Medical Tourism and Neurological Diseases: Omani Patients' Experience Seeking Treatment Abroad

Abdullah Al-Asmi[1]*, Fatma Sultan Al-Jabri[2], Sara Abdullah Al-Amrani[2], Yahya Alfarsi[3], Fatema Al Sabahi[1], Amna Al-Futaisi[4], and Samir Al-Adawi[5]

[1]Neurology Unit, Department of Medicine, College of Medicine & Health Sciences and Sultan Qaboos University Hospital, Sultan Qaboos University, Muscat, Oman

[2] Radiology Residency Training Program, Oman Medical Specialty Board, Muscat, Oman

[3]Department of Family Medicine & Public Health, College of Medicine and Health Sciences, P.O Box 35, Al-Khoud, Sultan Qaboos University, Muscat, Oman

[4]Department of Child Health, College of Medicine & Health Sciences and Sultan Qaboos University Hospital, Sultan Qaboos University, Muscat, Oman

[5]Department of Behavioral Medicine, College of Medicine & Health Sciences, Sultan Qaboos University, Muscat, Oman

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***Corresponding author:** alasm@squ.edu.om

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Abstract

Background: There is a dearth of research regarding the motivations and experiences of Omani nationals who travel abroad for medical treatment, especially for neurological diseases.

Objectives: The primary objective of this cross-sectional study was to examine and draw comparisons between Omani adults and Omani children with neurological disorders who pursued medical treatment abroad after having undergone evaluation by local specialists. The study aimed to gain insights into these patients' motivations and experiences. A related objective was to explore the sociocultural factors and family dynamics within the Omani society that shape the local attitudes towards illness and treatment seeking.

Methods: Omani patients treated at a major tertiary hospital in Muscat for neurological disorders and subsequently traveled overseas for treatment were identified and administered a structured questionnaire to gather relevant information.

Results: The participants were N = 116 Omani nationals (62 children and 54 adults) with neurological disorders, diagnosed predominantly with epilepsy (72%) followed by developmental delay, muscular dystrophy, and encephalopathy. Only 20% of patients received financial support from the government. The majority (70%) reported that they followed the recommendations of family members. Most (64%) participants reported positive outcomes after treatment abroad, though 4% developed complications and 5% acquired nosocomial infections. Most (56%) participants opined that the treatment they received overseas was comparable to what they would have received in Oman. Notably, there were no significant differences between children and adults in most of the aforementioned aspects.

Conclusion: It is important for local healthcare systems to establish trust among people by enhancing awareness regarding the pros and cons of medical tourism. Additionally, efforts should be made to improve patients' clinical pathways within the country, ensuring streamlined processes that maximize the utilization of high-quality healthcare services available locally.

Keywords: Medical Tourism, Neurological Disorders, Socio-Cultural Factors, Family Recommendations, Outcomes, Healthcare Systems, Oman

Introduction

Medical tourism (or 'health tourism' or 'wellness tourism' or 'treatment abroad') is a mode of travel undertaken by people who live in one country to another country abroad to use medical facilities there for diagnosis and treatment.[1,2] With globalization of health care, medical tourism is increasing in both emerging and industrialized economies.[2-4] Most literature on medical tourism has focused on the elective or long-term nature of the facilities offered by medical tourism destinations abroad.[3] There is a dearth of studies on the specific medical conditions for which treatment is sought abroad.[4,5] Trabacca et al.[6] examined the trend among Italian children traveling overseas for neurorehabilitation. Majid et al.[7] examined the outcome of children from United Arab Emirates who underwent kidney transplants abroad. However, these studies did not address the local characteristics and factors that lead to treatment abroad and considered only pediatric patients.

