | Male | 23,815.58 | 60,230 | -2,230.05 | -1,118.45 | < 0.0001 |
| | Female | 25,489.83 | 43,671 | | | |
| Total IP expense | Male | 387,096.51 | 4,261 | 36,074.34 | 100,425.13 | < 0.0001 |
| | Female | 318,846.77 | 4,133 | | | |

*5.4.2 Medical expenditure: Regional comparison*

*1. Overall picture*

This section demonstrates a comparison of medical expenditure between two categories of region. The first group comprises long-haul regions, including Europe, North America, Australia and Oceania. The second group comprises within-region countries, including those in Southeast Asia, South Asia, East Asia and the Middle East.

*1.1 Out-patient (OP) expenditure*

Medical tourists from within region tended to spend more than those from long-haul regions. Almost 50% of within-region patients spent between 10,000-50,000 THB on OP expenses, while 44% of long-haul patients spent less than 5,000 THB (Table 5.37). Average OP expenditure of within-region patients was 25,380 THB, while long-haul patients spent 20,690 THB (Table 5.38).

*1.2 In-patient (IP) expenditure*

Table 5.37 shows that the pattern of IP expenditure between patients from long-haul and within-region was comparatively similar. However, patients from within-region spent more than those from long-haul regions as their hospital stays were typically longer, as described in the previous chapter. Average IP expenditures in patients from within-region and long-haul regions were 396,740 THB and 277,360 THB respectively (Table 5.38).

Table 5.37: Medical expenditure of medical tourists, by regions

| | | OP expenditure | | IP expenditure | |
|---|---|---|---|---|---|
| | | Long-haul | Within | Long-haul | Within |
| Less than 5,000 THB | Count | 11,848 | 19,028 | 15 | 12 |
| | % | 44.0% | 26.5% | .5% | .3% |
| 5,001-10,000 THB | Count | 3,701 | 10,272 | 8 | 11 |
| | % | 13.7% | 14.3% | .3% | .2% |
| 10,001-50,000 THB | Count | 8,919 | 34,376 | 343 | 581 |
| | % | 33.1% | 47.9% | 10.9% | 12.2% |
| 50,001-100,000 THB | Count | 1,637 | 5,981 | 392 | 701 |
| | % | 6.1% | 8.3% | 12.4% | 14.7% |
| 100,001-500,000 THB | Count | 807 | 2,034 | 2,021 | 2,609 |
| | % | 3.0% | 2.8% | 64.1% | 54.9% |
| 500,001-1,000,000 THB | Count | 20 | 58 | 272 | 483 |
| | % | .1% | .1% | 8.6% | 10.2% |
| More than 1,000,000 THB | Count | 7 | 8 | 100 | 357 |
| | % | .0% | .0% | 3.2% | 7.5% |
| **Total** | Count | 26,939 | 71,757 | 3,151 | 4,754 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.38: Average medical expenditure of medical tourists, by region

| | **Region** | **Mean** | **N** | **Std. Deviation** | **Minimum** | **Maximum** | **Median** |
|---|---|---|---|---|---|---|---|
| OP expense | Long-haul | 20,692.99 | 26,939 | 47,732.67 | 0 | 3,186,743 | 6,812.00 |
| | Within | 25,384.20 | 71,757 | 42,680.76 | 0 | 3,027,182 | 15,477.00 |
| IP expense | Long-haul | 277,363.50 | 3,151 | 392,236.57 | 0 | 8,07,5947 | 196,585.00 |
| | Within | 396,739.09 | 4,754 | 895,681.96 | 0 | 20,327,593 | 175,955.50 |

*2. Gender comparison*

*2.1 Out-patient (OP) expenditures*

Patterns of OP expenditure between male and female patients from long-haul and within-region were similar (Table 5.39). The average OP expenditures of male and female patients from long-haul regions were only slightly different – approximately 20,800 THB and 20,460 THB respectively (Table 5.40). The average expenditure of female patients from within-region was slightly higher than the average of male patients: approximately 26,570 THB and 24,450 THB respectively.

*2.2 In-patient (IP) expenditure*

Patterns of IP expenditure tended to differ more than those of OP expenditures between male and female patients. Most patients from both groups spent between 100,000-500,000 THB (Table 5.39), but in each group male patients spent more than female patients (Table 5.40).

In terms of gender, there was no difference in OP expenditures by male and female patients in either long-haul or within-region groups, but male patients spent more than female patients on IP services in both groups.

Table 5.39: Medical expenditure of medical tourists between regions, by gender

| | | **OP expense** | | | | **IP expense** | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Long-haul | | Within | | Long-haul | | Within | |
| | | Male | Female | Male | Female | Male | Female | Male | Female |
| Less than 5,000 THB | Count | 7,362 | 4,484 | 10,909 | 8,113 | 9 | 6 | 7 | 5 |
| | % | 43.0% | 45.7% | 27.2% | 25.7% | .7% | .3% | .3% | .2% |
| 5,001-10,000 THB | Count | 2,334 | 1,366 | 5,742 | 4,530 | 3 | 5 | 4 | 7 |
| | % | 13.6% | 13.9% | 14.3% | 14.3% | .2% | .3% | .2% | .3% |
| 10,001-50,000 THB | Count | 5,837 | 3,080 | 19,370 | 15,002 | 185 | 158 | 368 | 213 |
| | % | 34.1% | 31.4% | 48.3% | 47.5% | 13.4% | 8.9% | 14.2% | 9.8% |
| 50,001-100,000 THB | Count | 1,055 | 582 | 3,044 | 2,937 | 224 | 168 | 393 | 308 |
| | % | 6.2% | 5.9% | 7.6% | 9.3% | 16.2% | 9.5% | 15.2% | 14.2% |
| 100,001-500,000 THB | Count | 511 | 294 | 1,033 | 1,001 | 756 | 1,264 | 1,275 | 1,334 |
| | % | 3.0% | 3.0% | 2.6% | 3.2% | 54.8% | 71.4% | 49.2% | 61.6% |
| 500,001-1,000,000 THB | Count | 10 | 10 | 37 | 21 | 124 | 148 | 309 | 174 |
| | % | .1% | .1% | .1% | .1% | 9.0% | 8.4% | 11.9% | 8.0% |
| More than 1,000,000 THB | Count | 4 | 3 | 2 | 6 | 78 | 22 | 233 | 124 |
| | % | .0% | .0% | .0% | .0% | 5.7% | 1.2% | 9.0% | 5.7% |
| **Total** | Count | 17,113 | 9,819 | 40,137 | 31,610 | 1,379 | 1,771 | 2,589 | 2,165 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 5.40: Average medical expenditure of medical tourists between regions, by gender

| | **Region** | **Gender** | **Mean** | **N** | **Std. Deviation** | **Minimum** | **Maximum** | **Median** |
|---|---|---|---|---|---|---|---|---|
| OP expenditure | Long-haul | Male | 20,809.94 | 17,113 | 44,137.09 | 0 | 1,861,343 | 7,195.00 |
| | | Female | 20,465.37 | 9,819 | 53,399.02 | 0 | 3,186,743 | 6,224.00 |
| | Within | Male | 24,453.41 | 40,137 | 41,649.53 | 0 | 3,027,182 | 15,299.00 |
| | | Female | 26,569.64 | 31,610 | 43,932.53 | 0 | 2,318,569 | 16,304.50 |
| IP expenditure | Long-haul | Male | 305,285.47 | 1,379 | 496,211.10 | 0 | 8,075,947 | 170,131.00 |
| | | Female | 255,720.16 | 1,771 | 284,627.14 | 0 | 4,762,258 | 203,901.00 |
| | Within | Male | 427,182.97 | 2,589 | 905,941.29 | 0 | 17,192,394 | 178,516.70 |
| | | Female | 360,333.00 | 2,165 | 882,086.77 | 0 | 20,327,593 | 173,667.00 |

*3. Age group comparison*

Younger patients spent less than older patients on both OP and IP services (Table 5.41). Patients from within-region spent more than those from long-haul regions in all age groups.

Table 5.41: Medical expenditure of medical tourists between regions by age groups

| | Region | Age group | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|---|---|
| OP expense | Long-haul | Less than 25 | 6,941.75 | 2,824 | 15,534.46 | 0 | 276,457 | 2,740.00 |
| | | 25-34 | 11,966.52 | 4,220 | 28,413.33 | 0 | 876,611 | 4,032.50 |
| | | 35-44 | 20,191.48 | 5,397 | 55,641.67 | 0 | 3,186,743 | 7,398.35 |
| | | 45-54 | 25,537.44 | 6,177 | 56,532.11 | 0 | 1,861,343 | 11,160.00 |
| | | 55-64 | 27,189.68 | 5,438 | 47,787.08 | 0 | 1,299,511 | 11,716.00 |
| | | More than 65 | 25,263.58 | 2,878 | 49,804.18 | 0 | 1,293,485 | 8,457.00 |
| | Within | Less than 25 | 12,439.78 | 11,760 | 24,320.95 | 0 | 837,708 | 5,800.00 |
| | | 25-34 | 19,107.07 | 14,416 | 31,190.66 | 0 | 1,213,605 | 11,200.00 |
| | | 35-44 | 24,609.79 | 16,008 | 34,047.26 | 0 | 1,191,872 | 16,620.00 |
| | | 45-54 | 30,367.09 | 14,466 | 45,594.77 | 0 | 2,318,569 | 21,434.00 |
| | | 55-64 | 36,224.44 | 9,347 | 62,918.50 | 0 | 3,027,182 | 24,177.50 |
| | | More than 65 | 39,641.96 | 5,748 | 57,392.62 | 0 | 1,076,213 | 25,248.50 |
| IP expense | Long-haul | Less than 25 | 162,349.50 | 434 | 181,755.20 | 0 | 1,884,675 | 136,398.00 |
| | | 25-34 | 188,663.43 | 546 | 143,587.29 | 3,775 | 2,047,694 | 187,147.00 |
| | | 35-44 | 252,474.04 | 527 | 283,800.87 | 7,737 | 4,258,342 | 202,953.00 |
| | | 45-54 | 288,217.47 | 653 | 402,207.98 | 0 | 5,130,918 | 201,078.00 |
| | | 55-64 | 350,845.63 | 570 | 536,706.32 | 5,801 | 8,075,947 | 228,723.00 |
| | | More than 65 | 425,797.22 | 421 | 544,559.11 | 20,831 | 4,045,855 | 269,062.00 |
| | Within | Less than 25 | 246,993.98 | 595 | 567,556.07 | 0 | 7,352,828 | 110,614.00 |
| | | 25-34 | 222,178.31 | 647 | 390,172.60 | 0 | 6,228,379 | 150,964.00 |
| | | 35-44 | 220,008.46 | 760 | 289,052.17 | 5,667 | 3,475,997 | 146,609.50 |
| | | 45-54 | 373,625.74 | 875 | 768,717.57 | 0 | 9,365,116 | 178,635.00 |
| | | 55-64 | 462,984.98 | 872 | 989,243.86 | 608 | 16,735,084 | 211,411.50 |
| | | More than 65 | 694,064.68 | 1,005 | 1,390,495.27 | 0 | 20,327,593 | 313,817.00 |

*4. Statistical analysis*

A two independent sample T-tests were employed to test whether there is any difference in the average OP and IP expenditures of medical tourists from within-region and long-haul regions. The null hypothesis was that there would be no difference between the two groups. A considerable significant difference (p value <

0.0001) was found in both the OP and IP expenditures of medical tourists from within-region and long-haul regions (Table 5.42).

Table 5.42: Comparison of medical expenditures of medical tourists, by regions

| | | **Means** | **N** | **95% CI** | | **p value** |
|---|---|---|---|---|---|---|
| | | | | Lower | Upper | |
| Total OP expenditure | Within region | 25,384.20 | 71,757 | 4,461.61 | 5,720.98 | < 0.0001 |
| | Long-haul regions | 20,692.99 | 26,939 | | | |
| Total IP expenditure | Within region | 396,739.09 | 4,754 | 93,492.39 | 161,492.76 | < 0.0001 |
| | Long-haul regions | 277,363.50 | 3,151 | | | |

*5.5 Discussion and conclusion*

This section presents a summary of the research findings, a general discussion on various aspects of the expenditure of medical tourists, a discussion on the limitations of the data in the analysis, and a conclusion.

*1. Summary of research findings*

293 medical tourists participated in the survey. 68% of them were from within-region while 32% were from long-haul regions. They were administrative/managerial employers, agricultural workers and retired persons. Approximately 34% of them were visiting Thailand exclusively for medical purpose, 50% of them had other reasons for their visit, while 16% of them had subsequently added medical services to their visit. Around 40% of them were new patients, while 40% of them had visited Thailand for medical services on more than three previous occasions. Long-haul patients tended to be first-timers, while patients from within-region were repeat customers. Long-haul patients travelled with a medical service package, while patients from within-region had usually organised their medical services themselves. Long-haul patients tended to spend more time in Thailand than those from within-region: approximately 12 and 8.9 days, respectively. Almost 50% of patients travelled alone. Participants from within-region tended to have more companions than those from long-haul regions.

Medical tourists and their companions spent more on tourism than non-medical tourists: average tourism expenditure was 82,520 THB, 80,350 THB and 31,970 THB, respectively. Non-medical tourists from long-haul regions spent more on tourism than those from within-region: 43,240 THB and 24,920 THB, respectively. In contrast, medical tourists and companions from long-haul regions tended to spend less on tourism than those from within-region. Average tourism expenditures of medical tourists from long-haul and within-region were 64,280 THB and 90,950 THB respectively, while one of companions from long-haul and within region are 71,620 THB and 83,980 THB respectively. Male patients tend to spend more on

tourism than female patients. However, gender doesn't affect the spending pattern of non-medical tourists.

The profile of tourism spending, including the elements of local transport, accommodation, food and drink, sight-seeing, shopping, entertainment and other expenses were analysed. In terms of tourism spending per day of visit, medical tourists and their companions spent more than non-medical tourists, the averages being 8,440 THB and 4,190 THB, respectively. Companions of medical tourists spent slightly more than the medical tourists themselves – an average of 9,080 THB. Accommodation, food and drink and shopping were the categories accounting for the most expenditure among all three groups. Non-medical tourists, medical tourists and companions from within the region tended to spend more than those from long-haul regions in all tourism categories except accommodation. Long-haul patients and their companions spent more on accommodation. Male medical tourists spent more than female in all tourism categories except accommodation. Similarly to overall tourism expenditure, gender did not influence the tourism spending profiles of non-medical tourists.

Many factors influence per-day tourism expenditure, including the fact of being a medical tourist, gender, region of origin, age and income. Medical tourists, travellers from long-haul regions, female travellers and higher income travellers tended to spend more; however, the longer the stay, the lower the expenditure per day.

In terms of medical expenditure, medical tourists spent more than Thai private patients on both out-patient and in-patient services. The average OP expenditure of medical tourists and Thai private patients was 24,520 THB and 15,280 THB respectively. The average IP expenditure of medical tourists and Thai private patients was 353,460 THB and 120,880 THB, respectively. Male medical tourists and male Thai patients spent more on IP services than the women in these categories. In contrast, there was less difference in OP expenditure between medical tourists and Thai patients. Due to disease complexity, the older patients were the higher their expenditure on both OP and IP services. Medical tourists from within the region spent more on OP and IP services than those from long-haul regions. Similarly to the

picture among medical tourists generally, gender influenced only IP expenditure. Male patients from both long-haul and within-region areas spent more than female. Though medical tourists tended to spend more than Thais, domestic patients still generated more revenue in total: 13.7 billion THB in the five hospitals in the study; while medical tourists generated 5.2 billion THB.

## *2. General discussion*

This chapter demonstrates a distinct *typology* of the medical tourists in Thailand. Information from the patient survey shows that medical tourists who obtained medical services in Thailand differ in terms of the importance of medical care as their reason for travelling. Some had travelled to Thailand exclusively for medical services. This group would be called *"mere patients"* in Cohen's classification [145]. Some of them were *"mere tourists"* at the start of their travel, but subsequently added a healthcare element to their trip. Some fell between these two groups, having travelled to Thailand for a variety of purposes, medical treatment being just one of them. Findings from this study are supported by the study of Wongkit (2013) [146], which reported that 40% of medical tourists were initially hesitant, making decisions about medical treatment after arriving at their destination. This indicates a good opportunity for health providers to attract "*mere tourists",* a much larger group than medical tourists, to participate in health activities.

An analysis in the patient survey demonstrates that a *"medical tourist"* is not only an overseas patient seeking health services internationally, but also a real tourist. They display the same tourism behaviours as an ordinary international tourist. Moreover, they spend as much on tourism as on medical elements, an average of 82,520 THB and 78,100 THB, respectively. Concordant with findings from the previous chapter, 40% visited hospital for health check-ups, which implies that they were more or less healthy or have only non-complicated conditions. This implication is supported by the findings of the patient survey showing half of these patients, although travelling to obtain medical services, had other reasons for their visit besides medical care.

Approximately 40% of the medical tourists studied had been to Thailand for medical care on more than three previous occasions. This reflects a reasonable level of satisfaction with quality of services, together with competitive prices. A return visit from customers, particularly those from within-region, confirms high quality and an international standard of services. However, this information came from five leading private hospitals, all of whom were certified by JCI. Furthermore, it was found that patients from long-haul regions tended to be new customers. Long-haul patients prefer to use medical service packages, which usually comprise a single visit for non-complicated treatment, such as health check-ups or simple cosmetic surgery. Patients from within-region are able to travel more easily and they tend to have organised their trip themselves. They are also able to visit more frequently than those travelling longer distances.

An analysis of tourism expenditure shows that medical tourists behave like ordinary tourists, engaging in all tourism categories, particularly shopping and entertainment which are comparatively unusual activities for people who are ill. Moreover, they spend much more on tourism than non-medical tourists – approximately 2.6 times more. They may be more affluent, being able to afford medical services abroad. The study further found that half travelled with companions: an average of 2 companions per patient. These companions also spend on both medical and tourism elements in the same way as medical tourists, and this revenue adds substantially to the country's economy.

The study also found that non-medical tourists from long-haul regions spent more in terms of total tourism expenditure than those from within the region, as they tend to stay in Thailand for longer periods. However, an analysis of tourism spending profiles demonstrates that tourists from within the region spend more on tourism per day than those from long-haul regions. These findings would guide an alignment of market segmentation for non-medical tourists. Thus, it is possible for tourism policy maker to establish policies to increase the spending of tourists from long-haul regions, and to lengthen the stay in Thailand of tourists from within the region, in order to increase revenues.

The analysis of medical expenditure shows that medical tourists spend much more than Thai patients – 1.6 times greater on OP and 3 times greater on IP services. This is due to differences in types of disease, types of procedure and lengths of stay between medical tourists and Thai private patients. In terms of total revenue, however, Thai patients generate much more than medical tourists. Total revenues generated by Thai private patients and medical tourists in the five hospitals in 2010 were 13.7 billion THB and 5.2 billion THB, accounting for 0.12% and 0.04% of GDP respectively in 2010. The revenue from medical tourists of 5.2 billion THB is much lower than all the estimates of previous studies. NaRanong et al (2011) estimated medical revenue of around 46-52 billion THB [10]. The Ministry of Public Health estimated revenue from international patients in 2007 at around 33 billion THB, while Kasikorn Research Centre and the Ministry of Commerce estimated around 36 and 41 billion THB respectively [143]. All estimates are considerably greater than the real figure, since they were based on 1.5-2 million medical tourists. This exaggerated estimate of the numbers of medical tourists has been the only information available for academia and policy makers in Thailand, as described in the previous chapter. This rather fantastic amount of revenue has encouraged politicians and trade-related organisations to focus intensively on these overseas patients.

As medical tourists are non-homogeneous, their expenditure depends on their demography and the services they require. This study found that patients from within the region spent more than those from long-haul regions. Findings presented in the previous chapter show that patients from within the region tended to be visiting for treatment for more serious conditions. They needed comprehensive medical care of an acceptable quality which was not available in their country. Meanwhile patients from long-haul regions came for services which were either not covered by their national health insurance, or were too expensive to access in their home country. Male patients spent more than female, and older patients spent more than younger ones. In terms of gender and age, male patients and the elderly tended to have more complex conditions than female and younger patients. These findings will allow hospitals marketing to specific groups of patients to enhance their revenues.

## *3. Conclusion*

This chapter demonstrates how much revenue medical tourists generate for the Thai economy, by exploring their spending on both medical and tourism elements. The literature review uncovered very little literature presenting empirical evidence of these tourists' expenditure, even on its medical component. This chapter suggests that medical tourists behave as both patient and tourist. They spend much more on medical expenses per person than local Thais. They and their companions also spend much more on tourism than non-medical tourists: 82,520 THB per patient, and 80,350 THB per companion. Yet this study also found that there were fewer medical tourists than previously estimated. Several recommendations for policy makers are outlined below.

- Market segmentation

As medical tourists are non-homogeneous, representing different health needs depending on where they are from, policy makers should be more specific in their marketing strategies. Greater market segmentation will allow more targeted recruitment, focused on those medical tourists with the most potential to add value to the Thai economy.

