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Demographic data of patients travelling from public hospitals for medical treatment abroad: outbound medical tourism in the Sultanate of Oman

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ABSTRACT

Introduction Medical tourism is a rapidly evolving global trend, with patients from high-income countries increasingly seeking affordable, quality care in middle-income nations. Despite its growing prevalence, there is a lack of systematic, population-level research on the demographics and disease profiles of individuals seeking treatment abroad, particularly within the Gulf Cooperation Council region. We address this gap by examining the age-specific and sex-specific patterns and disease burden among Omani patients who receive medical treatment abroad, with particular emphasis on chronic and non-communicable diseases.

Methods We analysed the Department of Treatment Abroad database, maintained by the Ministry of Health in Oman, comprising records of 2364 patients referred from public hospitals for medical treatment abroad during the period 2022–2023. The analysis included 1428 patients who received treatment abroad, excluding 936 patients who obtained care within local hospitals. The analysis focused on identifying demographic patterns, disease classifications and preferred treatment destinations.

Results Of the 1428 patients treated abroad, predominantly male, 46.4% were children (0–17 years), including 11% who were infants (0–1 year), and 10% were aged 60 years or older. Most children had ophthalmological, haematological, neurological and orthopaedic conditions, while epilepsy was prevalent among young people and adults. Liver cirrhosis was the most common diagnosis for middle-aged and older-adult males. Parkinson's disease and prostate cancer were the most common diseases in older adults. Liver transplant ranked the topmost medical procedure for treatment abroad, followed by bone marrow transplant, penetrating keratoplasty surgery and retinoblastoma. India was the primary destination for treatment abroad (82%), followed by Turkey (14%), Thailand (0.9%) and the UAE (0.8%).

Conclusions Our study highlights the need for targeted health policy interventions in Oman that address financial and systemic barriers driving outbound medical travel. Strengthening local healthcare for chronic and non-communicable diseases, especially for children, is crucial to reduce reliance on medical tourism and ensure equitable care.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The demographic characteristics and disease burden associated with medical tourism have not been systematically validated and quantified at the population level, either globally or within the Gulf Cooperation Council countries including the Sultanate of Oman.

⇒ The existing evidence, based on media, business reports, small surveys and those published by international consultancies and health tourism firms, is patchy and biased especially on the magnitude of the problem in question.

WHAT THIS STUDY ADDS

⇒ One in two Omani patients seeking treatment abroad are children.

⇒ Young individuals primarily travel abroad for epilepsy surgery and the treatment of neurological disorders.

⇒ Middle-aged adults commonly seek liver transplants, often due to cirrhosis.

⇒ Older male adults receive treatment abroad for prostate cancer and Parkinson's disease.

⇒ India is the top destination for Omani patients receiving treatment abroad.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Health policy interventions in Oman should address local barriers to medical travel and prioritise evidence-based resource allocation to strengthen public hospitals for chronic and non-communicable disease care.

⇒ Further research and clinical follow-up are needed to better understand the reasons behind emergency and non-emergency referrals for treatment abroad, as well as to evaluate treatment outcomes, recovery and patient experiences.

INTRODUCTION

Medical tourism refers to people travelling from their usual country of residence to another country for accessing medical

treatment, either paid for out-of-pocket,[1 2] through insurance or through a third party such as the government or employer. Medical tourism is also being acknowledged as medical value travel due to its healthcare behaviour and economic benefits.[3 4] Globally, an estimated 14 million people travel abroad each year for medical care, with the overall market size valued at US$144.5 billion in 2024, projected to experience substantial growth to US$704.8 billion by 2033.[5 6]

Despite growing relevance and media reports, the official data on medical tourism are limited, not systematically documented and restricted to total numbers without any disaggregation,[7 8] and the lack of standardised definitions and regulatory systems limits our understanding of the global medical tourism dynamics.[9 10] We conducted an extensive search of medical tourism data resources by country. Global data on medical tourism mostly from private consulting firms and media are often unsubstantiated and lack population representation.[11 12] This is especially the case in the Gulf Cooperation Council (GCC) region, including the Sultanate of Oman,[7] which has a relatively well-developed and comprehensive healthcare system.