In the developing world, several states of the Arabian Peninsula are increasingly becoming medical tourism destinations.[8-10] Many Arabian Gulf residents are also traveling abroad for medical care.[9-11] Due to a lack of a unified definition of patient groups and data collection methods, the exact number of medical travelers from the Gulf seeking treatment abroad is difficult to establish.[3] Nevertheless, data suggests that this trend is growing rapidly.[12,13]

There is a dearth of studies regarding Omani children, adolescents, and adults with neurological conditions who seek treatment abroad. This study aimed to compare adults and children with neurological disorders, who after being evaluated by specialists in major tertiary hospitals in Oman, sought seek medical treatment abroad. We also sought to incorporate into the study, the trend of treatment abroad with the socio-cultural factors in Oman regarding disease behavior and the centrality of family in Omani society.

The implications of this study are multifold. First, the observed trend can inform healthcare policymakers and authorities in Oman about the patterns and reasons for seeking treatment abroad among patients with neurological disorders. Second, understanding the factors that drive Omani adults and children to seek treatment abroad can help identify gaps in local healthcare services. Third, the observed trend can contribute to raising awareness of patients and their families about the advantages and disadvantages of seeking treatment abroad. Finally, by analyzing sociocultural factors related to illness behavior and the influence of family in Omani society, the study can provide information on the role of support networks and the importance of involving families in the decision-making process. Reporting trends have the potential to provide a more accurate understanding of the country's dynamics and assist in the formulation of targeted policies and interventions. This understanding can help healthcare providers develop strategies to engage and support patients and their families, thereby improving the quality and effectiveness of local healthcare services.

Methods

A cross-sectional study in the form of a retrospective chart review[14] was conducted covering the 42-month period from January 2011 to June 2014 at Sultan Qaboos University Hospital (SQUH), a referral tertiary teaching hospital with advanced neurological outpatient and inpatient services. During this period our neurology clinics were servicing yearly more than 4,000 pediatric and adult patients with more than 9,000 total visits per year.

We identified potential participants for this study by searching the Hospital's database for neurology patients who had requested for, and been given, their medical reports. All patients of SQUH are issued their medical reports without restriction, if they make a formal request mentioning the purpose. This enabled us to identify the neurology patients who were issued reports for the purpose of getting treatment abroad. From this list, we excluded all patients whose medical reports contained their treating neurologists' recommendations for treatment abroad.

The selected patients were contacted telephonically to confirm whether they received treatment abroad and subsequently returned to Oman. The purposes of the study and the assurance of confidentiality of patient data were conveyed to them. The patients (or guardians, in case of children or mentally challenged adults) who consented to participate and share the records of their overseas treatment were enrolled in the study.

Based on the available literature and prior knowledge of treatment abroad, a questionnaire was developed for the present study. First, a three-part English version of the questionnaire was developed. Part I sought sociodemographic information such as age, sex, marital status, educational level, employment, and income. Part

II explored the participants' attitudes toward medical tourism. Part III consisted of open questions that probed the reasons for seeking treatment abroad.

The clarity and linguistic accuracy of the English questionnaire was evaluated by administering it to a pilot group of 20 randomly selected participants. This allowed for the identification and resolution of conceptual and linguistic ambiguities in the questionnaire. The corrected and finalized English questionnaire was translated to Arabic using the back-translation method to ensure its accuracy and cultural sensitivity. To establish the reliability and validity of the Arabic questionnaire in Omani population, it was piloted in a new group of 30 randomly selected participants and finalized as per their feedback. The selected participants' diagnosis and treatment plans were compared between SQUH and health institutes abroad. The data was analyzed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp, Armonk, NY). $P < 0.05$ was considered significant.

This study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Medical & Research Ethics Committee of the College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman (Ref: MREC #996 dated November 10, 2014).

Results

A total of 623 medical reports were identified as issued during the period under study to 244 children and 379 adults with neurological diseases to access treatment abroad.

Pediatric patients. Out of the 244 children, we had to discard 66 who could not be contacted, 81 who did not travel abroad (six due to lack of funds), 18 who were still abroad during the study period, nine who had passed away, and eight children whose parents refused to participate. Ultimately, n = 62/244 (26%) children were included in the study.