Based on the results presented here, specific areas or patient groups are identified as areas of potential policy focus:

- Medical tourists are particularly lucrative tourists. While their expenditure on medical treatment is in some cases low, their real contribution is to the Thai economy through the revenue from their tourism activities, which is disproportionately higher than that of non-medical tourists. This overall finding means that focus should be on how to recruit tourists through a 'medical element', how to maximise their tourism expenditure, and ensure that any potential negative effects for the health system will be offset.

- Patients from within the region, in particularly those from the Middle East, are particularly lucrative.

- Services targeting male and older patients should be established to increase hospital revenues.

- The number of non-medical tourists travelling to Thailand is much greater than the number of medical tourists. However, results from this study suggest that some tourists decide on and engage in 'minor medical treatment' when they are already in Thailand. Therefore, to increase national revenue it would be worth targeting promoting medical services to tourists in Thailand. These tourists represent perhaps the largest and most easily accessible medical tourism market for Thailand.

# Chapter Six

## Impact of medical tourists on private hospitals and domestic private patients

# Chapter 6
# The impact of medical tourists on private hospitals and domestic private patients

The flourishing phenomenon of medical tourism has challenged the policy makers responsible for promoting Thai health services to other countries. They need to look at the impact this phenomenon may have on domestic resource utilisation and service provision for domestic patients. An increase of incoming medical tourists results in an increased demand for healthcare, in particular of patients looking for highly specialized care. This phenomenon is underpinned by an expansion of the middle classes in many developing countries, who can now afford services abroad [66]; and an increase in patients who are uninsured and uncovered in some specific (especially high-end) services by their national health insurance [6, 67].

The increased demand for healthcare arising from medical tourism may be met by four distinct routes: (i) utilising resources that would otherwise have been used to treat domestic public patients [147]; (ii) utilising resources that would otherwise have been used by domestic private patients; (iii) utilising spare capacity (in public or private sector); and/or (iv) specific foreign-built and operated facilities. Each has very different implications for the domestic health system and the domestic population. Utilizing a hospital's spare capacity would have a limited effect on domestic supply, while importation of resources, especially human resources for health, would similarly generate little effect on domestic supply although it might have a deleterious impact on source countries. Rather, from a receiving country perspective, it is especially important to consider whether additional resources used by medical tourists are transferred from the domestic public or private sector, and hence whether medical tourists displace care for domestic patients. It is therefore important to understand the mechanisms for the internal allocation of resources between foreign and local private patients.

This chapter aims to analyse the impact of medical tourists on the domestic health system, specifically private hospitals and domestic private patients. The key concern

is whether medical tourists displace domestic patients, both in the sense of competing for significant resources, and whether the benefits derived from the use of these resources return appropriately to the domestic health system. The first issue is therefore how resources required for medical tourists are obtained; spare capacity, allocation from private resources, domestic recruitment from public sources and importation from international sources. Although this covers all resources used for providing services, including buildings, beds, medical equipment, drugs, etc., human resources are of special concern, as they are almost entirely publicly produced and their utilisation for the treatment of medical tourists might be expected to have a significant impact on the treatment of public patients.

The second issue concerns where the revenues generated from medical tourists are allocated. They could be allocated to cover only the cost of care, subsidise care for local patients, be reinvested in the expansion of service capacity, be returned in some way to public services, paid as corporation tax for government revenue, or as income for shareholders. Understanding the allocation of revenue would assist in further understanding who gains from medical tourism.

The last issue is whether there is inequity in treatment between nationals and foreigners. Inequity might vary from offering a different treatment guideline, considered as a critical issue, to more minor differences, such as providing special food for medical tourists while they are hospitalised. Some differences will be appropriate, such as provision of translators, but others, it could be argued, generate either better or worse care: for example extensiveness of diagnostic tests, sufficient in-patient stay, or follow-up care.

Findings from all these issues are analysed in this chapter to generate an understanding of whether medical tourists are likely to have a beneficial or detrimental effect on the domestic health system, specifically the private sector, and establish who may stand to gain or lose from medical tourism.

## *6.1 Aim and specific research questions*

The aim of this chapter is to assess the impact of medical tourists versus domestic private patients on private hospitals. The specific research questions are:

1. Are medical tourists treated differently from domestic private patients –and if so why?
2. How are the resources required for medical tourists obtained?
3. How are the revenues from medical tourists allocated?

### *Results*

Interviews with 15 hospital executives, 12 doctors and 16 nurses in Bumrungrad International Hospital, Bangkok Hospital, Bangkok Pattaya Hospital and Bangkok Phuket Hospital were conducted between May-August 2012. Information from the interviews were analysed with a framework approach analysis, and the results are presented here.

## *6.2 Difference in service use between international and Thai patients*

### *6.2.1 Service provision between domestic and foreign patients*

There is no difference in critical aspects of care, such as medical treatment guidelines and choice of drugs, between foreign and local patients, but there are some differences in peripheral areas to enable care due to the "tourism" elements, such as translator and transfer services. However, this difference does not translate to a quality of care difference. Furthermore, foreign patients have to pay extra to cover these additional services.

All four hospitals have international service standards accredited by JCI. Standard practice guidelines of treatment are applied to all patients regardless of their status. All physicians and nurses participating in this study unanimously agreed that all

patients are treated within the standard medical guidelines. All guidelines are established by Thai specialist associations and they are also benchmarked against international standards.

> "We have the same guidelines for both groups (Thai and international patients). As the customer is our main business, we have to provide a uniform standard of service" (H4E3)

> "There is no difference. We apply the same guidelines to all patients. We just have to inform their diagnosis and treatment plan" (H4M2)

> "I've worked here for 13 years. I don't think to provide different services between Thai and overseas patients. We treat them with the same standards" (H1N1)

Though most diseases have a single treatment of choice, some have more than one. Furthermore, some operations have many operating approaches, such as exploratory laparotomy or endoscopic approaches, which have different resource requirements and hence a different price. In these cases, all available choices are explained to patients for their consideration. Treatments are chosen by patients regarding their ability to pay. This approach is employed in the case of both Thai and international patients.

> "We explain all available options of treatment to patients. Then patients have to choose depending on their budget. We also apply this approach to Thai patients" (H4M2)

> "Before starting a treatment, doctors will explain all the drug options to patients. Regarding their budget, patients and their relatives will choose the most appropriate option for them" (H3N1)

Despite the same standard guideline, in terms of time allocation, international patients tend to need more time from hospital staff compared with Thai patients. The first reason is due to language difference, which necessitates more time for communication. Most Thai physicians have comparatively good English, but there are often language issues associated with nursing and other staff. It is also much more time consuming to communicate with non-English speaking foreign patients. Thus all hospitals have translators to facilitate communication. The second reason is that international patients tend to be given a more in-depth consultation. Western culture and higher education often seems to increase the demand for physicians and nurses to provide more information on their disease and treatment plan to overseas patients [10]. Some overseas patients sought second opinions from their home country where they were treated before, or from other countries, before visiting Thai hospitals. They therefore came with some experience of treatment and some information about their problems.

> "It's no problem if patients can speak English. However, if they need translators, it would take more time" (H2M1)

> "This is a difficulty. Due to a different language, we talked through translators. It took 2-3 times the usual time" (H3M2)

> "Medical tourists spent much more time with doctors. We have to accept this as they travelled in order to receive information and services. Then they will talk with our doctors for a long time" (H2H1)

In terms of medical services, overseas patients and Thai patients are entitled to be provided with the same services. In actuality, they obtained the same standards of clinical practice guidelines, the same treatment, the same operations and the same choice of drugs. However, they needed a different allocation of a physician's time. Overseas patients needed more time for consultation and communication than Thai

patients. However, there is no evidence that spending a longer time with patients had any effect on quality of care or health outcomes compared to Thais.

Apart from direct medical services, there are some differences in the peripheral services provided to Thai and international patients. Overseas patients obtain some privileges from private hospitals, such as special transfer services and special food. These extra services aim to facilitate and to accommodate the patients' cultures during their stay in a Thai hospital. These services are described below.

- *Translator*

Many overseas patients are from non-English speaking countries. To mitigate difficulty in communication, all hospitals have translators. Most are recruited from a variety of nationals who also speak English. Translators have an important role in facilitating communication between patients and hospital staff. Moreover, native translators often make patients feel more at ease and comfortable in an unfamiliar environment. Some hospitals have more than 100 translators covering more than 10 different languages. However, with the growing level of overseas customers, some hospitals felt that this number was still inadequate. A limited number of translators cannot meet all patients' needs at the same time. Sometimes, medical consultation and medical treatment was delayed as there was no translator available: doctors and patients had to wait. In these cases, a tele-translator might be used. The hospital translator centre provided a pool of translators as a 24-hour service; doctors and patients could communicate with these translators via video-camera in real time. This reduced the need for a translator to be actually present during treatment. However, some patients still preferred an actual translator to be present rather than talking to them via video-camera.

> "We have over 100 interpreters and about 10 different languages and the numbers are proportionate to the number of specific groups like the single biggest groups is Arabic because we have a lot of patients speak Arabic, we also have many Burmese and Cambodian, Vietnamese and Chinese interpreter" (H1E2)

> "If we have more understanding in their culture, they feel more comfort to come. In Arabic patients, when they see our staff being like them, speaking the same language with them. They feel like their friends. Then, they prefer to come" (H3E4)

- *Transfer services*

Bangkok Pattaya and Bangkok Phuket hospitals provided a special service to transfer overseas patients from airport and hotel to hospital. Most medical tourists had advance hospital appointments. Hospitals arranged transfer services if patients requested them, but the service was not offered to expatriates or Thai patients.

> "We have transfer service for medical tourists from airport or hotel to our hospital. This is a free service ……. this is a value added to our service. We serve them from hotel to hospital every day until they finish their treatment" (H4M2)

- *Special food*

All hospitals provided special food menus to accommodate patients' cultures: for example, Islamic food or Myanmar food, etc.

> "We serve different menu of food. We feel uncomfortable when we are in an unfamiliar environment. We would like to ease our patients" (H2E1)

Some differences in services, particularly the provision of a special translator, sometimes created unfavourable perceptions in Thai patients. Clinicians reported that some Thai patients thought that overseas patients received more privileges, as hospitals provided special staff to escort foreigners. They also felt that physicians and nurses spent more time on foreigners.

> "Sometimes, it looks like we serve foreigners with better services. Having translator looks like we provide them a personal escort. Actually, we equally serve both Thai and international patients but we can communicate easily with Thais" (H4E2)

> "Some Thai patients thought that we take more care on international patients. We have some difficulties in communication. It took time for understanding while we can easily communication" (H3N4)

In summary, it was apparent that overseas and Thai patients were receiving the same clinical practice guidelines of treatment. They received the same drugs, the same investigations and the same operations. In the case of more options in treatment, customers were given information to allow them to choose the best option, depending on their ability to pay, regardless of whether they were foreigners or not. Overseas patients, particularly from non-English speaking countries, tended to spend more time with the physician. Moreover, some special services were provided for overseas patients, such as translators, insurance coordinators and transfer services.

### *6.2.2 Price*

There were two types of pricing policy in the four hospitals – the same price for all, and different prices for Thai patients and medical tourists. Those hospitals employing the same pricing policy for all patients, regardless of their being Thais or foreigners, charged all patients the same price. However, in order for this to be the case, the costs occasioned by services specifically for international patients, such as translators, international insurance coordinators, e-business offices and others, were distributed across all patients, meaning that domestic patients had to subsidise foreign patients.

> "We don't discriminate among patients. Discrimination includes pricing system. We have the same price between Thai and overseas patients" (H1E1)

Alternatively, in hospitals using different pricing systems for foreign versus domestic patients, international patients paid more than Thai patients, as they were charged directly for the cost of the additional services they needed specifically because they were foreign. Thus, in these hospitals, there is no such subsidisation for foreign patients.

> "To do foreign affair, we need to have special team. Most are foreigners. They are also translators…….This results in additional cost. Second, we have additional cost arising from coordinating with international insurance regarding time different between regions. We have to add this additional cost to overseas expense" (H4E2)

All hospitals provided a service package with a single price for both Thai and overseas patients. This was a set of services including preliminary investigation (blood check, urinary check, x-rays and others), operations, drugs and follow-up service. A service package was always provided in elective procedures, such as dental and cosmetic procedures. Patients paid once and received all included services. This helped patients to estimate their expenses and reassured them that they would not have to pay any other additional charges. The service package was the same price for all patients – Thai and international.

> "International patients use the same package as Thais. In the past, we used to add in some items for foreigner price. Currently, we don't add as they would complain" (H2M1)

> "We told international patients about this package. They can come for follow-up without any additional expense" (H2N1)

*6.2.3 Resource allocation*

Chapter 5 shows that revenue from international patients was much higher than from Thais per capita. However, in terms of numbers of patients, Thai customers were a majority in all hospitals. Hospital executives consistently stated there was no discrimination in catering for their patients whether they are foreigners or Thais.

> "Our policy is no difference. We follow through our quality assurance system in catering all types of patient regardless being foreigner or not" (H4E1)

> "We cannot discriminate between Thais and foreigners. It's not at all. If we do that, we will lose our focus in our business. We have to see them as a patient. Each patient is the heart of our business" (H2E2)

Hospitals did not try to separate overseas customers into special departments. However, in practice some hospitals did have special separate units for foreigners for several reasons. Bumrungrad hospital and Bangkok hospital had a substantial number of patients from the Middle East and Japan. There was a separate special registration unit for them, in order to facilitate efficient management of translators. After registration, Middle Eastern and Japanese patients in Bumrungrad hospital had to visit a pool of physicians in the out-patient department, while Bangkok Hospital provided a special out-patient unit for internal medicine for both groups. They allocated physicians and nurses specifically to treat them in this department. Apart from effective resource management, another reason for a separate department was to accommodate patients' cultures. Patients from the Middle East preferred to live like a community, arriving with many companions, so hospitals arranged a separate area for them. However, there was no separate ward for other international patients in these two hospitals.

> "We try to separate special area for Middle East. We have one in out-patient unit in 10$^{th}$ floor. We separate between Thai and international customers in

order to facilitate a management of translators. However, we don't separate in in-patient department" (H1E1)

"We have separate building for international patients. There are three unit for Arabic, Japanese and international patients…….Patients are screened there. If they need to see doctor, they will be sent to another building. It looks like they have to have a first visit there" (H2N2)

For in-patient service, there were difficulties in allocating a specific ward to international patients. The small number of patients and the variety of their diseases made it too inefficient to manage.

"In the past, we used to separate international patients into the same ward. However, currently we don't do this as we met a lot of problems. We had variety of diseases so we cannot manage effectively. Nowadays, we separate wards depending on specific diseases instead" (H3E1)

In other departments serving both Thais and foreigners at the same time, all patients were allocated a physician specifically for their problem, regardless of nationality. First come first served was employed for both groups. This approach was also used for prioritising appointments with doctors for elective procedures, such as dental and cosmetic procedures. However, most medical tourists had planned their treatment for a long time. They usually made an appointment with doctors 2-6 months in advance. These advance appointments resulted in a nearly-fully occupied schedule in particularly popular slots where there were only a small number of specialists. Some doctors had a tight schedule for a year ahead. This might cause problems for walk-in Thai patients in accessing these specialists. For hospitalization, severity of disease and urgency of condition were the first priority: these were judged by physicians at out-patient and emergency departments.

> "We do not save or in favor for any group of patients. Just kind of first come first serve and the Thai patients are here in the country so they usually have easier access to make sure that they can get into the hospitals" (H1E2)

> "It's a first come first serve. We reserve for patients who book in advance. Most of them are medical tourists. They usually book 2-3 months in advance. Some cases may be 6 months" (H4M2)

> "Our capacity doesn't reach 100%. We don't have any favour for overseas patients. We admitted them as their condition at that moment. We still have spare capacity" (H4E1)

In summary, in terms of hospital policy, there was no discrimination in managing patients regardless of whether they were foreigners or Thais; foreign patients received the same critical aspects of medical care. In practice, however, they tended to take more time from doctors and nurses. Furthermore, they were provided with particular services relevant to the tourism element of their visit, for which they usually had to pay extra. These kinds of difference did not mean discrimination in quality of care compared to that given to Thais. However, long-term planning for treatment could limit the ability of Thai patients to access some specialists.

### *6.3 Resources for international patients*

#### *6.3.1 Infrastructures and medical devices*

An increase of customers and new medical technology were key contributing factors to the need for expansion of capacity in all the hospitals in the study. Some increased capacities were designed to serve both Thai and foreign patients; there was investment in new buildings to cater for increased demand from both. Bumrungrad Hospital had invested in their new in-patient building as they had encountered limited bed capacity due to a low bed-turnover rate; patients sometimes had to wait for a bed to become available.

> "Recently, we have 2,900-3,000 patients per day in out-patient department. We have very limited bed for new patients as we cannot rotate our old patients. Nowadays, our hospital looks like a university hospital. We have many patients waiting for their beds" (H1E1)

> "Yes, we built the building, we added bed and we are building extra capacity now. This entire floor; 12 floor will convert to inpatients bed" (H1E2)

In contrast, Bangkok, Bangkok Pattaya and Bangkok Phuket hospital still had spare bed capacity. One reason was that they were in the same company – Bangkok Dusit Medical Services Public Company Limited (BDMS), which had a policy on resource sharing for efficient utilisation. Some patients were sent for post-operative care and palliative care to other hospitals outside Bangkok.

> "We have around 70% of bed occupancy rate. In our peak period, all our beds are occupied but it lasts for a few days. An average is 70%" (H3E1)

> "We have special signal. The first level is when we have 80% of bed occupancy rate. The second level is 90%. The third level is all our space is occupied. We have to send patients to our network hospitals" (H2E2)

Some capacities have been expanded focusing only on overseas customers; for example, Bangkok Phuket hospital had been promoted as an aesthetic hub in the southern region of Thailand. Several years previously, a large number of medical tourists, particularly from Australia, began to visit this hospital for cosmetic surgery. The hospital used the revenue from this to build a new floor just for aesthetic services, focusing on serving medical tourists.

"Aesthetic and dental clinic are profitable unit for us. They create lots of revenue. We set up special floor for aesthetic clinic" (H4E3)

Furthermore, most hospitals aim to be a medical centre of excellence. It was therefore vital for them to keep up with new medical technology at the global level. For this reason, they invested in new, advanced medical equipment; some considered it a good opportunity for Thais to gain access to this world-class technology. However, some sophisticated devices tended to be used specifically for overseas customers: Bangkok Phuket invested in a device for endoscopic breast augmentation, a popular technique for overseas patients, but not available for Thais.

> "Our main aim doesn't specify on Thai. It focuses on medical technology and medical education. We had this technology for 4-5 year while no one else had. Currently, everyone have this so we have to seek the better one" (H2E1)

In summary, all hospitals had continuously expanded their capacity to cater for a growth in numbers of patients. Some capacities aimed to serve both Thai and overseas customers, while some extra capacity was targeted only at foreigners. Much advanced medical equipment was imported to increase service capability towards world-class technology. All expansions of capacity were funded by domestic investment from revenues from hospital operation.

### *6.3.2 Human resources for health*

The health system is labour intensive. At the heart of every health system, the health workforce is central [148]. It is one of the most finite resources. Health system performance depends on the knowledge, skill and motivation of the people responsible for delivery of services. This limited resource has been of the most concern when considering the increased number of international patients using the Thai health system.

Appropriate staff numbers and mix to meet patient demand are important issues for private hospitals to ensure quality of service and patient satisfaction. Effective human

resource planning is required. In essence, numbers of staff depend on numbers of patients, regardless of whether they are Thai or foreign. However, particular staff needed when treating foreign patients, such as translators and international insurance coordinators, are directly determined by numbers of international customers.

> "In principle, we plan on overall patients, not being Thai or international in origin. In each unit considered how much their patients increased and then plan for how much staffs they required" (H4E4)

> "We have our staffs that are not Thai. We have unit for management on international affair. We have foreigners to be our translators" (H3E4)

Serving international patients drives all hospitals to seek more qualified staff. Proficiency in English is a crucial qualification in the recruitment of new staff. Most Thai doctors have some problems, and most new graduate nurses have considerable difficulties, with English. Furthermore, hospitals require more staff to have bachelor-degrees to ensure at least a basic level of English. Many lower-skilled hospital staffs, such as ambulance drivers and concierges, have bachelor degrees. Higher qualification standards make it more difficult for hospitals to recruit personnel.

> "We have a problem in recruiting new staffs as we need more qualifications" (H2E4)

> "We recruited more bachelor degree staffs. We have bachelor-degree porters and drivers. We trained them for appropriate move for patient" (H3E4)

> "Not only international patients but also more advanced medical equipment makes us need more qualified staff. Our business is based on IT that needs higher skill" (H3E4)

*Sources of human resources for health*

- *Domestic sources*

Private hospitals require newly qualified staff every year. Table 6.1 and Table 6.2 show the number of physicians and nurses in the Bangkok Dusit Medical Services Company (BDMS). Bangkok, Bangkok Pattaya and Bangkok Phuket are part of this company, which includes 28 private hospitals in all parts of Thailand. The number of physicians and nurses in these hospitals has increased every year. The majority of hospital staffs, particularly physicians, are recruited from domestic sources. In 2012, there were 16 public medical schools and one private medical school in the country, producing around 2,500 new graduates and 2,000 specialists annually. All the specialists and more than 90% of new graduates are products of public medical schools. Government subsidizes the training costs of new doctors and specialists, and medical students pay very little for tuition fees. World-class private hospitals require high-calibre physicians who have practised in public hospitals for at least 10 years to gain the experience necessary to work in these hospitals.