Global trends in medical tourism

Data from published sources show that outbound medical tourism in the USA has increased from approximately 750 000 to 1.4 million between 2007 and 2017.[13] Many patients opted for treatment abroad to circumvent the high costs associated with local healthcare services, particularly in areas such as dentistry, cosmetic procedures and in vitro fertility (IVF) treatment, often combining their treatment with leisure travel to popular medical tourism destinations, including Costa Rica, India, Malaysia, Mexico and Singapore.[13] In the UK, the number of individuals travelling abroad for medical treatment rose from 151 609 in 2018 to 3 48 000 in 2022, and further to 431 000 in 2023.[14–16] The reasons were similar to those in the USA, with the addition of weight loss surgery, transplants and stem cell therapy. In Canada, despite having a relatively well-equipped healthcare system that attracts international patients, the number of Canadians seeking medical care abroad increased from 45 619 in 2015 to 52 513 in 2016,[17 18] a trend likely explained by the long wait times experienced by over 1 million patients within the national healthcare system.[19]

The magnitude of inbound medical tourism in G8 economies remains high, driven by state-of-the-art medical facilities, advanced technology, innovative therapies and internationally recognised physicians.[6] Inbound patients from the Middle East, Asia and Europe often seek organ transplants, cancer treatment and heart surgery in the USA. While Germany, Switzerland and the UK continue to attract inbound patients from the same geographic regions, Hungary, Poland and Turkey have also emerged as popular destinations for dental and rehabilitation care.[6]

Within the GCC countries, the UAE, particularly Dubai and Abu Dhabi, serves as the primary destination for medical tourism. The number of international health tourists in Dubai increased twofold from 337 000 in 2018 to 691 000 in 2023, generating over US$3.3 billion in 2018 alone.[20] Most inbound patients sought care for cosmetic surgery, orthopaedic surgeries, ophthalmology, dermatology, dental care and IVF treatment.[21] However, due to high costs and a shortage of skilled healthcare providers, patients from the UAE and other GCC countries often travel to Singapore, Malaysia and India for treatment.[20 22]

Medical tourism has increasingly shifted to destinations in the Asian region, which holds the largest market share at 25.5%.[6] For example, India, Thailand and Malaysia have become prominent destinations for inbound medical tourism, providing efficient and advanced healthcare at competitive costs, with reduced waiting times. These countries are supported by world-class healthcare infrastructure accredited by international bodies, a workforce of highly skilled medical professionals and favourable market-driven national healthcare policies. In 2019, India recorded the arrival of approximately 700 000 international patients, reflecting a 63% increase since 2016, and generated an estimated revenue of US$5–6 billion from medical tourism.[23]

Key drivers of medical tourism

The factors underlying medical tourism are multifaceted and complex. The decision to seek medical care abroad is often influenced by factors such as long waiting times, high treatment costs, lack of insurance coverage for specific medical conditions, unavailability of certain treatment options and procedures, as well as restrictions imposed by health insurance policies.[24–26] Other considerations include patient expectations and confidence regarding the availability of competent doctors in host countries and the assurance of prompt medical treatment in facilities with high-quality infrastructure and personalised healthcare provision.[9]

People also travel abroad for treatment when a specific medical procedure or therapy is not locally available or when they feel comfortable to receive care from a culturally similar healthcare provider,[27] or receiving recommendations from friends or family, previous travel experience in the destination country[28] or combining wellness and healing retreats with holidays. In most cases, patients travel for surgeries, transplants, advanced cardiology and oncology treatment, neurological and orthopaedic care, dental care, elective and planned procedures such as fertility treatments and rehabilitation, and increasingly, for cosmetic and reconstructive surgeries. including breast augmentation, liposuction, abdominoplasty, eyelid surgery and rhinoplasty.[27]