Adult patients: Of the 379 adult neurology patients who were given medical reports for treatment abroad as per their request, 194 did not travel abroad (55 due to financial constraints), five had passed away, three refused to participate, 58 could not be contacted, and 65 patients were still abroad during our data collection period. Thus, n = 54/379 (14.2%) adult patients were included.

Table 1 displays the sociodemographic characteristics of the participants. The total participants comprised N = 116 participants of whom 62 (53.4%) were children. Most (59.3%) were younger than 40 years. There was also a male preponderance, but without significance ($p = 0.18$).

Table 1: Demographic characteristics of Omani adults and children with neurological problems who received treatment abroad. (N= 116).

Characteristics	Total (N= 116) n (%)	Children (n= 62) n (%)	Adults (n= 54) n (%)	*p*-value
Age (years)				-
< 15	62 (53.4)	62 (100)		
15–39	32 (27.6)		32 (59.3)	
40–59	11 (9.5)		11 (20.4)	
≥ 60	11 (9.5)		11 (20.4)	
Sex				0.18
Male	71 (61.2)	34 (54.8)	37 (68.5)	
Female	45 (38.8)	28 (45.2)	17 (31.5)	
Region (Governorate)				0.08
Muscat	35 (30.2)	16 (25.8)	19 (35.2)	
Al Batinah	32 (27.6)	19 (30.6)	13 (24.1)	
Sharqiyah	20 (17.2)	10 (16.3)	10 (18.5)	
A'Dakhiliya	17 (14.7)	8 (12.9)	9 (16.7)	
A'Dhahirah	5 (4.3)	4 (6.4)	1(1.9)	
Musandam	5 (4.3)	3 (4.8)	2 (3.7)	
Dhofar	2 (1.7)	2 (3.2)	0	
Diagnosis in Oman*				0.32
Epilepsy	83 (71.6)	41 (66.1)	42 (77.8)	
Developmental delay	7 (6.0)	7 (11.3)	0	
Muscular dystrophy	7 (6.0)	5 (8.1)	2 (3.7)	
Encephalopathy	5 (4.3)	2 (3.2)	3 (5.6)	
Nystagmus	4 (3.4)	2 (3.2)	2 (3.7)	
Myoclonus	4 (3.4)	2 (3.2)	2 (3.7)	
Hyperactivity disorder	2 (1.7)	1 (1.6)	1 (1.9)	
Hypermagnesemia	2 (1.7)	1 (1.6)	1 (1.9)	
Night blindness	2 (1.7)	1 (1.6)	1 (1.9)	

**More than one diagnosis per patient is possible.*

Most participants hailed from the nearby governorates of Muscat (35%) and Batinah (32%), while the least (2%) were from the farthest governorate, Dhofar. The regional distributions of children and adults were similar (p = 0.08). Epilepsy accounted for 72% of cases, followed by developmental delay, muscular dystrophy, and encephalopathy.

Table 2 presents the participants' characteristics regarding funding and the country where they received treatment. The vast majority relied on self-funding, while approximately 20% received funding from the government. The government funded approximately 24% of children and 15% of adults (p = 0.24). The Ministry of Health was the largest source of government sponsorship, followed by the Royal Diwan Court and the Ministry of Defense. About one-third of the participants used personal savings as a self-funding method, while around 15% reported taking loans. Only about 13% of cases were funded through donations, all of which were specifically for children. Roughly 9% of adult patients mentioned selling assets as a means of self-funding, however, none of the parents in our study revealed selling personal assets for their children's treatment. The vast majority of patients traveled to India (53%) and Thailand (32%). The remaining 15% opted for various European countries, Jordan, and other destinations. The differences between children and adults in terms of funding sources and the countries visited did not show statistical significance. Even though none of the adults received donations and none of the guardians sold their assets to fund the treatment overseas.

Table 2: Characteristics of the participants with respect to funding and country of treatment (N = 116).