An internal "brain drain" of health professionals, particularly of doctors, from public to private hospitals has been a problem for the Thai health system for a long time [39]. It creates an inequitable distribution of doctors between rural areas and Bangkok. In 2008, the difference of population per doctor ratio between Bangkok and the Northeast of the country, considered the poorest region, was around 5-fold; the population per doctor ratio in Bangkok and the Northeast is 955 and 5,028 respectively [17]. Private hospitals play a key role in large cities, particularly Bangkok. In 2008, 46% of bed capacity in Bangkok was in private hospitals and 32% of doctors in Bangkok work in private hospitals [17]. Recently, between 500-700 doctors resigned from hospitals in the Ministry of Public Health in a single year [17]. Most of them moved towards specialty training and went on to work in private hospitals. Though this problem is specifically at a public-private level, to some extent it is caused by the increase in demand from international patients.

Private hospitals also have part-time doctors who work for less than 40 hours a week. These doctors represent approximately 60-70% of the total doctors working in

hospitals (Table 6.1). Most of them also work in public hospitals, particularly medical schools: dual practice is allowed in Thailand and it is popular with physicians working in medical schools and tertiary hospitals in Bangkok and big cities. They work in private hospitals after 5 P.M. and over the weekend. They sometimes receive telephone-consultations from private cases during office-hours. There are fewer part-time nurses compared to doctors (Table 6.2).

Table 6.1: Number of physicians in BDMS

| | 2009 | 2010 | 2011 |
|---|---|---|---|
| Full-time | 303 | 321 | 345 |
| Part-time | 499 | 518 | 612 |
| Total | 802 | 839 | 957 |

Source: BDMS Annual report

Table 6.2: Number of nurses in BDMS

| | 2009 | 2010 | 2011 |
|---|---|---|---|
| Full-time | 594 | 589 | 787 |
| Part-time | 20 | 26 | 145 |
| Total | 614 | 615 | 932 |

Source: BDMS Annual report

To recruit new doctors, hospitals use both advertising through the media and personal invitation to doctors at other hospitals. To obtain new nurses, some hospitals recruit directly from the numbers of newly graduated nurses from universities and nursing schools.

> "We used many approaches. For domestic trained specialists, we used personal invitation. We sound out doctors in medical schools" (H3E2)

> "We have to recruit new nurses from all over the country" (H3N4)

- *Importation*

Some hospital staffs are recruited from international sources. Some Thai doctors in Bumrungrad and Bangkok hospital used to work abroad, and some of these moved back because they wanted to work at home.

> "Many of our Thai doctors, for example, already work in US and they came back. It is kind of reverse brain drain, because they can come back and work here it is very advance hospital setting so we do not have brain drain problem and we do not see AEC as a threat" (H1E2)

> "10% of our doctors have American-board and used to practice there. Next week, we will have one from Baltimore" (H2E2)

> "For abroad trained doctors, we advertised in our website. They contacted us and we had an interview. If they match with our hospital, we accept them" (H3E2)

There are some foreign doctors and nurses working in Bumrungrad and Bangkok hospital; however, they do not practice clinically. Regarding the regulations of the Thai Medical Council and Thai Nurse Council, all doctors and nurses who practise in Thailand have to pass a licensing examination in the Thai language. Not all of them have enough Thai proficiency to pass the examination, so they work as medical coordinators and nurse coordinators. These staffs help overseas patients set up appointment and treatment plans. They facilitate case management and coordination for international patients.

> "We also have other groups of doctors and nurses about 40-50, we call medical coordination and that includes international nurse from Australia and Arabic doctors in that team, Japanese doctor, Mongolian doctors and Vietnamese

doctor. They do not do practice clinical, they do case management and case coordination" (H1E2)

"So if you are international patients come for check-up you might not need to check up, you easily to do it yourself, but if you come for spine surgery or heart surgery. You need help setting up your appointment and treatment plan. We can't assume you are going to be in Thailand for 6 months. You might come in just a few days and get everything in that period of time so you need coordination and that is very efficient" (H1E2)

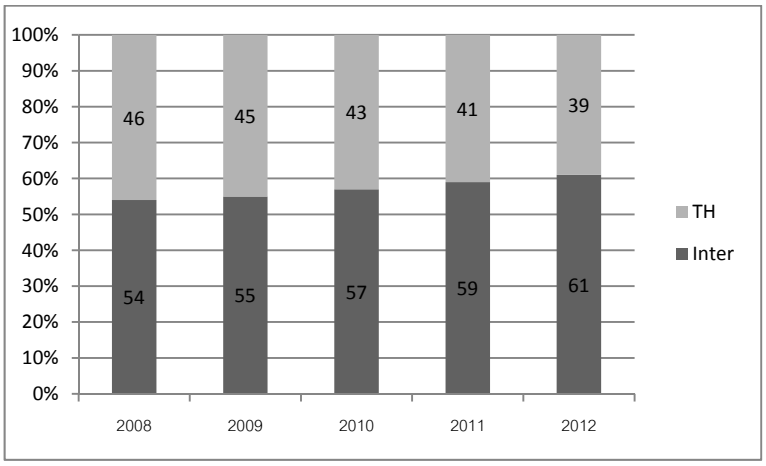
"We have foreigner staffs but they cannot pass Thai license. We hire them as physician coordinator and nurse coordinator. They help us a lot" (H2E4)

In summary, human resources for health are a very important part of hospital business. The public sector plays a key role in production: the main source of health personnel in private hospitals is from public hospitals. Highly skilled physicians are recruited directly from medical schools and tertiary hospitals; very few are recruited from western countries.

### *6.4 Revenue allocation*

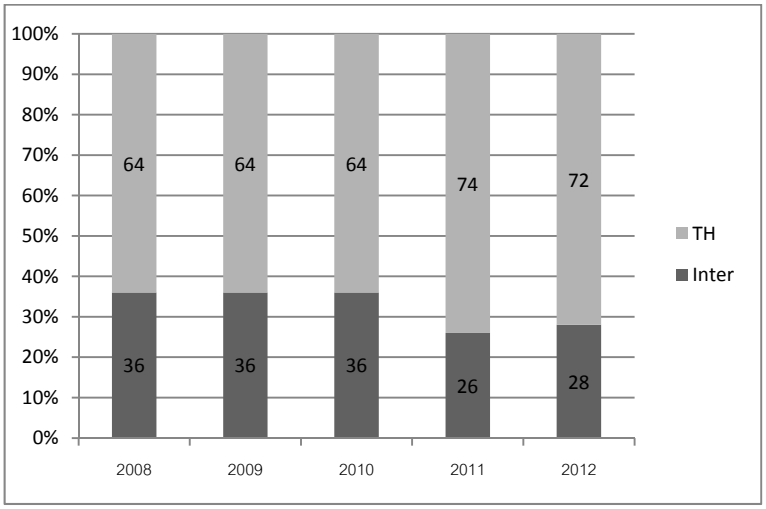
Thai patients predominate among patients in all hospitals except Bumrungrad Hospital, where the number of Thais is only slightly higher than that of foreigners: around 55% and 45% respectively. In terms of revenue, Bumrungrad Hospital gains more revenue from foreigners than Thais. Figure 6.1 shows that revenues from international patients in Bumrungrad hospital increased from 54% in 2008 to 61% in 2012. In contrast, private hospitals who are part of Bangkok Dusit Medical Services Company receive more revenue from Thai patients than from overseas patients (Figure 6.2).

Figure 6.1: Revenue contribution by nationality in Bumrungrad hospital




Source: Bumrungrad Hospital annual Report [149]

Figure 6.2: Revenue contribution by nationality in Bangkok Dusit Medical Service




Source: BDMS annual Report [150]

An analysis of total medical expenditure in Chapter 5 shows that on average medical tourist expenditure is higher than Thai: medical tourists spend more when they are hospitalized. Furthermore, some hospitals have a different pricing system and medical tourists pay more to receive extra services. Information from interviews with hospital executives substantiates this finding.

> "We have 70% of Thai patients and 30% of international patients. However, in term of revenue, 55% is from internationals patients while only 45% is from

Thais. Thus international customers are very important for us but we don't forget Thais" (H4E1)

"Currently, we got revenue from overseas patients around 40% and from Thais around 60%. International market has grown a lot. Though, majority of our customers are Thai, they don't expand as much as international group" (H2E3)

Disease patterns of international patients also differ from those of Thais, especially for those needing hospitalization. Some come with more serious conditions, such as cancer or orthopaedic problems, requiring operations and hospitalization. Thai patients usually present with less serious symptoms and less complicated conditions. Hence, average expenditure per patient for foreign patients is much greater than that for Thais.

"Expenditure from overseas patients is greater than Thai. They came with serious condition while they came with simple disease, just common cold" (H2E4)

"We don't charge them (Medical tourists) more than Thai. It is because of their severity of diseases. Medical tourist obtaining cosmetic surgery didn't pay less than 100,000 THB per patients. We didn't charge them a lot but there were many procedures" (H4E2)

In Bumrungrad hospital, revenue from hospital operations in 2011 was 11,015 million THB (Table 6.3) while in BDMS it was 35,224 million THB (Table 6.4). As mentioned above, this revenue is generated from both Thai and overseas customers. Approximately 60% of revenue is spent on hospital operations, including labour costs of physicians, nurses and other hospital staff, medical supplies and laboratory tests. 12-14% of this is spent on shareholder benefits. 5% of revenue is sent to government as corporate tax.

Table 6.3: Revenue and expenditure of Bumrungrad Hospital

| | | 2009 | | 2010 | | 2011 | |
|---|---|---|---|---|---|---|---|
| | | million THB | % | million THB | % | million THB | % |
| Income | Revenue | 9,068 | | 9,794 | | 11,015 | |
| Expenditure | Operating cost | 5,553 | 61.24 | 5,912 | 60.36 | 6,598 | 59.90 |
| | Administrative cost | 1,415 | 15.60 | 1,678 | 17.13 | 1,858 | 16.87 |
| | Shareholder | 1,245 | 13.73 | 1,258 | 12.84 | 1,588 | 14.42 |
| | Corporate tax | 444 | 4.90 | 507 | 5.18 | 506 | 4.59 |

Source: Bumrungrad Hospital annual Report

Table 6.4: Revenue and expenditure of Bangkok Dusit Medical Services (BDMS)

| | | 2009 | | 2010 | | 2011 | |
|---|---|---|---|---|---|---|---|
| | | million THB | % | million THB | % | million THB | % |
| Income | Revenue | 21,596 | | 23,512 | | 35,224 | |
| Expenditure | Operating cost | 12,593 | 58.31 | 15,350 | 65.29 | 23,675 | 67.21 |
| | Administrative cost | 4,275 | 19.80 | 5,356 | 22.78 | 7,224 | 20.51 |
| | Shareholder | 1,725 | 7.99 | 2,295 | 9.76 | 4,385 | 12.45 |
| | Corporate tax | 546 | 2.53 | 779 | 3.31 | 1,456 | 4.13 |

Source: BDMS annual Report

Total revenue generated from overseas patients is between 30-60%. Main expenses are operational costs, accounting for 60%. Revenue taken by government as corporate tax is approximately 5%. Essentially, revenues generated from Thais and foreigners are accumulated as revenues from hospital operations. It is relatively difficult to separate the specific element generated by serving foreigners; consequently, it is also difficult to identify exactly who benefits from these patients. Regarding information on proxy revenue allocation, the Thai government receives very little benefit directly from services to foreigners via corporate tax.

## *6.5 Discussion and conclusion*

This section presents a summary of research findings, a general discussion on the impact of medical tourists on private hospitals and domestic private patients from various aspects, a discussion on the limitations of data and analysis, and a conclusion.

### *1. Summary of research findings*

International and Thai patients were subject to the same clinical practice guidelines. They received the same choice of drugs, the same investigations and the same operations. International patients, particularly from non-English speaking countries, tended to spend more time with physicians. Some special services were provided for international patients, such as translators, insurance coordinators and transfer services. All hospitals asserted that there was no discrimination in the management of patients, whether international or Thai. However, in practice, there were some differences, for example a special registration area for international patients. However, these differences did not seem to affect the quality of treatment.

All hospitals, except Bumrungrad hospital, had a reserve bed-capacity to cope with any extra demand of patients. However, it seems that all the hospitals had continuously expanded their capacity, in order to cater for the growth of patients. Some capacities were expanded in order to serve both Thai and international customers, while some capacities were targeted specifically at foreigners. The majority of hospital staffs were recruited from domestic sources. Highly skilled physicians were recruited directly from medical schools and tertiary hospitals. Some Thai doctors had previously worked abroad. Some international doctors and nurses were working as medical and nurse coordinators.

## *2. General discussion*

There was no difference in critical aspects of care between international and Thai patients. They were treated within the same medical guidelines and offered the same procedures and choice of drugs. Additionally, however, in practice, international patients were offered peripheral services relating to the tourism component of their visit. Furthermore, they tended to need more time with doctors and nurses. One reason was the language difference; some patients needed a translator so that both parties could communicate in English; another reason for this was that international patients tended to ask more questions and tended to want a more interactive consultation. This finding supports the study of Na Ranong (2011) [10]. However, these differences did not lead to differences in quality of care.

A different pricing system in the four hospitals has many implications. The single pricing system ensures that all patients pay the same price. International patients prefer to know that they are not being charged more for being foreigners; however, Thai patients do not want to have to pay the same rate as international patients. Moreover, under this system, Thais have to subsidise the extra cost of services arising from the needs of international patients. However, price is not an issue for Thai customers in this world-class hospital. A different pricing system would generate other effects. This system creates inequity in price in a hospital. International patients may misunderstand why they are being charged more, while Thai patients would be more comfortable paying the Thai price. It is important in this system that international patients are seen to pay more in order to cover the cost of extra services, rather than for better treatment. According to the findings from Chapter 5, medical tourists spend more on medical services than Thais, particularly for hospitalization. The difference in services required for more serious conditions is one of the contributing factors to this, as is the hospital dual-pricing policy.

First-come, first-served was an approach employed in all hospitals to ensure equal access to services for all patients. This could be a problem in some fields of medicine, with scarce specialists in high demand from international patients, such as those providing dental and cosmetic treatment. International patients, particularly

medical tourists, usually plan their treatment at least 3-6 months in advance, while Thai patients usually make walk-in visits. Lots of advance appointments might displace access to services for Thais.

During the 1997 economic crisis, private hospitals had a lot of spare capacity, leading them to market themselves to new customers from overseas. However, after economic recovery, domestic demand increased, resulting in an increase in numbers of Thai patients in private hospitals. At the same time, the reputation of Thailand as a medical service destination has resulted in an influx of medical tourists; although as indicated earlier, to nowhere near the extent commonly assumed. A growth of both domestic and overseas customers has driven private hospitals to expand their capacity to serve this demand. At the time of study, Bumrungrad hospital had very limited reserve bed-capacity, as they operated as a single comprehensive hospital, while the other hospitals operated as a group and had some reserve bed-capacity, because they could transfer patients between hospitals within the group. Data from the MOPH supports the view that private hospitals have plenty of spare bed-capacity compared to public hospitals. In 2008, the bed-occupancy rate in private hospitals was 60% whereas the bed-occupancy rate in public hospitals under MOPH was 83%. This information substantiates the view that Thai private hospitals have capacity to serve more patients.

An influx of medical tourists in Thailand would therefore be unlikely to crowd out Thai private patients. Apart from plenty of spare capacity in private hospitals, the number of medical tourists is substantial smaller than the number of domestic private patients. Data from a private hospital survey by the Thai National Statistical Office demonstrated that there were approximately 46 million visits in all private hospitals in 2011 [30]. MOPH reported that there were approximately 136 million visits to all public hospitals in the same year [31]. Thus, it would be difficult for medical tourists to ‘distort’ the domestic private health system.

It is apparent that all hospitals obtain their resources, particularly human resources, from domestic sources. Most doctors are recruited from the public sector. Some part-time doctors are still working in medical schools and tertiary public hospitals.

However, there is a reverse brain drain of doctors from abroad, albeit a minor one. An internal brain drain of health personnel moving from public to private hospitals still remains. However, it is difficult to claim that this is because of a growth of medical tourists, as all providers still serve Thai patients who constitute the vast majority of patients.

An interesting finding which arose from interviews was that hospitals had a new strategy to mitigate the shortage of doctors and nurses by employing international professionals. According to strict regulation by the Thai profession council, they are not allowed engage in clinical practice, but they are often assigned to work as coordinators. They can combine their medical knowledge with language proficiency to facilitate the care of international patients. This is a good example of job transference. In 2015, ASEAN will be merged into one community; all people, including professionals, will be able to move more easily around the region. Information from interviews indicates Thai professionals would not move to work in other countries; however, professionals from other countries are likely to move into Thailand. This job transference is a good example of how they will be able to work in Thailand under Thai professional regulations.

## *3. Conclusion*

This chapter suggests that medical tourists do not displace domestic private patients in terms of competing for significant resources. This study had a chance to interview hospital executives, including directors, medical directors, marketing directors, human resource directors, medical doctors and nurses in four private hospitals. The key finding was that medical tourists would not displace Thai patients in private hospitals. They receive some difference in service but this does not relate directly to their medical treatment. Private hospitals have continued to expand their capacity to deal with an increase in demand, but most of this increase is of Thai patients, not international customers. However, this qualitative investigation was a smaller part of the overall study. The findings of different perceptions, for example by Thai patients and international patients, and the complexity involved in human resource

recruitment, points to the likelihood of benefits from further qualitative research in this area, which might affect resources in the public sector. Some recommendations for policy makers are as follows:

- Resource sharing between public and private is an important issue. Many private hospitals have reserve capacity in terms of beds and advanced medical equipment. At the same time, public hospitals, particularly university hospitals, always have crowded in-patient wards. It is possible for public hospitals to use these private resources. Government should have a clear policy enabling resource sharing among the two sectors to maximize the utilization of spare resources without recourse to filling beds with international patients.

- Private hospitals serving international patients should contribute to the training of physicians, at both undergraduate and speciality levels. Currently, the training of doctors in Thailand is mostly funded by public investment, and the main source of doctors in private hospitals is from the public sector. To compensate for taking public resources intended for local patients to serve private patients, some of whom are international patients, these hospitals should contribute to the funding of the training process, perhaps by the introduction of a tax, specifically for the training of doctors.

- An appropriate use of foreign professionals should be addressed to tackle shortages in the ASEAN community in 2015. There is a need to solicit a proper solution on how Thailand can derive maximum benefit from the use of foreign professionals, while still protecting the interests of Thais.

- As data on taxation and other redistributive arrangements by private hospitals is not publicly available it is hard to fully assess the costs and benefit of medical tourism to the public system. The Thai government should undertake a full evaluation of the medical tourism policy, which explicitly examines the cost of private medical facilities serving medical tourists to the public sector e. g. through the cost of human resources, and weigh this against the benefits received through taxation and tourism

income from medical tourists. The findings presented in this thesis mark an important step towards this, but the absence of data on hospital income and taxation mean they only represent a partial picture on net benefit to the health system

# Chapter Seven

## Discussion, limitations, conclusions and policy recommendations

# Chapter 7:
# Discussion, limitations, conclusions and policy recommendations

The phenomenon of the medical tourist has emerged over the last few decades. A new type of patient travels away from home to obtain healthcare in other countries. The term "*medical tourist*" is still difficult to define. Most literature focuses on the medical aspect. The absence of an agreed definition arises from an inadequate understanding about the actual nature of these people, but this has not stopped the medical tourism industry becoming increasingly important. Many countries, particularly developing countries in Asia, Eastern Europe and Latin America, try to position themselves as health service exporting countries. They target this niche market to earn foreign exchange to augment their economy. Meanwhile, there have been questions about the cost to the host country in serving these patients. Many arguments have been raised, such as the probability of an increased internal brain drain of skilled health personnel, the creation of a two-tier health system and an increase in healthcare costs for local patients. However, there has been little empirical evidence to elucidate this debate. Most literature remains based on speculation rather than empirical evidence.

This study aims to disentangle the issues above by seeking to empirically establish the impact of medical tourism on both the domestic economy and domestic private health system. It tries to provide recommendations on whether a country stands to gain or lose overall from investment in medical tourism, and to identify significant factors which may shift this balance to ensure that a country can move closer to a "net" benefit, by maximizing the opportunities and minimizing the risks. Two key research questions were undertaken. The first main research question concerned what medical tourists add to the economy in terms of medical and tourism elements, and whether these differ from the benefits brought by non-medical tourists. The second was what impact medical tourists have on the Thai health system, specifically private hospitals, and how this affects domestic private patients.

In order to answer key research questions, this study established a country case study. Thailand was purposively selected as it is a well-known medical tourist destination. Five leading private hospitals, being renowned in catering for international patients, were purposively selected. These five hospitals capture approximately 65% of the total number of international patients visiting Thailand. Three are located in the downtown area of Bangkok, and the other two are located in high-density tourist provinces in the eastern and southern regions of Thailand. This study focuses on medical tourists – defined as international patients who travel to Thailand specifically to obtain medical services. Expatriates and ordinary tourists who fall ill during travel are excluded from the study.

