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

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ABSTRACT

Objectives: There is a dearth of research regarding the motivations and experiences of Omani nationals who travel abroad for medical treatment, especially for neurological diseases. The primary objective was to examine and draw comparisons between Omani adults and children with neurological disorders who pursued medical treatment abroad after being evaluated by local specialists. The study also aimed to gain insights into these patients' motivations and experiences. A related objective was to explore the sociocultural factors and family dynamics that shape the attitudes towards illness and treatment seeking. ***Methods***: In this cross-sectional study, 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. ***Results:*** The participants were 116 Omani nationals (62 children and 54 adults) with neurological disorders, diagnosed predominantly with epilepsy (71.6%) followed by developmental delay, muscular dystrophy, and encephalopathy. Only 19.8% of patients received government sponsorship. The majority (69.8%) followed the recommendations of family members. Most (63.8%) participants reported positive outcomes after treatment abroad, though 4.3% developed complications and 5.2% acquired nosocomial infections. Most (83.6%) participants opined that the treatment they received overseas was comparable to what they would have received in Oman. There were no significant differences between children and adults in most of these aspects. ***Conclusions:*** Public awareness should be increased regarding the pros and cons of medical tourism. Patients must be made aware of the advanced treatment facilities available locally. Efforts should be made to enhance patient outcomes and satisfaction by adopting more efficient and patient-friendly processes.

Medical tourism denotes a mode of travel undertaken by people who live in one country to another country to use healthcare facilities there for diagnosis and treatment.[1,2] With the globalization of healthcare, medical tourism has increased 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 abroad.[3] There is a dearth of studies on the specific health conditions and sociocultural factors that motivate people towards medical tourism.[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 the UAE who underwent kidney transplants abroad. However, these and similar studies did not address the local factors that led to seeking treatment abroad.

In the developing world, several Arabian Gulf Cooperation Council (GCC) states have advanced medical care facilities and are becoming medical tourism destinations.[8–10] On the other hand, many GCC 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 is

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difficult to establish.[3] Nevertheless, data suggests that this trend is growing rapidly.[12,13]

Many Omanis with neurological conditions seek treatment abroad; however, there is no definite data regarding them. Our study has aimed to narrow the research gap by comparing Omani adults and children with neurological disorders, who, after being evaluated by local specialists in major tertiary hospitals, sought treatment abroad. We also sought to investigate the local sociocultural and family roles in this regard.

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, such understanding can help identify any suboptimal areas in local healthcare services. Third, it can identify whether there is a need to raise awareness among patients and their families about the advantages and disadvantages of seeking treatment abroad. Finally, the study can provide information on the role of support networks and the importance of involving families in the decision-making process. This can help healthcare providers develop effective strategies to engage patients and their families, thereby improving the quality and effectiveness of local healthcare services and public perception of these services.

METHODS

A cross-sectional study in the form of a retrospective chart review[14] was conducted covering 42 months from January 2011 to June 2014 at Sultan Qaboos University Hospital (SQUH), Muscat, a referral tertiary teaching hospital with advanced neurological services. During the above period, our neurology clinics were servicing > 4000 patients (> 9000 visits) annually.

We identified potential participants for this study by searching the SQUH patient 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 shortlist neurology patients who were issued reports to get treatment abroad. 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 actually traveled abroad for treatment 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 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 facilities abroad, a three-part questionnaire was developed for the present study. 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 questionnaire was initially drafted in English, and its clarity and linguistic accuracy were 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. 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 in the Omani population, the Arabic questionnaire was piloted in a new group of 30 randomly selected participants and finalized as per their feedback. The selected participants' diagnosis and treatment plans in SQUH and the foreign health institutes were compared. The data was analyzed using SPSS (IBM SPSS Statistics for Windows, version 26.0. Armonk, NY: IBM Corp).

This study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Medical and 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 issued during the period under study to 244 children and 379 adults with neurological diseases to access treatment abroad.

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 our data collection period, nine children who had passed away, and eight children whose parents refused to participate. Finally, 62 (25.4%) children were included in the study.

Of the 379 adult neurology patients who were given medical reports for treatment abroad, 194 did not go 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. Thus, 54 (14.2%) adult patients were included.

A total of 116 (62 pediatric and 54 adult) patients were selected for the study, as explained below.