Characteristics	Total (N= 116) n (%)	Children (n= 62) n (%)	Adults (n= 54) n (%)	*p*-value
Funding Type				0.24
Self-funded	93 (80.2)	47 (75.8)	46 (85.2)	
Government funded	23 (19.8)	15 (24.2)	8 (14.8)	
Government funding sources				1.0

Ministry of Health	13 (11.2)	7 (11.3)	6 (11.1)	
Diwan of Royal Court	6 (5.2)	4 (6.5)	2 (3.7)	
Ministry of Defense	2 (1.7)	2 (3.2)	0	
Self-funding sources				0.18
Savings	39 (33.6)	20 (32.2)	19 (35.2)	
Loan	17 (14.7)	9 (14.5)	8 (14.8)	
Donation	15 (12.9)	15 (24.2)	0	
Selling assets	9 (7.8)	0	9 (16.7)	
Others	15 (12.9)	5 (8.1)	10 (18.5)	
Country of treatment				0.23
India	61 (52.6)	31 (50.0)	30 (55.6)	
Thailand	37 (31.9)	21 (33.9)	16 (29.6)	
Germany	5 (4.3)	3 (4.8)	2 (3.7)	
Jordan	4 (3.4)	2 (3.2)	2 (3.7)	
United Kingdom	2 (1.7)	0	2 (3.7)	
Others	6 (5.2)	5 (8.1)	1 (1.9)	

Table 3 presents the indicators of knowledge, attitude, and practice (KAP) of medical tourism among the participants. The most commonly reported sources of information regarding overseas centers and services were friends, followed by family members, and the Internet. This pattern was similar for both children and adults. The majority of participants (70%) stated that they followed the recommendations of their family members, with friends and doctors also playing significant roles. Approximately 64% reported benefiting from treatment abroad, and around 45% expressed their willingness to return to the same center. This proportion was significantly higher among adults compared to children (67% vs. 26%; $p = 0.001$). Roughly 64% of the respondents stated that they would recommend the visited center to others, particularly for adult patients. A small minority (≈ 4%) reported developing complications associated with treatment abroad, while approximately 5% reported acquiring nosocomial infections.

Table 3: Knowledge, attitudes, behavior, and complications of medical tourism as perceived by an Omani cohort with neurological disorders. (N = 116).

Characteristics	**Total (N= 116)**	**Children (n= 62)**	**Adults (n= 54)**	**P-value**
	N (%)	**n (%)**	**n (%)**	
Host information source				0.05*
Friend	49 (42.2)	22 (35.5)	27 (50.0)	
Family member	29 (25.0)	18 (29.0)	11 (20.4)	
Advertisement/ Internet	12 (10.3)	7 (11.3)	5 (9.3)	
Others	17 (14.7)	9 (14.5)	8 (14.8)	
Who recommended treatment abroad?				0.04*
Family	81 (69.8)	46 (74.2)	35 (64.8)	
Friends	11 (9.5)	7 (11.3)	4 (7.4)	
Doctors in a regional hospital	8 (6.9)	3 (4.8)	5 (9.3)	
Neurologist	1 (0.9)	1 (1.6)	0	
Others	15 (12.9)	5 (8.1)	10 (18.5)	
Post-treatment perceptions – positive				
Treatment abroad was beneficial	74 (63.8)	39 (62.9)	35 (64.8)	0.84
Willing to be treated at the same center again	52 (44.8)	16 (25.8)	36 (66.7)	0.001*
Will recommend this center to others	74 (63.8)	37 (59.7)	37 (68.5)	0.34
Post-treatment perceptions – negative				
Developed complications abroad	5 (4.3)	5 (8.1)	0	0.06
Acquired a nosocomial infection	6 (5.2)	5 (8.1)	1 (1.9)	0.21

**Significant*

Table 4 displays the indicators of diagnosis and treatment outcomes abroad. Overall, about 56% of the participants stated that the treatment they received abroad was comparable what they would have received in

Oman. However, this percentage varied between children (48%) and adults (65%), but the difference was not statistically significant (p = 0.09). The majority of participants (69%) reported that the investigations conducted abroad were similar to those performed in Oman, with a slightly higher proportion among adults compared to children, again without significance (72% vs. 67%; p = 0.54). A significant majority of participants (84%) reported that the availability of treatment in Oman was on par with the treatment they received abroad, particularly among children (96%). The difference between children and adults in this regard was significant (p = 0.001).