324,906 electronic medical records of medical tourists in five hospitals in 2010 were retrieved to identify their characteristics in terms of demography and service profiles, and also their medical expenditure. 1,922,574 electronic medical records of Thai private patients in five hospitals in 2010, and 28,013 records of non-medical tourists: ordinary international tourists, surveyed by MOST in 2010, were also retrieved to compare the differences, from a variety of aspects, to medical tourists. To assess the tourism expenditure of medical tourists, information which was not available from any other sources, 293 patients were interviewed, in order to investigate their tourism behaviours. In addition, 15 hospital executives and 28 service providers in four private hospitals were interviewed, to assess the possible implications for the Thai health system.

## *7.1 Discussion*

This section discusses the key research findings of this study. It starts with key findings of characteristics of medical tourists compared to non-medical tourists and domestic Thai patients, economic impact of medical tourists and their companions, and impact of medical tourists on domestic private patients and Thai health system.

### *7.1.1 Characteristics of medical tourists*

- *Majority of medical tourists in Thailand are likely to be opportunistic tourists*

This study demonstrates more understanding of who medical tourists are in Thailand. It is apparent that the majority are not patients who travel abroad for medical treatment entirely. Moreover, some of them do not initially identify themselves as a patient upon arrival in Thailand. An analysis of the characteristics of surveyed medical tourists in chapter 5 shows that only 34% of them are actual patients who seek medical services exclusively, while half of them come with other purposes combined with medical care, and 18% of them include medical care later when they are in Thailand. The study of Wongkit and McKercher (2013), surveyed in eight private hospitals in Thailand, also showed that 40% of foreign patients made their decision to have medical services after they arrived Thailand [146].

They tend to come for simple problems as out-patients. An analysis on the service required in Chapter 4 demonstrates that the largest group of them, approximately 34% male and 41% female patients, come for health check-up and medical consultation. This information shows that, for out-patient, they may not be an actual medical tourist, who actively seeks medical care for more serious and complicated conditions, but perhaps are more accurately termed *"opportunistic"* tourist who has dropped-in for non-urgent medical care. In contrast, for in-patient, they are likely to be a "genuine" medical tourist as their average medical expense for in-patient is much higher, approximately 3-fold that of Thais. This implies that they are admitted with more complicated diseases.

Most literature tries to define medical tourism under a health category, by focusing on patients' motivations for seeking care abroad, the procedures they have, and other issues related to healthcare [5]. However, in the case of Thailand, the majority of foreign patients who receive medical services are *"opportunistic"* tourists. They either initially include medical services as only one of the purposes of their trip, or include them later after their arrival in Thailand.

- *The actual number of "genuine" medical tourists is far fewer than has been previously suggested*

According to current information, estimated by health and trade policy makers, approximately 1.5 million international patients visit Thailand every year. This is generally interpreted to mean that Thailand serves an additional 1.5 million fly-in patients, *"medical tourists"* in other words, every year. This number of patients has been used for estimating their present and future contribution to the national economy. Na Ranong et al (2011) employed this data and estimated that international patients generated 46-52 billion THB in 2008 and 59-110 billion THB in 2012 [10]. Unsurprisingly, these considerable revenues attract the attention of the Thai government. The policy of making Thailand into a hub of medical service in the region was established in 2004. At the same time, the prospect of a large number of patients arriving in Thailand created great concern for health policy makers and health NGOs on how much this influx might affect domestic patients.

Currently, a blurred interpretation of the terms "international patient" and "medical tourist", which are the main targets of the *"Medical Hub"* policy, remains. Trade policy makers, who usually support the policy, and NGOs, who are usually against it, make the unintentional assumption that the number of international patients is the same as the number of medical tourists, so both the positive and negative implications of serving medical tourists are usually overstated. The main reasons for data misinterpretation are multiple counts and medical tourists being included in other groups of foreign visitors. Existing data concerning international patients surveyed by the Ministry of Commerce was collected from 55 hospitals all over Thailand serving these patients, mostly private hospitals. All these hospitals reported

the number of foreign patients obtaining services according to the number of separate visits, rather than by the number of patients actually treated. As one patient may visit a hospital several times over the course of a year, the reported data doesn't reflect the actual number of patients accurately. As Connell (2013) mentioned, the number of medical tourists is usually inflated by the inclusion of all types of international patients, including expatriates, diaspora patients, and tourists who happen to have fallen ill during their holiday [5].

In Chapter 4, an analysis of international patients obtaining services in the five private hospitals in 2010 confirms the above arguments. There were 911,913 visits of international patients to the five private hospitals in 2010. This number is around 60% of the number of international patients (1.5 million) estimated by the MOC survey. The study shows that the *actual* number of international patients in the five hospitals was around 236,885 patients with an average utilization rate of 1.85 visits per patient per year. Of this number, only 44% were medical tourists, making 3.1 visits per patient per year. 31% were expatriates, while 25% were international tourists who happened to fall ill while travelling in Thailand.

To estimate the total number of actual medical tourists in the whole country, an assumption was made that international patients in all hospitals had the same proportion of medical tourists using facilities at the same rate. Hence, based on the figure of 1.5-2 million visits by international patients, there would be approximately 172,000-223,000 actual medical tourists. Thus, the actual number of medical tourists is considerable lower than is generally suggested.

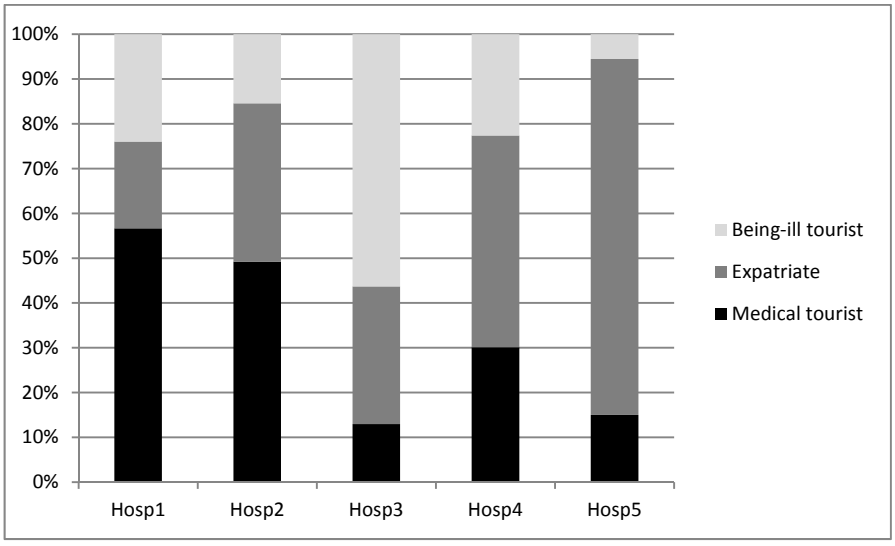
- *Fewer hospitals in Thailand have engaged in the medical tourism industry*

*The government "Medical Hub"* policy has led to the development of Thai hospitals particularly in the private sector. Many private hospitals promote themselves as an *"international"* hospital. Not only is the term *"International"* usually added to their name, but infrastructures are also renovated. International quality assurance, mostly by JCI, is applied as a trade mark of internationality.

The MOC survey reported that at least 55 hospitals served international patients in 2007. The top five of these hospitals are included in this study. In 2007, Bumrungrad International Hospital had the largest share of international patients: 426,398, accounting for 31% of that year's total. Ranked fifth was Bangkok Phuket Hospital, with 58,941 international patients, 4.3% of the total. This survey found that other hospitals had a very small market share, most of them less than 1% of the total number of international patients. Thus, the five hospitals in this study captured the majority of the international patient market in Thailand.

As mentioned before, all international tourists are categorized into three main groups, medical tourist, expatriate and tourists who fall ill while visiting Thailand. Analysis of the proportion of medical tourists in each hospital showed only three hospitals out of the five hospitals with more than 30% (Figure 7.1). The first hospital had 56%, the second hospital had 49% and the third had 30%. The other two had only 15% and 12% respectively. This implies that there are very few hospitals engaging heavily in the medical tourism industry in Thailand. Most of them served mainly expatriates, while hospitals in high-tourist areas served mainly international tourists who fell ill while visiting Thailand.

Figure 7.1: International patients by categories in each hospital



- *Medical tourists differ from Thai private patients in demography and services required*

Understanding the characteristics and service patterns of medical tourists allows the forecasting of demand, and assesses their impact on the domestic private health system. As mentioned before, a limited literature provides institutionally-derived information on these issues. Mostly, the treatment of these patients occurs in private hospitals where information is difficult to access.

The analysis of medical tourist characteristics in Chapter 4 shows that they differ from Thai private patients. In terms of demographic profiles, they are older than Thais and tend to be male. Almost 60% of medical tourists are male patients and their average age is 41.7. In contrast, 60% of Thai patients are female and their average age is 37.2. In terms of service profiles, they have comparatively different disease patterns and types of operation needed. The largest group visit hospitals for health check-ups, medical consultations and follow-up treatment: approximately 34% of these are male and 41% female. Apart from these services, their types of health problems also differ from those suffered by Thai male and female patients. In terms of procedure, male medical tourists receive comparatively similar types of procedure to Thais, but there are differences in the procedures undergone by female medical tourists and female Thai patients. As some of the medical tourists are *"genuine"* patients who seek economical and prompt medical care, this group needs more operations and longer stays in hospital when compared to Thais. An analysis of procedures shows that they have 2-2.5 fold higher operation rates when compared to Thais. Both male and female medical tourists tend to stay in hospital longer than Thais – with average LOS of 6.6 and 5 days per patient per year respectively.

Though medical tourists require somewhat different services to Thais, they may still compete with Thai private patients for some resources. An analysis shows that dental care, cosmetic procedures and heart-related procedures are more popular with these overseas patients. Nonetheless, Thai patients have more choice of services related to these procedures; for example, in public hospitals and other private clinics an increase in demand from medical tourists would displace some Thai patients to some

degree. An analysis of patients obtaining services in the five hospitals also shows that Thai patients are still in the majority, accounting for 68%, while 14% of patients are medical tourists. Though medical tourists would compete with Thais for some resources, their overall impact would be very marginal.

- *Long-haul medical tourists are different to within-region medical tourists*

Though it is difficult to precisely define "medical tourists", there is evidence that such persons are largely regional, cross-border and diasporic in their movement [5]. Familiarity with the health system, a common language, and the ability to access cheaper treatment are the main contributing factors. Connell (2013) reports that medical tourists are more likely to be intra-region patients or from the diaspora, while the *"White"* or Western patients were fewer in number than expected. However, there is still limited empirical evidence to support this view.

In the case of Thailand, this study confirms that the regional effect still has great influence. In 2010, 70% of medical tourists in the five hospitals were from within-region, including countries in Asia and the Middle East. The largest group were from the Middle East (39%), followed by Southeast Asia (14%) and South Asia (12%). 30% were long-haul, these source regions including North America, Europe, Australia and Oceania. This is because two of the hospitals in this study are located in a predominately Middle Eastern neighbourhood in central Bangkok, facilitating close informal links and advertising. Europe, North America and Australia are the main long-haul points of origin. Patients from Europe are the largest group, accounting for 13%.

Differences in health behaviour and healthcare infrastructures, such as available health facilities with highly-qualified staff, between long-haul and within region, create a difference in the characteristics of patients seeking healthcare abroad. An analysis of medical tourists among regions demonstrates that patients from long-haul regions including Europe, North America and Australia tend to have similar characteristics, while those from local regions, including Southeast Asia, other parts of Asia and the Middle East, tend to share similar characteristics also. Patients from

long-haul regions tend to be older than those from within local regions. The oldest are those from North America (45.35 years) and the youngest are from the Middle East (39.19 years).

Patients from long-haul regions tend to stay in hospital for a shorter period. Average LOS for Europeans is 5.36 days per patient which is the longest stay among the long-haul group, while average LOS for Australians is 2.32 days per patient. This implies that patients from Australia arrive with less serious conditions compared to those from other long-haul regions. Interviews with service providers supplied clarification that most Australian patients, particularly female ones, come for cosmetic procedures and they usually include medical services as part of their holiday in Thailand. Patients from the Middle East stay in hospital for the longest period, with an average LOS of 10.53 days per patient. They seek quality services which are unavailable in their countries. An analysis on length of stay shows that 3.6% of them stayed in hospital for more than 30 days. Those from the Middle East were the biggest group. 30 days is the maximum period foreign tourists are allowed to stay in Thailand. This regulation has been considered a barrier to the growth of the medical tourism industry in Thailand.

Heart-related procedures, including cardiac catheterisation, coronary angiograms and other cardiac operations are popular with those from local regions, while cosmetic procedures are more popular with those from long-haul regions. The difference in services required by the two regions results from the domestic health services available in their countries of origin. Advance tertiary care with a high quality of service is unavailable or difficult to access in countries within region, such as the UAE, Myanmar, Bangladesh and Cambodia. Patients from long-haul countries seek cosmetic procedures not covered by health insurance, and also cheaper heart-related procedures.

All these different characteristics seem not to be taken into account by policy makers at national level. As described earlier, there is a lack of empirical evidence on the nature of medical tourists in Thailand, particularly at national level. Hence, most policy makers focus only on the overall number of foreign patients rather than

breaking them down into specific segments. However, it is different for policy makers at the hospital level. Information from the interviews undertaken during this study shows that hospital executives closely monitor many of the characteristics of their foreign customers, such as country of origin, disease pattern and type of procedure received, in order to prepare effectively for service provision and marketing in the future.

- *Medical tourists have a different demography from non-medical tourists*

This study tried to investigate the tourism behaviour of medical tourists. There is a need to understand whether they are unique patients who intentionally visit Thailand for medical care, or whether they are tourists who just use drop-in medical services when they are in Thailand.

An analysis of both medical tourists and non-medical tourists shows that these two groups seem comparatively different. In terms of region, medical tourists from the Middle East, Southeast Asia and Europe are in the majority, while among non-medical tourists, those from Southeast Asia, Europe and East Asia are in the majority. Tourists from Southeast Asia make up the largest group among non-medical tourists, and tourists from Malaysia are the largest group of these, accounting for 13% of the total number of non-medical tourists. This is because they live in neighbouring countries, and it is easy to cross the border into Thailand. This group is followed by that of tourists from Europe and East Asia. As mentioned in the previous section, the Middle East is the main region of origin of medical tourists. Patients from UAE are the largest group of these, accounting for 20% of the total number of medical tourists. Patients from the Southeast Asia region rank second, accounting for 14%; most of these are from Myanmar and Cambodia, accounting for 7% and 4% respectively. There are very few patients from Malaysia, as Malaysia has a good health service and the Malaysian government has promoted the country to the medical tourism industry. Meanwhile, there are many tourists from East Asia, including China, Japan and South Korea, visiting Thailand, but they are not much interested in receiving medical care there. Apparently, South Korea is also positioned as a medical tourist destination. The MOC report stated that the Japanese are in the

top five of foreign patients in Thailand. This may be true, as many Japanese reside in Thailand, but they visit hospitals as an expatriate rather than as a medical tourist. Moreover, Southeast Asia and Europe are overlapped among two groups. It would be fair to say that the links between being a patient and being a tourist need further investigation.

### *7.1.2 The economic implications of medical tourists*

- *Overall, medical tourists and their companions contribute to the Thai economy*

Findings from Chapter 5 suggest that medical tourists and their companions contribute, overall, to the domestic economy. Medical tourists spend on medical expenditure, which is their main purpose of travel. The patient survey indicates that their companions also engage in medical services, spending about 23,800 THB per person on these services.

Furthermore, the findings of this study show that a medical tourist is not only a patient seeking healthcare services outside their own country, but someone who engages in a considerable number of tourism activities. From the service providers' view, hospital executives and other service providers, particularly those at hospitals in tourism destination areas, confirm that these patients combine tourism with their medical treatment. On the other hand, from the patients' view, some of them said that they made a decision to seek medical treatment while they were in Thailand. From this point of view, they are opportunistic tourists receiving medical care. When being a patient or being a tourist, they engage in both medical and tourism activities. This generates more revenue to the national economy. Moreover, spending on tourism by both patients and their companions has a substantial effect on the economy. Tourists contribute to destination sales, profits, jobs, tax revenues and income. There is a direct impact on primary tourism sectors, such as accommodation, restaurants, entertainment and retail shops, while other sectors are impacted by a secondary effect.

Concerning each medical tourist, more revenues are generated when compared to either a Thai patient or a non-medical tourist. However, the actual number of medical tourists was found to be not as high as expected, so overall, revenues from medical tourists are still marginal when compared to those generated by Thai patients and non-medical tourists.

- *Medical tourists spend more on medical expenditure than Thai private patients*

An analysis of medical expenditure in Chapter 5 suggests that medical tourists spend more per patient than Thais. For out-patient clinic services, medical tourists spent around 24,520 THB on average, while Thai private patients spent around 15,280 THB. As mentioned in the previous section, medical tourists in out-patient clinics tend to be a mixture of actual patients who seek medical care exclusively and those tourists receiving medical treatment during their holiday. Their disease pattern is comparatively simple, comprising uncomplicated conditions which result in slightly greater expense compared to the expense of the conditions suffered by Thais.

In contrast, medical tourists spent much higher amounts on in-patient care than Thais. The average in-patient expenditure of medical tourists was 353,460 THB, while average in-patient expenditure for Thai patients was 120,880 THB. This finding strengthens the argument that foreign patients who seek treatment are likely to be genuine medical tourists. They visit Thailand with complicated conditions that require hospitalisation and invasive procedures; the findings in Chapter 4 elaborate this argument. Medical tourists have a higher operation ratio (number of procedures per patient) than Thais – twice the number in men and 2.5 times the number in women.

For regional comparison, within-region medical tourists spent more than those from long-haul regions – 1.22 times more for out-patient services, and 1.33 times more for in-patient services. Patients from within the local region stay for longer than long-haul ones; hence, these patients are the most lucrative customers for the medical tourism industry in Thailand.

- *Medical tourists and their companions spend more per person on tourism than non-medical tourists*

This study aimed to investigate how much medical tourists increase the tourism market, what they tend to spend and on what items. An analysis from the patient survey in Chapter 5 demonstrates that medical tourists spend much more on tourism than non-medical tourists: excluding all medically-related elements, around 82,520 THB per person; while non-medical tourists spend around 31,970 THB per person. The reason behind this difference would appear to be that medical tourists are comparatively better-off, from the evidence that they can afford medical care abroad, so they are also able to spend more on tourism compared to ordinary tourists (many of whom are 'backpackers'). Similarly, tourists who receive opportunistic medical care while on holiday are likely to be affluent tourists rather than backpackers. However, this issue needs further study for a deeper understanding of their demography and tourism behaviour.

The patient survey in Chapter 5 also found that medical tourists tend to travel with companions. Half the medical travel with an average of 2 companions. Surprisingly, companions spend around 80,351 THB per person on tourism, which is again much higher than the spending of non-medical tourists.

An analysis of tourism spending profiles shows that medical tourists and their companions spend much more in all tourism categories than non-medical tourists. Medical tourists had an average tourism spending per day of around 8,440 THB, while their companions' expenditure was 9,080 THB. Non-medical tourists spent much less – around 4,190 THB per day. Accommodation, food & drink and shopping are the main tourism categories in which medical tourists and their companions spend. The study also found that medical tourists engaged in shopping and recreational activities such as sight-seeing and entertainment. This finding contrasts with the view expressed by Whittaker (2008) asserting that the term *"medical tourism"* is a misnomer, encompassing as it does the idea of recreation, which does not correlate with illness [75]. This study has found that medical tourism, to some extent, does include pleasure as part of the medical travel.

### *7.1.3 Impact of medical tourists on the health system*

- *Information is commercially sensitive and confidential*

Information on resources and revenue allocation is commercially sensitive and confidential; hospitals do not openly reveal how they obtain new resources specifically for medical tourists, how they allocate resources among Thais and foreigners, and how they allocate the revenues generated by treating foreign patients. This study employed secondary data, publicly accessed, which could not provide much rigorous information. Further research on these issues is needed to deliver deeper understanding.

- *There is no difference in critical aspects of care between Thai and international private patients*

Difference in service provision between patients is a sensitive concern, meaning that hospitals provide different standards to some of their patients, which may not ensure overall quality of service, especially for domestic patients. The issue of discrimination is an important element of the quality assurance system for national and international quality accreditation agencies. Hospitals aiming to serve foreigners try to achieve an international standard of quality as the "trade mark" to promote their hospitals. In Thailand, currently, there are 22 hospitals accredited by JCI. All hospitals in this study are already accredited by JCI.

The findings presented in Chapter 6 show that there is no difference in the critical aspects of care delivered to foreign and Thai patients. All patients are provided with the same medical guidelines for treatment, the same procedures and the same choice of drugs. However, there are some differences in terms of peripheral areas of care, due to the *"tourism"* element, such as translators, transfer services and special food. Moreover, foreigners tend to require more time allocation from doctors and nurses because of difficulties in communication. These differences do not affect the quality of medical service, and foreign patients have to pay extra to cover the additional services.