Table 1 displays the sociodemographic characteristics of the participants. Most (59.3%) were < 40 years old. There was also a male preponderance, but without significance (p = 0.180). Most participants hailed from the urbanized governorates in the north — Muscat (30.2%) and Al Batinah (27.6%). The regional distributions of children and adults were similar (p = 0.080). Epilepsy accounted for 71.6% of cases, followed by developmental delay, muscular dystrophy, and encephalopathy.

Table 2 presents the participants' funding sources and the countries where they received treatment. The vast majority (80.2%) relied on self-funding. About one-third of the participants used personal savings to finance their treatment, while around 14.7% reported taking loans. Only 12.9% of cases were funded through donations, all of which were for children. A minority (7.8%) of adult patients disclosed selling their personal assets to finance their own treatment, while none revealed doing the same for their children's treatment. The government funded approximately 24.2% of children and 14.8%

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

Characteristics	Total 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				0.180
Male	71 (61.2)	34 (54.8)	37 (68.5)	
Female	45 (38.8)	28 (45.2)	17 (31.5)	
Governorate				0.080
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'Dakhiliyah	17 (14.7)	8 (12.9)	9 (16.7)	
A'Dhahirah	5 (4.3)	4 (6.5)	1(1.9)	
Musandam	5 (4.3)	3 (4.8)	2 (3.7)	
Dhofar	2 (1.7)	2 (3.2)	0 (0.0)	
Diagnosis in Oman*				0.320
Epilepsy	83 (71.6)	41 (66.1)	42 (77.8)	
Developmental delay	7 (6.0)	7 (11.3)	0 (0.0)	
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.*

of adults (p = 0.240). The Ministry of Health was the largest source of government sponsorship. Most participants received India (52.6%) or Thailand (31.9%). The differences between children and adults in terms of funding sources and the countries visited did not show statistical significance.

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

Characteristics	Total n (%)	Children (n = 62) n (%)	Adults (n = 54) n (%)	*p*-value
Funding Type				0.240
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				1.000
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 (0.0)	
Self-funding sources				0.180
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 (0.0)	
Selling assets	9 (7.8)	0 (0.0)	9 (16.7)	
Others	15 (12.9)	5 (8.1)	10 (18.5)	
Country of treatment				0.230
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)	
UK	2 (1.7)	0 (0.0)	2 (3.7)	
Others	6 (5.2)	5 (8.1)	1 (1.9)	

Table 3: Knowledge and attitudes among Omani patients regarding medical tourism after receiving treatment abroad for neurological disorders (N = 116).

Characteristics	Total n (%)	Children (n = 62) n (%)	Adults (n = 54) n (%)	*p*-value
Source of information				0.050
Friends	49 (42.2)	22 (35.5)	27 (50.0)	
Family	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?				0.040*
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 (0.0)	
Others	15 (12.9)	5 (8.1)	10 (18.5)	
Post-treatment perceptions				
Treatment abroad was beneficial	74 (63.8)	39 (62.9)	35 (64.8)	0.840
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)	0.340
Developed complications abroad	5 (4.3)	5 (8.1)	0 (0.0)	0.060
Acquired nosocomial infection	6 (5.2)	5 (8.1)	1 (1.9)	0.210

**Significance.*

Table 3 presents the indicators of knowledge, attitude, and practice regarding medical tourism among our participants. The most 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 (69.8%) followed the recommendations of their family members, with friends and doctors also playing significant roles. Most (63.8%) reported benefiting from treatment abroad, and 44.8% expressed their willingness to return to the same center. This proportion was significantly higher for adult patients compared to children (66.7% vs. 25.8%; $p = 0.001$). The majority (63.8%) of respondents stated that they would recommend the visited center to others, particularly for adult patients. A minority (4.3%) reported developing complications associated with treatment abroad, while 5.2% reported acquiring nosocomial infections.

Table 4 displays the respondents' perceptions regarding their overseas medical treatment experience and outcomes. More than half (55.5%) of the participants stated that the treatment they received abroad was comparable to what they would have received in Oman (children: 48.4%; adults 64.8%; $p = 0.090$). The majority (69.0%) reported that the investigations conducted abroad were similar to those performed in Oman, with a higher proportion for adult patients compared to pediatric patients, though without significance (72.2% vs. 66.1%; $p = 0.540$). Most participants (83.6%) also opined that the treatment in Oman was on par with the treatment they received abroad, particularly with respect to children (96.8%). The difference between children and adults in this regard was significant ($p = 0.001$).