Table 4: Outcome of investigations, diagnosis, and treatment of neurological disorders in Oman and foreign medical institutions.

Characteristics	Total (N = 116) N (%)	Children (n= 62) n (%)	Adults (n= 54) n (%)	*p*-value
Was diagnosis the same as in Oman?				0.09
Yes	65 (55.8)	30 (47.8)	35 (65.0)	
No	51 (44.2)	32 (52.2)	19 (35.0)	
Were investigations the same?				0.54
Yes	80 (68.9)	41 (66.7)	39 (72.0)	
No	36 (31.1)	21 (33.3)	15 (28.0)	
Was the treatment received the same?				
Yes	97 (83.6)	60 (96.2)	37 (68.2)	0.001**
No	19 (16.4)	2 (3.8)	17 (31.8)	

**More than one diagnosis for the same patient is possible. **Significant.*

Discussion

This study reviewed the details of patients who traveled overseas for treatment after being reviewed by highly qualified neurologists at SQUH, Muscat, Oman during January 2011 to June 2014. Most Omanis engage in medical tourism with privately sourced funds. The government generally funds only such patients whose diagnostic procedures or treatments are unavailable locally. The Ministry of Health's (MOH) 2021 annual report has listed a rising trend for the numbers of government-sponsored Omani patients for overseas treatment the over the years,[15] except during the COVID-19 pandemic: in 2021, only 655 patients were sponsored against 1655 in 2015.[15] The pandemic-triggered travel bans and lockdowns severely impacted medical tourism worldwide, including in our region.[16,17]

Globalization and information technology have led to standardization of medical training, specializations, medical equipment, and protocols across the world. This has enabled developing countries such as India and Thailand to provide high quality efficient medical treatment much cheaper than in the industrialized countries which may be a reason why Omanis are increasingly preferring such countries.[18,19] Our participants reported no major differences between the diagnosis and treatment provided at SQUH and in the host countries. We could not adequately ascertain why patients still go abroad for treatment in the face of similar diagnostics and therapeutic results at home. In fact, a significant proportion of patients who received treatment abroad reported positive results, highlighting the effectiveness and quality of care available in foreign medical facilities.

This raises the need for investigating possibilities such as these: Is there a perception of mistrust on the part of patients about the local physicians and the health care system? Is there social pressure from family and community? Is stigma associated with disease? Also, to be pondered are the psychological factors that may potentially influence participant responses to our questionnaire: 'for-profit' medical institutions might give individualized attention to patients and the accompanying relatives so that they leave the host country with relatively pleasant memories. A response bias may also be expected from some patients who invested significant finances and time on medical tourism and may want to defend their decision. Other potential reasons in the literature include longer delays/waiting times, less competitive or expensive private facilities in home countries, and the attraction of tourism.[20]

Many factors promote medical tourism that Omani patients undertake. Advances in information technology have made it easy to search for information about various health institutions in host countries.[20,21] The costs of travel, accommodation, and treatment in the popular host countries are lower.[20,22] There are certain advanced functional neurosurgical procedures such as epilepsy surgery, deep brain stimulation, stem cell therapy, bone

marrow transplant, may not be available in the home country.[13,20] Other reasons include long waiting times for non-urgent procedures, and the high cost of treatment in the private sector.[4,18,20,23,24]