- *Hospitals employ their spare capacity to serve the demand of international patients*

Competition for resources between foreign and Thai patients is a great concern for health policy makers, especially as medical tourists might appropriate resources that would otherwise have been available for locals. However, the increased demand for health care occasioned by medical tourists may simply be met by health care providers who already had sufficient spare capacity to deal with the increase. It is therefore important to investigate whether additional resources are actually transferred from the domestic public sector, and therefore whether medical tourists do displace domestic patients.

The study findings presented in Chapter 6 show that hospitals employed a variety of strategies when allocating resources to service the increased demand of international patients. Most hospitals utilised their spare capacity to provide services for foreign patients. Information from the Bureau of Policy and Strategy, MOPH, shows that the bed-occupancy rate of private hospitals in Thailand in 2008 was 60%, an increase from 54% in 2006. The same report also reported that the bed-occupancy rate in hospitals under MOPH during 2008 was 83%. This meant that private hospitals still had sufficient spare capacity to cope with increased patient demand. Hospitals in Bangkok Dusit Medical Services Company, including Bangkok, Bangkok Phuket and Bangkok Pattaya hospitals, had spare bed-capacity at this time. In contrast, Bumrungrad Hospital had very limited bed-capacity. At the time of this study, they were planning to construct a new building in a nearby area to expand their capacity to treat for both Thais and foreigners.

- *HRH for serving international patients are mostly recruited from domestic sources*

Human resources for health (HRH) are considered a potentially critical negative implication arising from medical tourism, as they are comparatively limited,

particularly in the developing countries which are becoming medical tourist destinations. Thailand has experienced a shortage of HRH for several years.

Interviews with hospital executives suggested that their hospitals were continuously expanding the capacity of their health professionals in order to cope with the increasing demand of patients. They required high-calibre doctors in a variety of different fields. The more specialized the professionals required, the greater the need. Hospitals serving foreigners mostly provide comprehensive tertiary medical care. They also require highly-skilled nurses to care for patients suffering from complicated conditions. Meanwhile, health professionals in Thailand are mostly the products of public investment; there are 16 public and 1 private medical school, and 64 public and 10 private nursing schools. Medical and nursing students pay their own tuition fees, which are much less than their actual cost, during their period of study. However, world-class private hospitals do not employ these new graduates: they want experienced medical and nursing specialists, and obtain them by recruiting from medical schools and public tertiary hospitals. At the same time, there are shortages of these specialists in the public sector. Hence, an expansion of human resource capacity in private hospitals depletes the resources of public services. However, it is arguable whether this is a direct result of the increase in demand by foreign patients, as these specialists serve both Thai and foreign patients at the same private hospitals.

The findings in Chapter 6 suggest that some hospitals use foreign resources to cater for the demands of international patients. For example, in terms of medical equipment, all hospitals have expanded their capacity to serve an increased demand by patients, and to provide access to new medical technologies at a global level, by importing advanced and sophisticated medical equipment. Some hospitals have recruited Thai doctors who have been working in other countries, mostly the USA. In addition, some hospitals have recruited foreign doctors and nurses to work in non-clinical roles; these professionals are not permitted to engage in clinical practice under the regulations of the Thai professional council. Instead, they work as physician and nurse coordinators, combining their medical knowledge with their

language abilities to assist patients in arranging a treatment plan. This is an effective approach to the employment of foreign professionals in Thai hospitals.

- *According to tax law, very few revenues from foreign patients are allocated back to the public sector*

Though Thai patients predominated in all the hospitals in the study, in terms of revenue, at some hospitals medical tourists dominate. In 2012, 61% of hospital revenues in Bumrungrad International Hospital were from foreign patients. In contrast, approximately 30% of hospital revenues in BDMS were generated by foreigners. Regarding two findings, between 30-60% of hospital revenues in the five hospitals were derived from the treatment of overseas patients.

Data from hospital financial reports showed that most hospital income was spent on hospital operations and 15-20% was allocated to administrative costs. As all hospitals in this study were listed on the stock exchange, 12-14% of their income was allocated to share-holders; 5% of their revenue was paid to the government as corporate tax. This direct income is considered to represent an insignificant figure compared to the total income generated by foreign patients.

## *7.2 Limitations of the study*

### 7.2.1 Sub-study 1

- *Diversity of sources of patient data*

A limitation of this analysis was the number of hospitals included in the study. They were selected from the list of hospitals surveyed by the MOC in 2007. According to MOC data, however, the number of private hospitals involved in this survey was the highest; in subsequent years, fewer hospitals were surveyed. This implies that the data from 2007 may be more complete than that from other years. Another consideration related to the number of hospitals involved in this study is although it included five hospitals, four were operated by the same company, under the same principles; consequently, information obtained from this group of hospitals was likely to be very similar. In addition, this study employed data from the year 2010; the medical tourism industry in Thailand has grown rapidly since then, along with the improvement in the Thai economy. Thus, the current picture of medical tourists may differ slightly from that presented in this study.

- *Incomplete diagnosis of patient data, particularly out-patient*

Regarding data of medical tourists and Thai private patients from the five hospitals, the overall data is reasonably complete, as there is a good managerial system in the private sector. However, some information on the diagnosis of out-patients is still missing, although information on in-patients is definitely complete. This should be kept in mind when interpreting information on patient diagnosis.

- *Accuracy of non-medical tourist data*

This study used data from the MOTS survey, being the only available source in Thailand. All information about international tourists depends on the accuracy and

presentation of this data. It would have been better if this study had been able to analyse the data of an actual population of international tourists.

### 7.2.2 Sub-study 2

The main limitation of this section concerns the patient survey of tourism expenditure. Not only is it quite difficult to conduct a survey in private hospitals, but patients there, particularly international patients, are particular about privacy. To enhance their participation, this study used hospital staff, mostly nurses and interpreters, as interviewers. Two key reasons were that patients were comfortable with them as they were in hospital uniform, and that communication in a variety of languages would be easier. Despite this, some patients still declined to participate. This problem also arose in the MOTS survey. Regarding time limitations, this study included 293 participants, 50.7% of the required sample. Nonetheless, it is worth remembering that this study has still managed to recruit a larger sample size than any previous studies.

Given the limitations described above, participants in this survey tended to be from comparatively lower income groups. The largest group were agricultural workers, accounting for 18.6%, followed by administrative and managerial professionals, accounting for 17.5%. One reason is this group tended to engage more easily with the survey than more wealthy patients. Participants would therefore not necessarily be the best representatives of the wider population of medical tourists. On the other hand, in terms of policy implications, the actual expenditure of medical tourists would be likely to be higher than those findings from this study. However, it is necessary to remain careful in interpreting and utilizing the findings.

Information on tourism expenditure was obtained by asking patients to recall their spending in each category up until the day they went into hospital. Hence, this figure may be less than the amount they actually spent during their visit. The difference also depends on the length of the period between the day they were interviewed and their departure from Thailand. It was too complicated and costly to monitor patients during this period.

### 7.2.3 Sub-study 3

This section tries to show whether, and to what extent, foreign patients create any implications for the Thai health system from interviews with hospital executives and service providers. Though staff from only four hospitals were interviewed, out of more than 55 hospitals reported as providing services to foreign patients, these were the key hospitals engaged in the medical tourism industry in Thailand. Many private hospitals in Thailand operate in alliance; three of those in the study were part of the same company. However, each had management autonomy. Information from interviews shows that, though they shared common policies, there were many differences between these hospitals in serving foreign patients. Hence, information derived from these four hospitals is rich enough to demonstrate the implications of foreign patients at national level. However, further study focusing on patients would provide deeper insights into patient perceptions.

As the service providers: the doctors and nurses in these interviews, were selected by the hospitals themselves using the study criteria, sample bias could have occurred. Hospitals may have deliberately chosen staff with positive views on international patients. However, most of the interview questions asked for the facts of their routine work, and very few questions asked for the interviewee's personal opinion. Moreover, their information was triangulated with that of others, and both positive and negative accounts relating to foreign patients emerged during the interviews.

This study was unable to interview a hospital CEO. However, all the hospital executives interviewed were on the executive board and were able to provide information on hospital policy. In addition, the study tried to select hospital executives from a variety of roles to ensure diversity of information and also to triangulate for data validity. Hence, information derived from them is rich and diverse.

Though this study tried to mitigate bias during data collection and data analysis, some biases no doubt remain. Participants were purposely selected hospital executives and service providers who were likely to provide good information.

However, it might not represent 'real' practice. For example, information on discrimination in treatment may be more likely to be raised by Thai patients than professionals from the hospitals serving them.

Detailed information on the resources obtained to serve the demands of foreign patients was inaccessible. This study tried to explore how these resources were obtained, for example from domestic or foreign sources, by investigating secondary hospital data. For reasons of confidentiality, this information was not available to researchers. However, the study used secondary data from public source, such as hospital annual and financial reports, for data triangulation. The primary investigator sometimes picked up interesting issues from this secondary data and sought further explanation during interviews.

### *7.3 Conclusion*

Globalization has created a free movement of patients travelling around the world for cheaper, better and prompter services, and this is likely to continue as long as differences in health services in each country remain. Unsurprisingly, this is resulting in the rapid growth of the medical tourism industry in many countries, in order to capture these lucrative customers. Thailand has already engaged in this profitable market. The perceived success of the "Medical Hub" policy during 2004-2008 encouraged the Thai government to continue the second phase of this policy, while many concerns about possible negative implications still remain.

In order to continue with this policy, there is a need for the Thai government to carefully consider its overall *"cost"*. The direct cost includes all costs related to operating activities, costs of the tax incentives given to the private sector for investment in the infrastructures serving foreigners, costs for marketing, such as international road shows, advertising campaigns and websites. The findings of this study indicate that medical tourists do directly contribute to the national economy. It is apparent that each medical tourist and any companions spend a lot, not only on the medical element of their visit, but also on tourism elements. They are profitable customers to Thailand as, in terms of medical services, they spend more than Thais

and, in term of tourism, they also spend more than general international tourists. However, the key important finding is that the overall number of “genuine” medical tourists is far less than generally believed. They should be considered as a niche market compared to the substantial number of non-medical tourists visiting Thailand every year. Hence, overall revenue from them is very marginal compared to overall revenue from non-medical tourists. It is very important to consider the the net benefit gained from pursuing the policy of encouraging medical tourists, in order to ensure Thailand will gain from serving them.

As medical tourists are non-homogenous, the next medical hub policy should perhaps be smarter. Market segmentation is needed. Rather than a broad and general policy covering all customers, it should directly identify specific profitable groups. A second priority is to enhance the revenues generated from medical tourism. To maximize these revenues, collaboration between the health and tourism sectors is essential. The varied nature of the medical tourist in Thailand provides a great opportunity. The majority are tourists who add medical services to their trip either in advance, or on arrival. At present, Thailand has 22 million international tourists annually. It would be a great challenge to encourage them to engage in health services. Health products should not focus only on advanced and sophisticated medical care, but expand to include simple and less invasive services, such as health check-ups and one-day procedures in dental and cosmetic care, which would be easy for tourists to add to the main purpose of their visit.

However, an indirect implication of medical tourism is its effect on the domestic health system. It might create a shortage of high calibre doctors in medical schools and public tertiary hospitals, especially among some specialists, such as orthopaedists, heart surgeons, plastic surgeons and dentists. It is difficult to assess how far this would impact on the domestic health system, particularly on HRH. Further study is still needed in this respect. Many strategies could be established to mitigate this effect, such as well-prepared policies and comprehensive human resource planning. Furthermore, the private sector could contribute more to HRH production. However, this problem is not directly a medical tourist issue, but it is really a public-private issue.

## *7.4 Recommendations*

### *7.4.1 Policy recommendations*

*1. Combining a medical element with the tourism industry*

Findings show that only 0.5% of international tourists came to Thailand with a primary healthcare purpose. However, it is apparent that some of them engage in medical services after arriving Thailand. This is an opportunity for government to link medical activities to the tourism industry. One approach might be to promote simple medical packages, such as physical check-ups, simple dental procedures and simple cosmetic procedures, through the Tourism Authority of Thailand offices located in big cities around the world, and through world-wide travel agencies. Promotion of medical-services packages in tourism settings such as planes, hotels and other relevant locations may be an additional route to recruiting patients.

*2. Promoting tourism packages to medical tourists and their companions*

Though some medical tourists and their companions still engage in tourism, private hospitals do not provide well-organised tourism package for patients. It would be a good opportunity for hospitals to coordinate with local travel agencies to provide a tourism package specifically suited to individual health conditions. A tourism section advertising a variety of recreational activities should be added to hospital websites, enabling patients to find out what other activities they could engage in while they and their companions are in Thailand.

*3. Emphasizing market segmentation*

As medical tourists are non-homogenous, a new medical hub policy should not be a broad campaign for general patients but should be more focusing on specific groups according to region, gender and age, in order to maximise revenue from these lucrative tourists. Policies should focus on how to recruit tourists through “medical elements”. The following are some recommendations;

3.1 Attracting non-medical tourist from East Asia as a new market for medical tourism industry

Tourists from East Asia rank third in the numbers of tourists visiting Thailand, accounting for 23% of total international tourists, but they rarely engage in medical services. Policy should target this group to increase their participation in health services.

3.2 Focusing the attention of medical tourists from within region on heart-related, digestive and orthopaedic procedures

Patients from within-region tend to be more lucrative than those from long-haul. They visit Thailand for services which are not available in their home country. Heart-related, digestive and orthopaedic are the most popular procedures for them.

3.3 Focusing the attention of medical tourists from long-haul regions on cosmetic and heart-related procedures

The most popular procedures for patients from long-haul regions are cosmetic and heart-related. Most Australian patients visit Thailand for cosmetic procedures and these, considered as less invasive operations, would combine well with a tourism package to increase the value-added aspect.

3.4 Providing medical service packages for long-haul patients

Long-haul patients are likely to visit Thailand using medical service packages. To attract them, packages such as those providing cosmetic and dental treatment, would be the most appropriate.

3.5 Targeting men and older patients

Based on their disease patterns, men and older patients engage in a variety of medical treatments. Some need more serious operations such as heart and orthopaedic procedures, and could contribute considerable revenue through medical expenditure.

*4. Extending visa period in Thailand for medical tourists*

There is a need to extend the period foreign patients are allowed to stay in Thailand, as currently some need to stay in hospital longer than the period officially permitted. This extension will facilitate patients with complicated conditions and allow them to complete their treatment; this will particularly help patients from the Middle East. Though the study shows that only 3% of the total number of medical tourists is in this group, there is a need to loosen this legislative barrier for when planning to serve this lucrative age group in the future.

5. *Increase private sector contributions to HRH production*

The training of health professionals is mostly funded by public investment, especially that of doctors. An increased demand for health professionals to meet the demand from either Thai or foreign patients, results in pressure on resources from public sources. To redress the balance, there is a need for private hospitals to contribute more to HRH production. One approach would be to increase corporate tax from hospitals serving foreign patients.

*7.4.2 Recommendations for research priorities*

Many issues are commercially confidential and it is difficult to access important information, particularly on resource allocation in private hospitals. Research in the future is still needed to reveal information on issues on which data are currently indistinct.

*1. A cost-benefit analysis*

This study provides initial information concerning medical tourists in Thailand. It is the first study providing strong empirical evidence about medical tourism and its possible implications. However, data on taxation and other redistributive arrangements in private hospitals is not still publicly available. There is a need to investigate the cost to the public sector of serving medical tourists. Further understanding of the likely net benefit of medical tourism to the country requires a comprehensive cost-benefit analysis, looking more closely at the costs of the policies enacted to encourage and service medical tourism, compared to the range of benefits such as those reported here.

*2.* The *implications of medical tourists diverting medical specialists from local patients*

A key concern for health policy makers is the extent to which medical tourists effect the movement of specialists from the public to the private sector. This study focused its investigation on private hospitals, so cannot assess the possible impact on the public sector. It would be valuable to explore this issue.

*3. Study of medical tourists' views on why they chose Thailand*

A study of medical tourists' perspectives on their reasons for choosing Thailand, rather than another country, as a destination for medical service, should be conducted. Findings from that study would help to strengthen the country's competitiveness in the global medical tourism industry.

*4. A study on the impact of international patients from bordering countries*

This study focuses on foreign patients served in world-class private hospitals in Thailand. These prosperous patients are the main target group of the "Medical hub" policy, and also the same target group of all medical tourist destination countries, as

they generate national revenue. However, some international patients from bordering countries are also seeking health services, mostly in public health facilities. Most cross-border patients are in the poor to middle-income category. Providing services for these patients would generate very little revenue, but they are still likely to directly compete for health resources with domestic public patients, particularly the poor. A study of this issue would provide another perspective of the impact of international patients.

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# Annexes

***Annex 1**: Ethical committee approval*

**LONDON SCHOOL OF HYGIENE**
**& TROPICAL MEDICINE**

**ETHICS COMMITTEE**

**APPROVAL FORM**
**Application number:** **5880**

| | |
|---|---|
| Name of Principal Investigator | **Thinakorn Noree** |
| Faculty | **Public Health and Policy** |
| Head of Faculty | **Professor Anne Mills** |

**Title:** **The impact of medical tourism on the domestic economy and health system: A case study of Thailand**

This application is approved by the Committee.

**Chair of the Ethics Committee** .....

**Date** ..18 January 2011

**Approval is dependent on local ethical approval having been received.**

**Any subsequent changes to the application must be submitted to the Committee via an E2 amendment form.**

***Annex 2**: Information sheet and consent form for patient survey*

1. English language

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

**Information sheet for tourism expenditure survey**

**Dear Participant,**

My name is Thinakorn Noree. I am studying for a PhD at the Department of Global Health and Development, Faculty of Public Health & Policy, London School of Hygiene & Tropical Medicine, London. I am conducting a research study on the impact of medical tourism on the domestic economy and health system by using Thailand as a case study, under supervision of Professor Richard Smith. A summary of the study is provided below.

**Summary of the study**

Thailand is the foremost destination country for medical tourists in Southeast Asia. It is widely believed that there is a substantial economic benefit of medical tourism, but this is not enough evidence to support this idea. An understanding of how much medical tourists and their companions add to tourism expenditure in general is very important for estimating their *additional* economic impact. Similarly, although there is concern over the impact that foreign patients may have on the domestic health system, there is a lack of clear evidence concerning the impacts on the health system of the destination country. The divergence of views and overall lack of evidence provide the potential for policy incoherence between trade and health, and generate a need to establish empirically the impact of medical tourism on *both* the domestic economy and health system to determine whether it represents a 'good deal' overall for countries, as well as identify factors which may be used to balance the opportunities and risks presented.

**Participation**

You have been approached to take part in a survey of tourism expenditure undertaken by medical tourists and their companions. Participation in this survey is entirely voluntary and should you agree to take part you may withdraw at any point without giving a reason.

**Confidentiality**

I will ensure that your identity is anonymised; that is, you will not be individually identified in any analysis and reporting of the information you provide. I will, with your permission, use information you provide me in undertaking analysis, but without any specific form of specific citation. No person other than me will have access to the interview materials and they will be kept confidentially once the study is completed and will be destroyed after 10 years as the School data retention policy.

**Further information**

Should you have any questions or require further information or explanation regarding this study, please contact me at this address below.

Dr.Thinakorn Noree
*Research Student*
*Department of Global Health and Development*
*Faculty of Public Health & Policy*
*London School of Hygiene & Tropical Medicine*
*15-17 Tavistock Place*
*London WC 1H 9SH*
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The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Consent Form for Survey Respondents

**Contact details :**

Department of Global Health and Development
Faculty of Public Health & Policy
London School of Hygiene & Tropical Medicine
15-17 Tavistock Place
London WC 1H 9SH
Tel : 020 7299 4759
Email: thinakorn.noree@lshtm.ac.uk

**To be completed by the participant**

I have read the information above and understand what is required of me to take part in the survey.

I agree to answer this questionnaire.

Yes No

**Researcher name:** Dr.Thinakorn Noree
NAME: ……

ADDRESS or Email: ……
……
……
Signed: Dated:

2. Arabic language

**أثر السياحة العلاجية على الإقتصاد المحلي والنظام الصحي**
**دراسة حالة من تايلاند**
**ورقة معلومات لغاية إجراء دراسة استقصائية للنفقات السياحية**

**عزيزي المشارك،**

اسمي ثيناكورن نوري وأنا طالب دكتوراه في قسم الصحة والتنمية العالمية من كلية الصحة والسياسة العامة، جامعة لندن لعلم الصحة والطب الإستوائي في لندن. وأجري دراسة بحثية تحت إشراف البروفيسور ريتشارد سميث عن أثر السياحة العلاجية على الإقتصاد المحلي والنظام الصحي وذلك باستخدام تايلاند كحالة دراسية، فيما يلي ملخص الدراسة.