DISCUSSION

This study reviewed the details of Omani neurology patients who traveled overseas for treatment after being reviewed by highly qualified neurologists at SQUH, Muscat, Oman from January 2011 to June 2014. The government generally sponsors overseas treatment only if diagnostic procedures or treatments are unavailable locally; therefore, most of our participants used privately sourced funds. The Ministry of Health's 2021 annual report has listed a rising trend for the numbers of government-sponsored Omani patients for overseas treatment over the years,[15] except during the COVID-19 pandemic: in 2021, only 655 patients were sponsored against 1655 in 2015.[15] This was due to the pandemic-triggered travel bans and lockdowns worldwide.[16,17]

Globalization and information technology have spread medical knowledge, expertise, and technology worldwide. This has enabled developing countries such as India and Thailand to provide high-quality medical treatment much cheaper than in the industrialized countries.[18,19] Our participants were mostly satisfied with their healthcare experiences abroad. However, most of them did not find any major differences between the diagnosis and treatment provided at SQUH and in the host countries. It was not clear why they still opted to spend significant amounts of money and time for treatment abroad. This raises a host of questions: Is

Table 4: Comparative perception of the outcome of investigations, diagnosis, and treatment of neurological disorders in Omani medical institutions versus foreign institutions.

Characteristics	Total (N = 116) n (%)	Children (n= 62) n (%)	Adults (n= 54) n (%)	*p*-value
Was diagnosis the same as in Oman?				0.090
Yes	65 (55.8)	30 (47.8)	35 (65.8)	
No	51 (44.2)	32 (52.2)	19 (35.2)	
Were investigations the same?				0.540
Yes	80 (69.0)	41 (66.1)	39 (72.2)	
No	36 (31.0)	21 (33.9)	15 (28.8)	
Was the treatment received the same?				
Yes	97 (83.6)	60 (96.8)	37 (68.5)	0.001*
No	19 (16.4)	2 (3.2)	17 (31.5)	

*Significance.

there a suboptimal perception on the part of patients about the local physicians and the health care system? Is there social pressure from family and community to seek treatment abroad? Is stigma associated with some neurological diseases in Oman?

Also to be pondered are the psychological factors that potentially influenced participant responses: for-profit medical institutions strive to provide individualized attention to patients and their accompanying relatives, so that they leave the host country with pleasant memories. A response bias may also be expected from some patients who invested significant finances and time in 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 influence the 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, and bone marrow transplant, which may not be available in the home country.[13,20] Other reasons include longer 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'Dakhiliyah 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 the UAE found word-of-mouth to be the primary reason for > 60% of its participants who sought treatment in a specific hospital in South Korea.[25] In our study, family members and friends were the most influential in the choice of overseas treatment centers. However, in making the final decision, 69.8% of our participants followed their family's advice which is similar to Al-Hinai et al,[18] study. The Arab culture is strongly family-oriented, and patients prefer to go abroad accompanied by their near relatives, whose wishes and priorities might also be influencing the choice of the country, city, and institution. In the Al-Hinai et al,[18] 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.

In our study, there were more male (61.2%) than female patients. The reason for this might have been the fact that 71.6% of our 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] 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 (4.3%) and nosocomial infections (5.2%), highlights the need for proactively providing returnee medical tourists with comprehensive post-treatment follow-up and care. 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 mycobacterial infections.[26] An Omani study reported that infection complications were more prevalent among patients after renal transplants done abroad than in Oman.[27] The risk of antibiotic-resistant organisms entering the country as a consequence of complications related to infection acquired via medical tourism also needs to be assessed and remedial measures taken.[28] Also, the rise in predatory medical advertising, especially via social media, to manipulate patients into seeking treatment in low-quality institutions abroad needs to be studied.[29]

We recommend further research into the phenomenon of medical tourism in all specialties and tweaking public health policies to improve 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 follow-up and care within the country.

A major limitation of this study was our inability to reach the majority of Omanis who availed of treatments abroad. 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, our study excluded all patients whose medical reports had SQUH neurologists' recommendations for treatment abroad, and thus 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. There were no significant pattern differences between children and adults, suggesting that the decision-making processes and factors influencing both age groups were relatively similar. An overall male preponderance was noticed among both adults and pediatric patients who traveled abroad. We recommend a larger nationwide study, covering all health disciplines, to gain a comprehensive understanding 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 of the advantages and disadvantages of seeking treatment abroad by creating an online portal with unbiased information related to medical tourism. 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 pressured into giving personal recommendations to patients seeking treatment abroad.

Disclosure

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