Al-Hinai et al's[18] 2009–2010 regional survey in A'Dakhiliya governorate of Oman found that the most common reasons patients gave for seeking treatment abroad were lack of proper diagnosis (38.2%) and ineffective treatment (38.2%). However, this was not the case in our study, and these regional findings cannot be generalized to the entire country. A study on medical tourists from United Arab Emirates (UAE) found word-of-mouth to be the primary reason for more than 60% of its participants to seek treatment in a specific hospital in Korea.[25]

In our study, family members and friends were the most important sources of information and recommendations in the choice of overseas treatment centers. In both Al-Hinai study and ours, family members were influential in seeking treatment abroad.[18] However, in taking the final decision, 70% of our participants followed their family advice. Arab culture is strongly family-oriented, and patients prefer to go abroad accompanied by their near relatives, whose wishes and priorities might well be influencing the choice of the target country and institution. In the Al-Hinai et al. study, the most common medical conditions that prompted medical tourism were orthopedic diseases, followed by neurological and ophthalmological diseases, respectively. Similar to our study India and Thailand were the most popular medical tourism destinations.[18]

In our study there were more male (61.2%) than female patients. The reason for this might have been the fact that 72% of the cases involved epilepsy, which has a male predominance. However, the possibility of culturally induced male bias cannot be dismissed because the Al Hinai et al.[18] study, which had patients with mixed complaints, had an even higher male preponderance (67.5%). This calls for investigating possible gender preferences in medical tourism.

The fact that a minority of our participants reported experiencing complications (4%) and nosocomial infections (5%), highlights the importance of proactively providing returnee medical tourists with comprehensive post-treatment follow-up and care. In fact, a recent systematic review found that most complications linked to medical tourism were related to wound and blood-borne infections as well as non-tuberculous mycobacteria were isolated.[26] Infection complications were more prevalent among Omani patients after renal transplants ted patients done abroad than those who had undergone the procedure locally. as reported in one of the studies done locally.[27] The risk of antibiotic resistant organisms entering the country as a consequence of Complications related to infection is medical tourism need to be assessed and remedial measures taken one of the concern of medical tourism which may lead to bring to the country antibiotic resistant organisms.[28] A related risk that needs to be studied is the reported rise in predatory advertising, especially via social media, to manipulate patients into seeking treatment in low-quality institutions abroad.[29]

We recommend further research into the phenomenon of medical tourism on all specialties including neurology, and developing appropriate public health policies that include increasing patient confidence in the local healthcare system. It is also essential to advise all medical establishments in Oman to unconditionally welcome patients returning after medical treatment abroad, so that they feel comfortable in seeking all required follow up and care within the country.

A major limitation of this study was the inability to reach the vast majority of Omanis who availed of treatments abroad. Only 25.4% of children and 14.2% of adults could be recruited. Being a single tertiary center experience, and one that is specific to patients with neurological disorders, our findings may not be generalizable to other specialties or the overall trends for medical tourism in Oman. In addition, the patients in our study were recommended by their physicians for treatment abroad, and therefore, do not represent the true number of patients sponsored by the government for treatment abroad.

Conclusion

Our findings are specific to medical tourism by Omanis with neurological disorders, particularly those diagnosed with epilepsy. Most participants sought medical treatment abroad at their own expense. Interestingly, there was no significant pattern differences between children and adults, suggesting that the decision-making processes and factors influencing both the age groups were relatively similar. An overall male preponderance was noticed among both adults and pediatric patients who traveled abroad. We recommend a a larger nationwide study, covering all health disciplines, to gain a comprehensive understand of medical tourism by Omanis. Based on such comprehensive data, policies could be evolved to enable the local healthcare system to effectively address the

growing phenomenon of medical tourism. We also recommend raising public awareness on the advantages and disadvantages of seeking treatment abroad by creating an online portal with all necessary information on medical tourism including its advantages and disadvantages. The portal should incorporate a comprehensive and evidence-based database which should be regularly updated in collaboration with reliable authorities such as the World Health Organization. The availability of such a reliable and regularly updated database will also help doctors, social workers and health counselors not to be pressurized into giving personal recommendations to patients seeking treatment abroad.

Disclosure

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