**ملخص الدراسة**

تايلاند هي بلد المقصد الرئيسي للسياحة العلاجية في جنوب شرق آسيا. وبالرغم من ايمان الكثيرين بمقدار الفائدة الإقتصادية الكبيرة للسياحة العلاجية، إلا أنه لا يوجد دليل كافٍ لدعم هذه الفكرة. لذا فمن المهم فهم مدى زيادة السياح العلاجيين ومرافقيهم للنفقات السياحية بشكل عام وذلك من أجل تقدير أثرهم الإضافي على الإقتصاد. وبالمثل، وعلى الرغم من القلق حول الأثر الذي قد يسببه المرضى الأجانب على النظام الصحي المحلي إلا أنه لا يوجد دليل واضح بشأن مدى أثرهم على النظام الصحي في بلد المقصد. كما ويؤدي اختلاف وجهات النظر وعدم توفر الأدلة الشاملة لحدوث تنافر بين السياسات التجارية والصحية، ويولد حاجة إلى برهنة تأثير السياحة العلاجية على الإقتصاد المحلي والنظام الصحي بشكل تجريبي وذلك من أجل تحديد ما إذا كانت السياحة العلاجية هي 'صفقة جيدة' بالنسبة للبلدان عموماً، ومن أجل تحديد العوامل التي يمكن استخدامها لتحقيق التوازن بين الفرص والمخاطر المقدمة.

**المشاركة**

لقد طلب منك المشاركة في إجراء دراسة استقصائية عن الإنفاق السياحي للسياح العلاجيين ومرافقيهم. مع العلم بأن المشاركة في هذه الدراسة طوعية تماماً وإن وافقت على المشاركة سيظل بامكانك الإنسحاب في أي وقت ودون إعطاء أي سبب.

**السرية**

سوف أضمن لك الإبقاء على سرية هويتك مما يعني أنه لن يتم التعرف عليك بشكل فردي عند إجراء أي تحليل أو كتابة التقرير عن المعلومات التي تقدمها. كما وبعد إذنك، سأستخدم المعلومات التي تقدمها لي عند إجراء التحليل، ولكن دون أي شكل من أشكال التنويه. ولن يكون بمقدور أي شخص آخر دوني الوصول إلى مواد المقابلة، وهذه سيتم الاحتفاظ بها بسرية بمجرد الإنتهاء من الدراسة، كما وسيتم تدميرها بعد مرور عشر ة أعوام بحسب سياسة البيانات للجامعة.

**للمزيد من المعلومات**
إن كانت لديك أية أسئلة أو إن احتجت للمزيد من المعلومات أو أي توضيح بشأن هذه الدراسة، يرجى الإتصال بي على العنوان أدناه.

Dr.Thinakorn Noree

**أثر السياحة العلاجية على الإقتصاد المحلي والنظام الصحي**
**دراسة حالة من تايلاند**
**ورقة معلومات لغاية إجراء دراسة استقصائية للنفقات السياحية**

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**يتم تعبئة التالي من قبل المشارك**

لقد قرأت المعلومات الواردة أعلاه وفهمت ما هو مطلوب مني عند المشاركة في الدراسة الإستقصائية.

أوافق على الإجابة على هذا الإستبيان:
نعم لا

**اسم الباحث:** د. ثيناكورن نوري
الإسم: ..... .
العنوان أو البريد الإلكتروني:.....
.....
التوقيع: التاريخ:

3. Japanese language

医療観光（メディカル・ツーリズム）の国内経済及び医療に及ぼす影響

**観光費用調査にあたって**

**関係者各位**

私はティナコン・ノリー（Thinakorn Noree）、ロンドン大学公衆衛生学・熱帯医学大学院公衆衛生政策学部世界的保健・政策学科の研究者です。
私はリチャード・スミス教授の監督の下、タイの事例研究を用いて医療観光の国内経済及び医療システムに及ぼす影響を研究しています。

**研究の概要**

タイは東南アジアにおける医療観光客の第一目的地となっています。医療観光の実質的な経済効果は広く信じられているところですが、十分な根拠があるとはいえません。一般的に医療観光客やその同伴者たちがいくら位観光費用を追加支出するのかを知ることは、彼らの追加的な経済効果を評価する上で非常に重要です。同様に、外国人患者が国内の医療システムに影響を及ぼすかもしれないことは心配されるところですが、旅行先の医療システムに与える影響について、明白な証拠に欠けます。見解の相違と総合的な証拠の欠如は商業と保健の間に政策的な矛盾をもたらす可能性があり、現存するチャンスと危険性を調和させることに利用出来るかもしれない要因を確認するだけでなく、国家にとって良いことなのかどうかを全般的に究明するため、医療観光が地域経済と医療システムの双方に及ぼす影響を実験的に証明する必要が生じています。

**参加**

あなたは医療観光客とその同伴者によって支出される観光経費の調査への参加を持ち掛けられました。この調査への参加は完全に自発的行為であり、いつでも理由の如何に関わらず参加を取り消すことができます。

**守秘義務**

私はあなたの匿名性を保証します。あなたが提供してくださった情報のいかなる分析や報告においてもあなた個人が特定されることはありません。私はあなたの同意を得て提供していただいた情報を分析しますが、具体的な引用は致しません。私以外の誰もこの調査票にアクセスすることはありませんし、研究が完了した後は秘密を守り、大学のデータ保存方針に従って10年後に破棄させていただきます。

**さらなる詳細**

この研究に関する質問、さらなる詳細または説明を希望される方は下記、私の連絡先までお問い合わせ下さい。

Dr.Thinakorn Noree
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**観光費用調査にあたって**

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**下記にご記入願います**

私は上記の情報を読み、この調査への参加の意味を理解致しました。

私はこの調査への参加を(I agree to answer this questionnaire.)

承諾します（Yes）　　承諾しません（No）

**研究者名:** Dr.Thinakorn Noree

名前: .....

住所またはE-mailアドレス: .....

.....

.....

署名:　　日付:

***Annex 3:*** *Questionnaire for patient survey (in English, Arabic and Japanese)*

1. Questionnaire in English language

**Questionnaire for the 2011 Medical Tourist Expenditure Survey**

This is a Survey on Medical Tourist Expenditure 2011, which is conducted by International Health Policy Program, Ministry of Public Health Thailand. The survey includes questions mostly on your travel expenditures in Thailand. It may need your time and some effort to complete. Your participation in this survey will help us in planning for improvement of Thai tourism and medical tourism industry. Your responses will be kept strictly confidential and for research purpose only.

Thank you

**<u>Part 1</u>: Data on Travel Expenditures**

1. In which country do you live? …….

2. Have you been to Thailand **for medical care** before?
[1] Never before [2] once or twice before [3] more than 3 times

3. Number of days that you spent **in Thailand** ……days.

4. Number of days you stayed **in hospital**.....days (for inpatients only)

5. Are you in Thailand on **a package of medical services**? [i.e. a package in which at least includes medical service cost, air fares and accommodation prepaid before departure]
[1] Yes
[2] No, I'm self organized this trip
**[if your answer is NO, please go to question No.7]**

6. How much did you pay for this package of medical services (for 1 person only)?
……..... **[Indicate currency]**

Please check the items that are included in the package of medical services

| | | | |
|---|---|---|---|
| [1] | International air/bus fares | [2] | Transfer |
| [3] | Medical costs | [4] | Accommodations |
| [5] | Food & Beverages | [6] | Sightseeing |
| [7] | Medical services | [8] | Other [Specify] ……..... |

7. By which airline[s] did you use for travel into and out of Thailand and how much did you pay for the air fare (1 person only)?

7.1 **Into Thailand**, air fare cost…… **[Indicate currency]**

[1] Thai airways [2] Other airlines

7.2 **Out of Thailand**, air fare cost ……... **[Indicate currency]**

[1] Thai airways [2] Other airlines

8. How much in total did you spend on the following items on this **visit to Thailand**? Please make sure that you include all methods of payment (cash, credit cards, travelling cheques, etc.). **If you are on a package of medical services, make sure this amount excludes the package tour you bought.**

| **Types of Expenditure** | **Total [Indicated currency]** |
|---|---|
| 1. Local transportation [by domestic fare, etc.] | |
| 2. Accommodation [exclude hospital room services] | |
| 3. Food & Beverage | |
| 4. Sightseeing [domestic tour, etc.] | |
| 5. Shopping | |
| 6. Entertainment and leisure/sport activities | |
| 7. Medical care [ include hospital room services] | |
| 8. Other expenses [convention fee, etc.] | |
| **Total** | |

## <u>Part 2</u>: Data on Travel Expenditures of your companions/relatives

9. How many companions or relatives come with you in this trip? .....person[s]

10. How much in total did **your companions/relatives** spend on the following items on this **visit to Thailand**? Please make sure that you include all methods of payment (cash, credit cards, travelling cheques, etc.).

| **Types of Expenditure** | **Total [Indicated currency]** | **Expenditure of No. of persons** |
|---|---|---|
| 1. Local transportation [by domestic fare, etc.] | | |
| 2. Accommodation | | |
| 3. Food & Beverage | | |
| 4. Sightseeing [domestic tour, etc.] | | |
| 5. Shopping | | |
| 6. Entertainment and leisure/sport activities | | |
| 7. Medical care | | |
| 8. Other expenses [convention fee, etc.] | | |
| **Total** | | |

## <u>Part 3</u>: Personal Data

1. Gender

[1] Male [2] Female

2. Age .....year old

3. Occupation

[1] Professionals [2] Administrative and Managerial

[3] Government and Military Personal [4] Clerical, Salesmen and Commercial Personal

[5] Housewife or Unpaid Family Workers [6] Student and Children

[7] Labourer [8] Agricultural worker

[9] Retired and Unemployed [10] Others [Please Specify] ……

4. For statistical records, we would like to know your personal income before taxes:

Currency ……Amount…….. [ ] per month [ ] per year

Or please specify annual personal income before taxes

[1] Less than US$ 20,000 [2] US$ 20,000-39,999 [3] US$ 40,000-59,999

[4] US$ 60,000-79,999 [5] US$ 80,000 and above

5. Which of the following statements best describes your current trip to Thailand?

[1] Medical treatment was the main purpose of this visit to Thailand.

[2] Medical treatment was only one of the reasons for this visit to Thailand.

[3] You planned this visit to Thailand before you thought of getting medical treatment here.

6. If you had <u>not</u> needed medical treatment, do you think you would have…

[1] Definitely visited Thailand this year

[2] Probably visited Thailand this year

[3] Probably not visited Thailand this year

[4] Definitely not visited Thailand this year

**********************Thank you very much**********************

2. Questionnaire in Arabic language

**استبيان لإجراء دراسة استقصائية عن نفقات السياحة الطبية لعام 2011**

يقوم بإجراء الدراسة الإستقصائية التالية عن النفقات السياحة الطبية لعام 2011 برنامج سياسة الصحة الدولية من وزارة الصحة العامة التايلاندية. وتتشكل الدراسة الإستقصائية من أسئلة معظمها عن نفقات السفر الخاصة بك في تايلاند، وقد يحتاج إكماله بعض الوقت والجهد. كما وستساعدنا مشاركتك في هذه الدراسة الإستقصائية على التخطيط من أجل تحسين السياحة العامة في تايلاند بالإضافة للسياحة الطبية. وسيتم التعامل مع إجاباتك بسرية تامة ولأغراض الدراسة فقط.

شكراً

**<u>الجزء الأول</u>: بيانات عن نفقات السفر**

1. ما اسم البلد الذي تقطنه؟ .....

2. هل قمت بزيارة تايلاند في السابق لتلقي **الرعاية الطبية** ؟
[1] أبداً [2] مرة واحدة أو مرتان في السابق [3] أكثر من 3 مرات

3. عدد الأيام التي قضيتها في **تايلاند**..... يوم.

4. عدد الأيام التي قضيتها في **المستشفى**..... يوم (للمرضى الداخليين فقط)

5. هل أتيت إلى تايلاند مستفيداً من **حزمة من الخدمات الطبية؟** (أي حزمة تتضمن ما لا يقل عن تكلفة الخدمة الطبية، وتذاكر السفر جواً والإقامة المدفوعة مسبقا قبل الرحيل)
[1] نعم
[2] لا، لقد نظمت هذه الرحلة بنفسي **(إذا كان الجواب لا، يرجى الانتقال إلى السؤال السابع)**

6. كم دفعت ثمن هذه الحزمة من الخدمات الطبية (لشخص واحد فقط)؟ ..... **(اذكر العملة)**

يرجى مراجعة البنود المتضمنة في حزمة الخدمات الطبية
1) ثمن تذكرة الطيران الجوي الدولي أو الباص
2) التنقل
3) التكلفة الطبية
4) الإقامات
5) الطعام والشراب
6) زيارة المواقع السياحية
7) الخدمات الطبية
8) غير ذلك (حددها).....

7. ما اسم شركة الطيران التي سافرت معها من وإلى تايلاند وما هو المبلغ الذي دفعته لقاء تذكرة السفر بالطائرة (لشخص واحد)؟

**1. إلى تايلاند،** ثمن تذكرة السفر ..... **(اذكر العملة)**

1) الخطوط الجوية التايلاندية 2) شركة طيران أخرى
**2. من تايلاند،** ثمن تذكرة السفر ..... **(اذكر العملة)**

8 الخطوط الجوية التايلاندية 2) شركة طيران أخرى

8. ماهو مجموع ما صرفته على كل من الآتي **أثناء زيارتك لتايلاند؟** الرجاء التأكد من ذكر جميع طرق الدفع (نقداً، وبطاقات الائتمان، وشيكات السفر، الخ). **إذا كنت مستفيداً من حزمة من الخدمات الطبية، تأكد من عدم شمول سعر الرحلة المنظمة التي اشتريتها ضمن هذا المبلغ.**

| أنواع النفقات | المجموع (أذكر العملة) |
|---|---|
| التنقلات المحلية (من أجرة التذكرة المحلية، الخ) | |
| الإقامة (لا تشمل خدمات غرفة المستشفى) | |
| أطعمة وأشربة | |
| مشاهدة معالم المدينة (سياحة محلية، الخ) | |
| التسوق | |
| الترفيه والأنشطة الترفيهية والرياضية | |
| الرعاية الطبية (أشمل خدمات غرفة المستشفى) | |
| نفقات أخرى (رسوم المؤتمر، إلخ) | |
| **المجموع** | |

**<u>الجزء الثاني</u>: بيانات عن نفقات سفر مرافقيك/ أقربائك**

9. ما هو عدد مرافقيك أو أقربائك الذين أتوا معك إلى هذه الرحلة؟ ..... شخص

10. ماهو مجموع ما صرفه مرافقوك أو أقرباؤك على كل من الآتي **خلال هذه الزيارة لتايلاند؟** الرجاء التأكد من ذكر جميع طرق الدفع (نقداً، وبطاقات الائتمان، وشيكات السفر، الخ).

| أنواع النفقات | المجموع (أذكر العملة) | نفقات العدد التالي من الأشخاص |
|---|---|---|
| التنقلات المحلية (من أجرة التذكرة المحلية، الخ) | | |
| الإقامة | | |
| أطعمة وأشربة | | |
| مشاهدة معالم المدينة (سياحة محلية، الخ) | | |
| التسوق | | |
| الترفيه والأنشطة الترفيهية والرياضية | | |
| الرعاية الطبية | | |
| نفقات أخرى (رسوم المؤتمر، إلخ) | | |
| **المجموع** | | |

**<u>الجزء الثالث</u>: المعلومات الشخصية**

1. الجنس
[1] ذكر [2] أنثى

2. السن ..... عاماً

3. المهنة

1) صاحب مهنة حرفية

2) إداري أو تنظيمي

3) موظف حكومي أو عسكري

4) موظف سجلات، أو بائع أو تاجر

5) ربة منزل أو عامل في الأسرة دون أجر

6) طالب أو طفل

7) عامل يدوي

8) عامل زراعي

9) متقاعد أو عاطل عن العمل

10) غير ذلك (يرجى التحديد).....

4. لغاية السجلات الإحصائية، نود معرفة دخلك الشخصي قبل خصم الضرائب:
العملة..... المبلغ..... [ ] في الشهر [ ] في السنة

أو يرجى تحديد الدخل الشخصي السنوي قبل خصم الضرائب:

1) أقل من 20000 دولار أمريكي

2) 20000- 39999 دولار أمريكي

3) 40000- 59999 دولار أمريكي

4) 60000- 79999 دولار أمريكي

5) 80000 دولار أمريكي وما فوق

5. أي من الآتي الأدق في وصف رحلتك الحالية لتايلاند؟

1) العلاج الطبي هو السبب الرئيسي لزيارتي لتايلاند

2) العلاج الطبي هو فقط أحد أسباب زيارتي لتايلاند

3) قررت زيارة تايلاند قبل التفكير بأخذ العلاج هنا

6. إن <u>لم تحتج</u> لعلاج طبي، هل تعتقد بأنك كنت ستفعل التالي...
[1] تقوم بزيارة تايلاند هذا العام بشكل مؤكد.
[2] تقوم بزيارة تايلاند هذا العام على الأرجح.
[3] لن تقوم بزيارة تايلاند هذا العام على الأرجح.
[4] لن تقوم بزيارة تايلاند هذا العام بشكل مؤكد.

********** شكراً جزيلاً لك **********

## 3. Questionnaire in Japanese language

**2011調査質問票する関に費年医療観光経**

2011
がタイで大部分、われるもので行に下の管理プログラムの国際医療の国保健省タイ、は調査するこの関に年医療観光経費ツ医療び観光及をタイの協力のご皆様への調査。いします願をお協力にご記入への質問票。です質問する対に旅行費用の。とさせていただきます極秘、し使用のためのみに調査は回答、また。きます頂させて反映に改善の産業ーリズム

。ありがとうございます

**Part 1: について旅行費用**

1. ？まいですか住にお国どちらの……..……..

2. はありますか事タイにいらっしゃった**で治療目的**これまでに?
[1] もない一度 [2] ある度２～１ [3] 回以上３

3. ですか滞在くらいご何日は**タイに**……日間

4. されましたか**入院**何日間..... （のみ入院期間）日間入院

5. タイされましたか来で**パッケージ・ツアー医療観光**? [み済い支払を宿泊費用、航空運賃や医療費に事前、前タイ来：例]
[1] はい
[2] タイ来で個人アーではなくツ。いいえ**|は方いいえの No.7さい下んで進へ質問の|**

6. われましたか支払あたりいくら一人として費用パッケージ医療? ……..... **|通貨単位明記|**
。さい下をつけて丸に費用まれる含パッケージに医療

[1] 航空運賃 [2] 移動費用
[3] 治療費用 [4] 宿泊費用
[5] 飲食費用 [6] 観光費用
[7] 費用サービス医療 [8] 他その[しく詳] …….....

7. われましたか支払あたりいくら一人、され利用を航空会社タイにはどちらの来ご?

7.1 航空運賃**タイ来**…….…… **|通貨単位明記|**
[1] 航空タイ [2] 他航空会社その

7.2航空運賃**帰国**…….…… **|通貨単位明記|**
[1] 航空イタ [2] 他航空会社その

8.

を（他トラベラーズチェック、クレジットカード、現金）支払方法すべての？はおいくらでしたか費用**滞在・訪問タイ**の今回**料金いになったパッケージツアー支払にお事前、は方パッケージツアーでいらした医療**。さい下らせ知をお金額めた含**。さい下え答めないでお含は**

| **種類の支出** | **合計金額**<br>**[通貨単位明記]** |
|---|---|
| 1.[国内線費用等]交通費の国内タイ | |
| 2. [をのぞく入院部屋代]宿泊費 | |
| 3. 飲食費 | |
| 4. [ツアーなど国内観光]観光費用 | |
| 5. 物い買 | |
| 6. スポーツなど、レジャー、娯楽 | |
| 7. [む含も入院部屋代]医療 | |
| 8. [など費用の会議]他支出その | |
| **合計** | |

**<u>Part 2</u>: について旅行費用の親族／同伴者あなたの**

9. といらっしゃいましたか親族／同伴者の何人、今回? ..... 人

10.

トラベラーズ、クレジットカード、現金）支払方法すべての？おいくらでしたか費用**滞在・訪問タイの親族／同伴者**の今回。さい下らせ知をお金額めた含を（他チェック

| **種類の支出** | **合計金額**<br>**[通貨単位明記]** | **人数の利用者**<br>**[ 人 ]** |
|---|---|---|
| 1.[国内線費用等]交通費の国内タイ | | |
| 2. [をのぞく入院部屋代]宿泊費 | | |
| 3. 飲食費 | | |
| 4. [ツアーなど国内観光]観光費用 | | |
| 5. 物い買 | | |
| 6. スポーツなど、レジャー、娯楽 | | |
| 7. [む含も入院部屋代]医療 | | |
| 8. [など費用の会議]他支出その | | |
| **合計** | | |

**Part 3: 個人情報**

1. 性別

[1] 男性　　[2] 女性

2. 年齢..... 歳

3. 職業

[1] 専門職　　[2] 管理職

[3] 軍関係者・政府　　[4] 販売関係、営業、事務

[5] い家事手伝、主婦　　[6] 子供、学生

[7] 肉体労働者　　[8] 農業

[9] 無職、引退　　[10] 他その[詳細] ……

4. さい下らせ知をお税引前個人所得あなたの、として統計記録:

通貨 ……..…金額…….…….. [ ]　　月収[ ] 年収
。さい下らせ知をお税引前個人年収から下記もしくは

[1] 2約)ドル万160　以下(万円　　[2] 2約)ドル万160(万円-39,999約)ドル320(万円

[3] 4約)ドル万320(万円-59,999約)ドル480(万円

[4] 6約)ドル万480(万円-79,999約)ドル640(万円

[5] 8約)ドル万640(万円

5.。てはまりますか当も最に表現のどの下記、場合する説明について旅行のタイ今回

[1]。である旅行のタイ目的けることが受サービスを医療に主

[2]。である旅行のタイ目的けることのみが受サービスを医療

[3]。である旅行ててていたタイ立に既を計画に前える考けることを受スをサービ医療

6.。われますか思あなたはどうしたと、場合としていなかった必要けることを受サービスを医療に仮

[1]。れていた訪タイを今年に確実

[2]。れていた訪タイを今年おそらく

[3]。れていなかった訪タイを今年おそらく

[4]。れていなかった訪タイを今年に確実

**********。ありがとうございました、協力ご**********

***Annex 4:*** *Information sheet and consent form for interview (hospital executives and service providers)*

1. For hospital executives

เอกสารหมายเลข 4

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

**Information sheet for hospital administrators**

**Dear Participant,**

My name is Thinakorn Noree. I am studying for a PhD at the Department of Global Health and Development, Faculty of Public Health & Policy, London School of Hygiene & Tropical Medicine, London. I am conducting a research study on the impact of medical tourism on the domestic economy and health system by using Thailand as a case study, under supervision of Professor Richard Smith. A summary of the study is provided below.

**Summary of the study**

Thailand is the foremost destination country for medical tourists in Southeast Asia. It is widely believed that there is a substantial economic benefit of medical tourism, but this is not enough evidence to support this idea. An understanding of how much medical tourists and their companions add to tourism expenditure in general is very important for estimating their *additional* economic impact. Similarly, although there is concern over the impact that foreign patients may have on the domestic health system, there is a lack of clear evidence concerning the impacts on the health system of the destination country. The divergence of views and overall lack of evidence provide the potential for policy incoherence between trade and health, and generate a need to establish empirically the impact of medical tourism on *both* the domestic economy and health system to determine whether it represents a 'good deal' overall for countries, as well as identify factors which may be used to balance the opportunities and risks presented.

**Participation**

You have been approached to take part in an interview because I believe you may be able to contribute to my understanding on how medical tourists are treated in your hospital and how hospital resources are allocated for serving them. Participation is entirely voluntary and should you agree to take part you may withdraw at any time without giving a reason. Should you agree to participate, I would like to record the interview and have it transcribed to assist my analysis. However, you are free to indicate that you would prefer the interview not to be recorded, in which case I will take hand- written notes during the course of the interview.

**Guided questions**

1) Are medical tourists treated differently from domestic patients?
2) Are medical tourists used to fill up spare capacity or compete with domestic patients?
3) Does hospital expand to build new capacity for medical tourist? And where will extra resources come from?
4) Do medical tourist expenditures on medical services cover their cost? And where does their profit go?
5) If hospital has limited resources, for example only one bed, who would get it between medical tourist and domestic patient?

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Information sheet for hospital administrators

**Confidentiality**

Where you are happy to be identified, I will do so in any research papers and publications that I publish. However, should you prefer to remain anonymous, I will ensure that your identity is anonymised. Should you prefer not to be quoted at all, even anonymously, I will, with your permission, use information you provide me in undertaking analysis, but without any specific form of specific citation. No person other than me will have access to the interview materials and they will be kept confidentially once the study is completed and will be destroyed after 10 years as the School data retention policy.

**Further information**

Should you have any questions or require further information or explanation regarding this study, please contact me at this address below.

Dr.Thinakorn Noree
*Research Student*
*Department of Global Health and Development*
*Faculty of Public Health & Policy*
*London School of Hygiene & Tropical Medicine*
*15-17 Tavistock Place*
*London WC 1H 9SH*
*Tel : 020 7299 479*
*Email: thinakorn.noree@lshtm.ac.uk*

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Consent Form for hospital administrators

**Interviewer's name:** Dr.Thinakorn Noree

**Contact details :**
Department of Global Health and Development
Faculty of Public Health & Policy
London School of Hygiene & Tropical Medicine
15-17 Tavistock Place
London WC 1H 9SH
Tel : 020 7299 4759
Email: thinakorn.noree@lshtm.ac.uk

**To be completed by the participant**

I have read the information above and understand what is required of me to take part in the interview. My questions concerning this study have been addressed by the researcher identified above.

I understand that I can withdraw from the interview process at any time I wish without having to provide any explanation.

I agree to be interviewed and the interview to be recorded.
Yes No

I agree to be interviewed and the interviewer takes notes only, without recording.
Yes No Not Applicable

I give consent that my responses may be quoted in the research described above.
Yes No

I give my consent that my responses may be quoted anonymously.
Yes No

I give consent that my responses are not quoted at all even anonymously but just used to inform the analysis.
Yes No

I would like to receive a synopsis of the research findings from the researcher.
Yes No

NAME: .....

ADDRESS or Email .....
.....
.....

Signed: Dated:

2. For service providers

เอกสารหมายเลข 4_Revise 20 Sep 2011

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Information sheet for physicians and nurses

**Dear Participant,**

My name is Thinakorn Noree. I am studying for a PhD at the Department of Global Health and Development, Faculty of Public Health & Policy, London School of Hygiene & Tropical Medicine, London. I am conducting a research study on the impact of medical tourism on the domestic economy and health system by using Thailand as a case study, under supervision of Professor Richard Smith. A summary of the study is provided below.

**Summary of the study**

Thailand is the foremost destination country for medical tourists in Southeast Asia. It is widely believed that there is a substantial economic benefit of medical tourism, but this is not enough evidence to support this idea. An understanding of how much medical tourists and their companions add to tourism expenditure in general is very important for estimating their *additional* economic impact. Similarly, although there is concern over the impact that foreign patients may have on the domestic health system, there is a lack of clear evidence concerning the impacts on the health system of the destination country. The divergence of views and overall lack of evidence provide the potential for policy incoherence between trade and health, and generate a need to establish empirically the impact of medical tourism on *both* the domestic economy and health system to determine whether it represents a 'good deal' overall for countries, as well as identify factors which may be used to balance the opportunities and risks presented.

**Participation**

You have been approached to take part in an interview because I believe you may be able to contribute to my understanding on how medical tourists are treated in your hospital and how hospital resources are allocated for serving them. Participation is entirely voluntary and should you agree to take part you may withdraw at any time without giving a reason. Should you agree to participate, I would like to record the interview and have it transcribed to assist my analysis. However, you are free to indicate that you would prefer the interview not to be recorded, in which case I will take hand- written notes during the course of the interview.

**Guided questions**

1) Are medical tourists treated differently from Thai patients?
2) If yes, in what kind of hospital services they differ and how do you think they differ?
3) What do you think about international patients coming for medical services in Thailand? And why do they come?
4) What do you benefit from serving medical tourists? In terms of;
    - Encouraging your further specialty training
    - Capacity building on your medical2nursiing skill
    - Capacity building on your English/other languages skill
    - Career advancement for working abroad in the future
    - Pleasing remuneration

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Information sheet for *physicians and nurses*

**Confidentiality**

Where you are happy to be identified, I will do so in any research papers and publications that I publish. However, should you prefer to remain anonymous, I will ensure that your identity is anonymised. Should you prefer not to be quoted at all, even anonymously, I will, with your permission, use information you provide me in undertaking analysis, but without any specific form of specific citation. No person other than me will have access to the interview materials and they will be kept confidentially once the study is completed and will be destroyed after 10 years as the School data retention policy.

**Further information**

Should you have any questions or require further information or explanation regarding this study, please contact me at this address below.

Dr.Thinakorn Noree
*Research Student*
*Department of Global Health and Development*
*Faculty of Public Health & Policy*
*London School of Hygiene & Tropical Medicine*
*15-17 Tavistock Place*
*London WC 1H 9SH*
*Tel : 020 7299 479*
*Email: thinakorn.noree@lshtm.ac.uk*

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

## Consent Form for physicians and nurses

**Interviewer's name:** Dr.Thinakorn Noree

**Contact details :**
Department of Global Health and Development
Faculty of Public Health & Policy
London School of Hygiene & Tropical Medicine
15-17 Tavistock Place
London WC 1H 9SH
Tel : 020 7299 4759
Email: thinakorn.noree@lshtm.ac.uk

**To be completed by the participant**

I have read the information above and understand what is required of me to take part in the interview. My questions concerning this study have been addressed by the researcher identified above.

I understand that I can withdraw from the interview process at any time I wish without having to provide any explanation.

I agree to be interviewed and the interview to be recorded.
Yes No

I agree to be interviewed and the interviewer takes notes only, without recording.
Yes No Not Applicable

I give consent that my responses may be quoted in the research described above.
Yes No

I give my consent that my responses may be quoted anonymously.
Yes No

I give consent that my responses are not quoted at all even anonymously but just used to inform the analysis.
Yes No

I would like to receive a synopsis of the research findings from the researcher.
Yes No

NAME: .....

The impact of medical tourism on the domestic economy and health system
A case study of Thailand

**Information sheet for *physicians and nurses***

ADDRESS or Email .....
.....
.....
Signed: Dated:

***Annex 5:*** *Semi-structured questions for interview*

1. Topic guide for hospital executive

*Part 1: Questions on respondents' background*

1) What position are you holding in your hospital, and what is your role?
2) How long have you been in this hospital?

*Part 2: Questions on resource management and resource allocation*

1) Are medical tourists treated differently from domestic patients?
2) Are medical tourists used to fill up spare capacity or compete with domestic patients?
3) Does hospital expand to build new capacity for medical tourist? And where will extra resources come from?
4) If hospital has limited resources, for example only one bed, who would get it between medical tourist and domestic patient?

2. Topic guide for service provider

*Part 1: Questions on respondents' background*

1) What position are you holding in your hospital, and what is your role?
2) How long have you been in this hospital?

*Part 2: Questions on variation of services*

1) Are medical tourists treated differently from Thai patients?
2) If yes, in what kind of hospital services they differ and how do you think they differ?
3) What do you think about international patients coming for medical services in Thailand? And why do they come?
4) What do you get from serving medical tourists?
   4.1) Encouraging your further specialty training
   4.2) Capacity building on your medical2nursiing skill
   4.2) Capacity building on your English/other languages skill
   4.4) Career advancement for working abroad in the future
   4.5) Pleasing remuneration

***Annex 6:*** *List of interview participants*

| No | Name | Position | Hospital | Interview date | Code |
|---|---|---|---|---|---|
| 1 | Dr Montri Luxuwong | Vice director | Bumrungrad International Hospital | 31 August | H1E1 |
| 2 | Mr. Kenneth Mays | Marketing Director | | 25 July | H1E2 |
| 3 | Mrs. Artirat Charukitpipat | Chief Human Resource Officer | | 14 August | H1E3 |
| 4 | Ms. Ansuree Suwansura | Nurse | | 27 July | H1N1 |
| 5 | Ms. Sukanya Kon-on | Nurse | | 31 July | H1N2 |
| 6 | Dr Kritawit Lertusahakul | Director | Bangkok Hospital | 21 June | H2E1 |
| 7 | Dr Trin Jarumilind | Medical Director | | 21 June | H2E2 |
| 8 | Mrs. Sumalee Promburi | Human Resource Director | | 21 June | H2E3 |
| 9 | Ms. *Pojana* Suksamanwong, | *Marketing Director* | | 8 August | H2E4 |
| 10 | Dr Nattanun Prasassarakich | Doctor | | 21 June | H2M1 |
| 11 | Dr Laksamee Chanvej | Doctor | | 8 August | H2M2 |
| 12 | Dr Supreecha Kapiya | Doctor | | 9 August | H2M3 |
| 13 | Dr Sithiphol Chinnapongse | Doctor | | 15 August | H2M4 |
| 14 | Ms. Prapaporn Nichangtong | Nurse | | 14 August | H2N1 |
| 15 | Ms. Jitraporn Khankum | Nurse | | 14 August | H2N2 |
| 16 | Ms. Weranuch Wiboonpan | Nurse | | 15 August | H2N3 |
| 17 | Mrs. Pannee Songsai | Nurse | | 15 August | H2N4 |
| 18 | Mrs. Poranee Pongnoppakun | Nurse | | 21 June | H2N5 |
| 19 | Dr Pichit Kangwolkij | Director | Bangkok Pattaya Hospital | 19 June | H3E1 |
| 20 | Dr Supakorn Winwak | Deputy Director | | 19 June | H3E2 |
| 21 | Mrs. Nirachorn Sirisampan | Marketing director for Foreign Affairs | | 19 June | H3E3 |
| 22 | Ms. Datchaneeporn Pantaprom | Human Resource Director | | 20 June | H3E4 |
| 23 | Dr Woratorn Munintorn | Doctor | | 19 June | H3M1 |
| 24 | Dr Athakorn Kirakul | Doctor | | 19 June | H3M2 |
| 25 | Dr Niyom Pisitpipattana | Doctor | | 19 June | H3M3 |
| 26 | Dr Attaporn Suwannik | Doctor | | 20 June | H3M4 |
| 27 | Dr Tassanee Lertutsahakul | Doctor | | 20 June | H3M5 |
| 28 | Ms. Wachara Kaopong | Nurse | | 20 June | H3N1 |
| 29 | Ms. Lissara Dungpetch | Nurse | | 20 June | H3N2 |
| 30 | Ms. Saovanee Reungsri | Nurse | | 20 June | H3N3 |
| 31 | Ms. Panee Pasuk | Nurse | | 20 June | H3N4 |
| 32 | Ms. Sirarom Janechotsuwan | Nurse | | 20 June | H3N5 |
| 33 | Dr Narongrit Havarngsi | Director | Bangkok Phuket Hospital | 13 July | H4E1 |
| 34 | Dr Bodin La-ied | Deputy Director | | 13 July | H4E2 |
| 35 | Mr. Charnchai Panya | Marketing director for Foreign Affairs | | 12 July | H4E3 |

| No | Name | Position | Hospital | Interview date | Code |
|---|---|---|---|---|---|
| 36 | Mr. Chaowalit Laoprasertsiri | Human Resource Manager | Bangkok Phuket Hospital | 12 July | H4E4 |
| 37 | Dr Piyapas Pichaichannarong | Doctor | | 12 July | H4M1 |
| 38 | Dr Supachai Kerdsap | Doctor | | 13 July | H4M2 |
| 39 | Dr Lalita Kongsiha | Doctor | | 12 July | H4M3 |
| 40 | Mrs. Ratree Koythanakom | Nurse | | 11 July | H4N1 |
| 41 | Mrs. Kattika Lakleam | Nurse | | 11 July | H4N2 |
| 42 | Mrs. Pacharee Sungthong | Nurse | | 12 July | H4N3 |
| 43 | Mrs. Somlak Samgpleng | Nurse | | 12 July | H4N4 |

***Annex 7:*** *Country comparison on characteristic of medical tourists*

## Country comparison on characteristic of medical tourists

For country selection in specific question 4, this study selected countries with the largest number of medical tourists in each region in top-10 country. Five countries were selected including UK from Europe, USA from North America, Australia from Australia and Oceania, Myanmar form Southeast Asia and UAE from Middle East. These five countries had a total of 44,284 medical tourists accounting for 42% of total medical tourists (Table 8.1).

Table 8.1: Number of patients in five selected countries

| | Number of patients | Total patients in the region | % of total number |
|---|---|---|---|
| United Kingdom | 3,935 | 14,004 | 28.1 |
| USA | 7,854 | 9,481 | 82.8 |
| Australia | 3,359 | 3,949 | 85.1 |
| Myanmar | 7,569 | 14,730 | 51.4 |
| U.A.E. | 21,567 | 40,554 | 53.2 |
| **Total** | **44,284** | **104,830** | **42.2** |

In 2010, there were 44,284 medical tourists from five countries with separate 104,830 visits (Table 8.2). They accounted 42.2% of total medical tourist. Medical tourists from UAE had the highest utilization rate, approximately 4.4 visits per person per year while those from UK had the lowest rate, approximately 2.7 visits per patient per year.

Table 8.2: Number of patients, visit and utilization rate of medical tourists in five countries

| | Number of patients | Number of visit | Utilization rate |
|---|---|---|---|
| United Kingdom | 3,935 | 10,779 | 2.7 |
| USA | 7,854 | 24,262 | 3.1 |
| Australia | 3,359 | 10,136 | 3.0 |
| Myanmar | 7,569 | 32,940 | 4.4 |
| U.A.E. | 21,567 | 63,457 | 2.9 |
| **Total** | **44,284** | **141,574** | **3.2** |

*1. Gender and age*

Men dominated most countries except Myanmar (Table 8.3). The largest age group in most countries except UAE was age between 45-54 year while one in UAE was age between 25-34 year (Table 8.4). Myanmar had the biggest group in age more than 65 compared to other countries. Patients from Myanmar had the highest average age, approximately 46.65 year while those from UAE had the lowest, approximately 37.42 year (Table 8.5).

Table 8.3: Gender comparison of medical tourists among five countries

| | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| Male | Count | 2,702 | 5,135 | 1,727 | 3,360 | 12,230 |
| | % | 68.7% | 65.4% | 51.4% | 44.4% | 56.7% |
| Female | Count | 1,231 | 2,717 | 1,632 | 4,208 | 9,337 |
| | % | 31.3% | 34.6% | 48.6% | 55.6% | 43.3% |
| **Total** | Count | 3,933 | 7,852 | 3,359 | 7,568 | 21,567 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 8.4: Age distribution among five countries

| | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| Less than 25 | Count | 321 | 847 | 375 | 754 | 4561 |
| | % | 8.2% | 10.8% | 11.2% | 10.0% | 21.2% |
| 25-34 | Count | 498 | 1034 | 607 | 761 | 5509 |
| | % | 12.7% | 13.2% | 18.1% | 10.1% | 25.6% |
| 35-44 | Count | 819 | 1372 | 746 | 1687 | 4367 |
| | % | 20.8% | 17.5% | 22.2% | 22.3% | 20.3% |
| 45-54 | Count | 1015 | 1857 | 779 | 1939 | 3353 |
| | % | 25.8% | 23.6% | 23.2% | 25.6% | 15.6% |
| 55-64 | Count | 831 | 1880 | 613 | 1411 | 2265 |
| | % | 21.1% | 23.9% | 18.2% | 18.6% | 10.5% |
| More than 65 | Count | 450 | 864 | 239 | 1017 | 1504 |
| | % | 11.4% | 11.0% | 7.1% | 13.4% | 7.0% |
| **Total** | Count | 3934 | 7854 | 3359 | 7569 | 21559 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 8.5: Average age of medical tourists among five countries

| Gender | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| United Kingdom | 46.52 | 3,932 | 15.82 | 0 | 91 | 48.00 |
| USA | 45.68 | 7,852 | 17.23 | 0 | 95 | 48.00 |
| Australia | 43.42 | 3,359 | 14.98 | 0 | 88 | 44.00 |
| Myanmar | 46.65 | 7,568 | 16.52 | 0 | 95 | 47.00 |
| UAE | 37.42 | 21,559 | 17.43 | 0 | 106 | 36.00 |

*Statistical analysis*

From table 8.1, Pearson Chi-square test is employed to prove whether there is any difference in gender distribution among medical tourists in five countries. It is found that there is statistically difference in gender (p value < 0.0001) among medical tourists in five countries.

Analysis of Variance (ANOVA) test is also employed to prove whether there is any difference in an average age among medical tourists in five countries. The null hypothesis is an average age of medical tourists in all countries are the same. It is found that there is statistically difference (p value < 0.0001) in average age among five countries. Hence, the average ages of medical tourist in five countries are not the same. The statistical analysis also finds that an average age of medical tourist from UK is very similar to one of those from Myanmar (p value > 0.99).

*3. Disease pattern*

3.1 Male comparison

In contrast to region comparison, male patients of five countries, being from different regions including long-haul and within regions, had comparatively similar disease pattern (Table 8.6). Health check-up, disease of digestive system, disease of circulatory system and disease of musculo-skeleton were common problems in all countries. Health check-up including medical consultation and treatment follow up were the most common, ranging from 28% in Myanmar to 41% in Australia. Disease of skin and sub-cutaneous tissue, related to cosmetic problems, were also common in male patients from USA and Australia.

Table 8.6: Disease pattern in male medical tourists among five countries

| Male diagnosis | | Country | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. | |
| Health examination, medical | Count | 2,690 | 5,720 | 1,668 | 3,399 | 11,685 | 25,162 |
| consultation and treatment follow-up | % | 40.5% | 39.7% | 41.0% | 27.8% | 38.0% | 37.0% |
| Diseases of the digestive system | Count | 815 | 1,631 | 597 | 939 | 2,421 | 6,403 |
| | % | 12.3% | 11.3% | 14.7% | 7.7% | 7.9% | 9.4% |
| Diseases of the circulatory system | Count | 420 | 887 | 201 | 1,398 | 1,885 | 4,791 |
| | % | 6.3% | 6.2% | 4.9% | 11.5% | 6.1% | 7.0% |
| Diseases of the musculo-skeletal | Count | 398 | 926 | 208 | 426 | 2,098 | 4,056 |
| system and connective tissue | % | 6.0% | 6.4% | 5.1% | 3.5% | 6.8% | 6.0% |
| Diseases of the genito-urinary system | Count | 329 | 643 | 181 | 636 | 1,971 | 3,760 |
| | % | 5.0% | 4.5% | 4.4% | 5.2% | 6.4% | 5.5% |
| Endocrine, nutritional and metabolic | Count | 224 | 540 | 155 | 907 | 1,837 | 3,663 |
| diseases | % | 3.4% | 3.7% | 3.8% | 7.4% | 6.0% | 5.4% |
| Diseases of the skin and subcutaneous | Count | 312 | 798 | 249 | 270 | 1,727 | 3,356 |
| tissue | % | 4.7% | 5.5% | 6.1% | 2.2% | 5.6% | 4.9% |
| Neoplasms | Count | 264 | 545 | 124 | 1,410 | 918 | 3,261 |
| | % | 4.0% | 3.8% | 3.0% | 11.6% | 3.0% | 4.8% |
| Diseases of the eye and adnexa | Count | 244 | 577 | 177 | 359 | 1,246 | 2,603 |
| | % | 3.7% | 4.0% | 4.3% | 2.9% | 4.1% | 3.8% |
| Infectious and parasitic diseases | Count | 216 | 501 | 130 | 1,206 | 524 | 2,577 |
| | % | 3.3% | 3.5% | 3.2% | 9.9% | 1.7% | 3.8% |
| Diseases of the respiratory system | Count | 148 | 354 | 110 | 322 | 1,159 | 2,093 |
| | % | 2.2% | 2.5% | 2.7% | 2.6% | 3.8% | 3.1% |
| Symptoms, signs and laboratory | Count | 107 | 236 | 61 | 288 | 787 | 1,479 |
| findings, not elsewhere classified | % | 1.6% | 1.6% | 1.5% | 2.4% | 2.6% | 2.2% |
| Diseases of the nervous system | Count | 128 | 321 | 35 | 214 | 778 | 1,476 |
| | % | 1.9% | 2.2% | .9% | 1.8% | 2.5% | 2.2% |
| Mental and behavioural disorders | Count | 156 | 361 | 61 | 162 | 605 | 1,345 |
| | % | 2.4% | 2.5% | 1.5% | 1.3% | 2.0% | 2.0% |
| Diseases of the ear and mastoid | Count | 124 | 244 | 72 | 107 | 549 | 1,096 |
| process | % | 1.9% | 1.7% | 1.8% | .9% | 1.8% | 1.6% |
| Diseases of the blood and the immune | Count | 31 | 69 | 9 | 93 | 229 | 431 |
| mechanism | % | .5% | .5% | .2% | .8% | .7% | .6% |
| Congenital malformations, and | Count | 10 | 23 | 19 | 45 | 214 | 311 |
| chromosomal abnormalities | % | .2% | .2% | .5% | .4% | .7% | .5% |
| Injury, poisoning and certain other | Count | 11 | 15 | 8 | 9 | 74 | 117 |
| consequences of external causes | % | .2% | .1% | .2% | .1% | .2% | .2% |
| Certain conditions originating in the | Count | 0 | 11 | 0 | 5 | 19 | 35 |
| perinatal period | % | .0% | .1% | .0% | .0% | .1% | .1% |
| External causes of morbidity and | Count | 7 | 4 | 4 | 3 | 14 | 32 |
| mortality | % | .1% | .0% | .1% | .0% | .0% | .0% |
| Pregnancy, childbirth and the | Count | 2 | 4 | 0 | 8 | 11 | 25 |
| puerperium | % | .0% | .0% | .0% | .1% | .0% | .0% |
| **Total** | Count | 6,636 | 14,410 | 4,069 | 12,206 | 30,751 | 68,072 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

From table 8.6, Pearson's Chi-square test is employed to prove whether there is any difference on disease pattern among male medical tourists from five countries. It is found that there is statistically difference in disease pattern (p value < 0.0001) among male medical tourists from five countries.

### 3.2 Female comparison

Disease pattern in female patients from UK, USA and Australia was comparatively similar while one in those from Myanmar and UAE was quite related (Table 8.7). Health check-up, disease of genito-urinary system, disease of digestive system and disease of skin were common in female patients form UK, USA and Australia. Health check-up, disease of genito-urinary system and metabolic diseases were common in those from Myanmar and UAE.

In conclusion, comparing disease pattern in term of country, male patients had quite similar disease pattern among countries from long-haul and within regions. In contrast, in female comparison, there was different disease pattern among countries from long-haul and within regions.

Table 8.7: Disease pattern in male medical tourists among five countries

| Female diagnosis | | Country | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. | |
| Health examination, medical | Count | 1,744 | 4,203 | 2,965 | 5,784 | 11,958 | 26,654 |
| consultation and treatment follow-up | % | 52.5% | 51.2% | 63.9% | 36.5% | 42.6% | 44.3% |
| Diseases of the genito-urinary system | Count | 258 | 519 | 203 | 1,336 | 2,400 | 4,716 |
| | % | 7.8% | 6.3% | 4.4% | 8.4% | 8.5% | 7.8% |
| Neoplasms | Count | 108 | 339 | 54 | 2,044 | 1,467 | 4,012 |
| | % | 3.2% | 4.1% | 1.2% | 12.9% | 5.2% | 6.7% |
| Diseases of the digestive system | Count | 248 | 719 | 409 | 766 | 1,786 | 3,928 |
| | % | 7.5% | 8.8% | 8.8% | 4.8% | 6.4% | 6.5% |
| Diseases of the musculo-skeletal system | Count | 130 | 335 | 86 | 766 | 2,189 | 3,506 |
| and connective tissue | % | 3.9% | 4.1% | 1.9% | 4.8% | 7.8% | 5.8% |
| Endocrine, nutritional and metabolic | Count | 100 | 332 | 141 | 1,220 | 1,662 | 3,455 |
| diseases | % | 3.0% | 4.0% | 3.0% | 7.7% | 5.9% | 5.7% |
| Diseases of the skin and subcutaneous | Count | 138 | 450 | 263 | 325 | 1,749 | 2,925 |
| tissue | % | 4.2% | 5.5% | 5.7% | 2.1% | 6.2% | 4.9% |
| Diseases of the circulatory system | Count | 150 | 200 | 64 | 978 | 934 | 2,326 |
| | % | 4.5% | 2.4% | 1.4% | 6.2% | 3.3% | 3.9% |
| Diseases of the eye and adnexa | Count | 113 | 280 | 132 | 366 | 774 | 1,665 |
| | % | 3.4% | 3.4% | 2.8% | 2.3% | 2.8% | 2.8% |
| Infectious and parasitic diseases | Count | 58 | 128 | 41 | 971 | 344 | 1,542 |
| | % | 1.7% | 1.6% | .9% | 6.1% | 1.2% | 2.6% |
| Diseases of the respiratory system | Count | 61 | 156 | 62 | 220 | 606 | 1,105 |
| | % | 1.8% | 1.9% | 1.3% | 1.4% | 2.2% | 1.8% |
| Symptoms, signs and abnormal clinical | Count | 44 | 99 | 21 | 322 | 531 | 1,017 |
| and laboratory findings, | % | 1.3% | 1.2% | .5% | 2.0% | 1.9% | 1.7% |
| Diseases of the nervous system | Count | 30 | 86 | 15 | 196 | 468 | 795 |
| | % | .9% | 1.0% | .3% | 1.2% | 1.7% | 1.3% |
| Diseases of the blood and blood-forming | Count | 9 | 33 | 13 | 178 | 439 | 672 |
| organs and the immune mechanism | % | .3% | .4% | .3% | 1.1% | 1.6% | 1.1% |
| Diseases of the ear and mastoid process | Count | 35 | 80 | 35 | 122 | 311 | 583 |
| | % | 1.1% | 1.0% | .8% | .8% | 1.1% | 1.0% |
| Congenital malformations, deformations | Count | 17 | 36 | 44 | 72 | 218 | 387 |
| and chromosomal abnormalities | % | .5% | .4% | .9% | .5% | .8% | .6% |
| Mental and behavioral disorders | Count | 34 | 81 | 27 | 93 | 133 | 368 |
| | % | 1.0% | 1.0% | .6% | .6% | .5% | .6% |
| Pregnancy, childbirth and the | Count | 39 | 119 | 25 | 49 | 98 | 330 |
| puerperium | % | 1.2% | 1.5% | .5% | .3% | .3% | .5% |
| Injury, poisoning and certain other | Count | 6 | 4 | 27 | 15 | 17 | 69 |
| consequences of external causes | % | .2% | .0% | .6% | .1% | .1% | .1% |
| External causes of morbidity and | Count | 2 | 3 | 15 | 4 | 7 | 31 |
| mortality | % | .1% | .0% | .3% | .0% | .0% | .1% |
| Certain conditions originating in the | Count | 0 | 2 | 0 | 10 | 4 | 16 |
| perinatal period | % | .0% | .0% | .0% | .1% | .0% | .0% |
| **Total** | Count | 3,324 | 8,204 | 4,642 | 15,837 | 28,095 | 60,102 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

From table 8.7, Pearson Chi-square test is employed to prove whether there is any difference on disease pattern among female medical tourists from five countries. It is found that there is statistically difference in disease pattern (p value < 0.0001) among female medical tourists from five countries.

*4. Type of procedure*

In 2010, 5,824 procedures were conducted in medical tourists from five countries, accounting for 47% of total procedures in all medical tourists (Table 8.8). Australian medical tourists had the highest operation rate while those from UAE had the lowest rate. In term of gender, male UK medical tourists tended to have more operations than female ones. On the contrary, female Australian medical tourists had much more operations than men Australian.

Table 8.8: Number of procedures in medical tourists in five countries in 2010

| | Male | % within country | Female | % within country | Total | % between countries | Rate (Procedures/ 100 patients) |
|---|---|---|---|---|---|---|---|
| United Kingdom | 277 | 59.3 | 190 | 40.7 | 467 | 8.0 | 11.87 |
| USA | 505 | 49.5 | 516 | 50.5 | 1,021 | 17.5 | 13.00 |
| Australia | 221 | 18.2 | 990 | 81.8 | 1,211 | 20.8 | 36.05 |
| Myanmar | 747 | 52.6 | 673 | 47.4 | 1,420 | 24.4 | 18.76 |
| U.A.E. | 900 | 52.8 | 805 | 47.2 | 1,705 | 29.3 | 7.91 |
| **Total** | **2,650** | **45.5** | **3,174** | **54.5** | **5,824** | **100.0** | **13.15** |

## 4.1 Male comparison

Pattern of procedure in male medical tourists compared among countries was similar to those in region comparison. Countries from long-haul region, UK, USA and Australia, had comparatively similar pattern while countries from within regions, Myanmar and UAE, also had similar pattern (Table 8.9). Heart-related procedures and procedures on digestive system were two most common procedures in male patients from Myanmar and UAE. Cosmetic procedures, heart-related and orthopaedic procedures were common operations in male patients from UK, USA and Australia.

Table 8.9: Procedures in male medical tourists in five countries

| Male procedure | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| Miscellaneous and therapeutic procedures | Count | 36 | 68 | 24 | 145 | 132 |
| (mostly cardiac catheter insertion) | % | 13.0% | 13.5% | 10.9% | 19.4% | 14.7% |
| Digestive system | Count | 46 | 45 | 23 | 113 | 144 |
| | % | 16.6% | 8.9% | 10.4% | 15.1% | 16.0% |
| Musculo-skeleton system | Count | 55 | 111 | 24 | 36 | 85 |
| | % | 19.9% | 22.0% | 10.9% | 4.8% | 9.4% |
| Procedures and interventions, not classified | Count | 16 | 19 | 8 | 120 | 132 |
| elsewhere (mostly angio-cardiogram) | % | 5.8% | 3.8% | 3.6% | 16.1% | 14.7% |
| Cardiovascular system | Count | 19 | 34 | 5 | 136 | 95 |
| | % | 6.9% | 6.7% | 2.3% | 18.2% | 10.6% |
| Integumentary system (mostly cosmetic | Count | 24 | 93 | 61 | 9 | 42 |
| surgery) | % | 8.7% | 18.4% | 27.6% | 1.2% | 4.7% |
| Eyes | Count | 29 | 45 | 29 | 21 | 32 |
| | % | 10.5% | 8.9% | 13.1% | 2.8% | 3.6% |
| Nose, mouth and pharynx | Count | 8 | 20 | 24 | 26 | 63 |
| | % | 2.9% | 4.0% | 10.9% | 3.5% | 7.0% |
| Male genital organs | Count | 12 | 33 | 12 | 17 | 48 |
| | % | 4.3% | 6.5% | 5.4% | 2.3% | 5.3% |
| Urinary system | Count | 10 | 9 | 2 | 37 | 53 |
| | % | 3.6% | 1.8% | .9% | 5.0% | 5.9% |
| Respiratory system | Count | 3 | 8 | 2 | 32 | 32 |
| | % | 1.1% | 1.6% | .9% | 4.3% | 3.6% |
| Nervous system | Count | 11 | 10 | 3 | 30 | 21 |
| | % | 4.0% | 2.0% | 1.4% | 4.0% | 2.3% |
| Haemic and lymphatic system | Count | 1 | 3 | 0 | 13 | 8 |
| | % | .4% | .6% | .0% | 1.7% | .9% |
| Ear | Count | 1 | 0 | 3 | 6 | 7 |
| | % | .4% | .0% | 1.4% | .8% | .8% |
| Endocrine system | Count | 3 | 1 | 0 | 4 | 6 |
| | % | 1.1% | .2% | .0% | .5% | .7% |
| Other diagnosis and therapeutic procedures | Count | 3 | 6 | 1 | 1 | 0 |
| | % | 1.1% | 1.2% | .5% | .1% | .0% |
| Female genital organ | Count | 0 | 0 | 0 | 1 | 0 |
| | % | .0% | .0% | .0% | .1% | .0% |
| **Total** | Count | 277 | 505 | 221 | 747 | 900 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

From table 8.9, Pearson's Chi-square test was employed to find out whether there was any difference in patterns of procedure among male medical tourists from five countries. Statistical difference in procedure pattern (p value < 0.0001) was found.

## 4.2 Female comparison

Pattern of procedure in female medical tourists compared among countries was similar to those in region comparison. Pattern in countries from long-haul regions including UK, USA and Australia were moderately alike while pattern of those from within region were also similar (Table 8.10). Cosmetic-related procedures dominated female patients from UK, USA and Australia. Most of procedures in female patients from Australia – approximately 80%, were cosmetic operations. Female genital organs, digestive and heart-related procedures were the main operations in those from Myanmar and UAE.

In summary, similar to region comparison, type of procedures in medical tourists from UK, USA and Australia, being from long-haul regions, are similar pattern while one in those from Myanmar and UAE, being from within region, are also similar.

Table 8.10: Procedures in female medical tourists in five countries

| Female procedure | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| Integumentary system (mostly cosmetic surgery) | Count | 97 | 245 | 794 | 42 | 80 |
| | % | 51.1% | 47.5% | 80.2% | 6.2% | 9.9% |
| Female genital organ | Count | 16 | 56 | 18 | 121 | 171 |
| | % | 8.4% | 10.9% | 1.8% | 18.0% | 21.2% |
| Digestive system | Count | 5 | 32 | 9 | 129 | 148 |
| | % | 2.6% | 6.2% | .9% | 19.2% | 18.4% |
| Eyes | Count | 26 | 62 | 114 | 21 | 14 |
| | % | 13.7% | 12.0% | 11.5% | 3.1% | 1.7% |
| Miscellaneous and therapeutic procedures (mostly cardiac catheter insertion) | Count | 5 | 15 | 7 | 102 | 91 |
| | % | 2.6% | 2.9% | .7% | 15.2% | 11.3% |
| Musculoskeleton system | Count | 10 | 27 | 6 | 60 | 75 |
| | % | 5.3% | 5.2% | .6% | 8.9% | 9.3% |
| Cardiovascular system | Count | 2 | 1 | 3 | 65 | 47 |
| | % | 1.1% | .2% | .3% | 9.7% | 5.8% |
| Nose, mouth and pharynx | Count | 10 | 15 | 22 | 9 | 28 |
| | % | 5.3% | 2.9% | 2.2% | 1.3% | 3.5% |
| Procedures and interventions, not elsewhere classified (mostly angio-cardiogram) | Count | 3 | 3 | 3 | 22 | 39 |
| | % | 1.6% | .6% | .3% | 3.3% | 4.8% |
| Respiratory system | Count | 0 | 7 | 5 | 31 | 22 |
| | % | .0% | 1.4% | .5% | 4.6% | 2.7% |
| Endocrine system | Count | 6 | 18 | 8 | 15 | 14 |
| | % | 3.2% | 3.5% | .8% | 2.2% | 1.7% |
| Urinary system | Count | 3 | 4 | 0 | 23 | 24 |
| | % | 1.6% | .8% | .0% | 3.4% | 3.0% |
| Nervous system | Count | 2 | 2 | 1 | 12 | 26 |
| | % | 1.1% | .4% | .1% | 1.8% | 3.2% |
| Obstetrics | Count | 4 | 24 | 0 | 9 | 4 |
| | % | 2.1% | 4.7% | .0% | 1.3% | .5% |
| Haemic and lymphatic system | Count | 1 | 3 | 0 | 10 | 16 |
| | % | .5% | .6% | .0% | 1.5% | 2.0% |
| Ear | Count | 0 | 2 | 0 | 2 | 6 |
| | % | .0% | .4% | .0% | .3% | .7% |
| **Total** | Count | 190 | 516 | 990 | 673 | 805 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

From table 8.10, Pearson Chi-square test is employed to prove whether there is any difference on procedure pattern among female medical tourists from five countries. It is found that there is statistically difference in procedure pattern (p value < 0.0001) among female medical tourists from five countries.

*5. Length of stay*

Similar to regional comparison, medical tourists from UAE tended to have the longest duration of stay in hospitals while those from Australia had the shortest one. Most patients from all countries stayed in hospital between 1-3 days (Table 8.11). UAE had the largest group of patients staying more than 30 days, accounting for 8.2%, compared to other countries. Patients from UAE have the longest period with almost 10 days per patients and those from Australia have the shortest one with only 2.3 days per patients (Table 8.12).

Table 8.11: Length of stay of medical tourists from five countries

| | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| 1-3 days | Count | 195 | 487 | 683 | 478 | 587 |
| | % | 70.9% | 74.4% | 88.2% | 52.2% | 60.6% |
| 4-7 days | Count | 44 | 106 | 64 | 212 | 160 |
| | % | 16.0% | 16.2% | 8.3% | 23.2% | 16.5% |
| 8-14 days | Count | 22 | 33 | 14 | 136 | 95 |
| | % | 8.0% | 5.0% | 1.8% | 14.9% | 9.8% |
| 15-30 days | Count | 9 | 17 | 12 | 66 | 47 |
| | % | 3.3% | 2.6% | 1.6% | 7.2% | 4.9% |
| More than 30 days | Count | 5 | 12 | 1 | 23 | 79 |
| | % | 1.8% | 1.8% | .1% | 2.5% | 8.2% |
| **Total** | Count | 275 | 655 | 774 | 915 | 968 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 8.12: Average length of stay of medical tourists from five countries

| | Mean | N | Std. Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| UK | 4.29 | 275 | 6.68 | 1 | 51 | 2.00 |
| USA | 3.89 | 654 | 7.63 | 1 | 111 | 2.00 |
| Australia | 2.30 | 774 | 2.93 | 1 | 32 | 2.00 |
| Myanmar | 6.53 | 915 | 9.94 | 1 | 137 | 3.00 |
| UAE | 9.98 | 968 | 22.47 | 1 | 228 | 3.00 |

*Statistical analysis*

Analysis of Variance (ANOVA) test was employed to find out whether there was any difference in the average length of stay among medical tourists from five countries. The null hypothesis was that the average age of medical tourists from all countries was the same. Statistically difference (p value < 0.0001) was found, thus, the average length of stay in five countries is not the same.

*6. Type of payment*

Self-pay was the main payment method in patients from five countries (Table 8.13). Corporate contract was the second most popular type of payment, however, with relatively low percentages. Similar to the comparison among regions, private insurance was the least popular mode for medical expenditure payment.

Table 8.13: Types of payment by medical tourists among five countries

| | | Country | | | | |
|---|---|---|---|---|---|---|
| | | United Kingdom | USA | Australia | Myanmar | U.A.E. |
| Self -pay | Count | 8,689 | 18,873 | 7,044 | 27,443 | 55,942 |
| | % | 88.5% | 85.1% | 87.1% | 94.0% | 95.4% |
| Insurance | Count | 393 | 1,376 | 231 | 147 | 23 |
| | % | 4.0% | 6.2% | 2.9% | .5% | .0% |
| Corporate contract | Count | 740 | 1,939 | 812 | 1,592 | 2,645 |
| | % | 7.5% | 8.7% | 10.0% | 5.5% | 4.5% |
| **Total** | Count | 9,822 | 22,188 | 8,087 | 29,182 | 58,610 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

*Statistical analysis*

From table 4.46, Pearson's Chi-square test is employed to prove whether there is any difference in type of payment among medical tourists in five countries. Statistical difference in types of payment (p value < 0.0001) was found.