Data from a follow-up patient survey show that post-treatment follow-up, quality of care, safety standards, transparency of financial costs, communication and information as initial concerns for seeking treatment abroad.[29] More importantly, 98% of the patients regard

the level of trust as key to their decision-making, while considering other factors such as professional skills, accreditation, competency and technology.[29]

Globalisation, privatisation of healthcare and increased mobility between countries have also propelled the rapid increase in cross-border medical tourism. The supply and demand for healthcare in international markets are influenced by a range of factors, including social and institutional frameworks, the medical tourism ecosystem, macroeconomic policies, healthcare infrastructure and the availability of advanced diagnostic and treatment services, all of which contribute to shaping a competitive landscape for medical tourism.[24] Over the past two decades, India, Thailand and Turkey have emerged as key medical tourism destinations, investing heavily in healthcare infrastructure and specialised medical hubs to meet the growing demand from patients in high-income countries.

The commercial factors that influence medical tourism include affordable costs of diagnosis and treatment and integration of medical tourism as part of traditional tourism.[24] Other related factors include the availability of advanced medical technologies, medical reputation and availability of qualified physicians and healthcare services.[30] There is also a growing market trend in medical tourism facilitated by companies and agents providing online promotions and exhibitions connecting prospective patients to top-tier global healthcare providers,[31 32] and offering additional bespoke services such as airline and commercial air ambulance services, insurance and even cremation and urn transfer services.

In view of high economic returns from medical tourism,[9 33] governments in host countries allow large private hospitals in major cities to provide attractive patient-centred healthcare packages to foreign nationals. Thailand offers a 1-year medical tourist visa, while India has recently introduced an *Ayush* (long life) visa[34] for foreign citizens seeking traditional and therapeutic care for well-being such as Ayurveda and Yoga.[35]

Health systems and medical tourism in Oman

Oman's national health system champions a progressive outlook towards promoting quality healthcare services and allows the provision of treatment abroad for achieving better population health outcomes. About 67% of the hospitals are publicly funded where Omani nationals have free access to healthcare.[36] Oman has a wide network of primary healthcare (PHC) facilities which include small clinics, and about 86% of PHCs are private.[36] Between 2015 and 2020, the number of private hospitals nearly doubled in response to the growing demand for healthcare services, especially for chronic and non-communicable diseases.[20] Tertiary care hospitals are mostly concentrated in the Muscat region, which accounts for over 50% of the country's population, while other governorates are primarily served by secondary healthcare facilities.[36]

Although Oman is making substantial investments to modernise its healthcare system and position itself as a medical tourism destination, it currently refers more patients abroad than it receives and has yet to achieve competitiveness with other medical tourism markets within the GCC region. The factors driving Omanis to seek medical care abroad are similar to those observed in other countries, including delays in diagnosis and treatment, waiting list in public hospitals, the high cost of private healthcare, shortage of specialists and the limited availability of competitive private facilities offering specialised care.[7 37]

The Ministry of Health (MoH) in Oman established the National Committee for Treatment Abroad (NCTA) in 1994 under Ministerial Decision No. 48/94,[38] with regulations subsequently updated under Ministerial Decision 135/2015.[39] NCTA comprised medical specialists and consultant experts, to review and approve the referral applications from public hospitals. These referrals are based on physician's recommendations and are granted when required treatment options are either limited or unavailable within the country's healthcare system.

Patients who need treatment abroad receive full funding support from the government, administered through a separate Department of Treatment Abroad (DoTA) within MoH. DoTA covers costs for treatment, air travel, accommodation, subsistence and related expenses, including those for by-standers and medical escorts for the disabled and older patients. DoTA also provides funding to meet essential expenses for parents of infants and very young children. DoTA manages a comprehensive national database which records details of individual applications approved by the National Committee of Treatment Abroad. The selection of a destination country for medical treatment is typically guided by factors such as the availability and quality of specific healthcare services, institutional track records, previous patient experiences and the nature of the required medical intervention.

Research objectives

As demonstrated in the literature review, there is a notable lack of systematic population-based research on medical tourism in Oman, indicating a gap in the existing body of knowledge regarding this emerging sector. Who are the patients seeking medical care abroad, what are the specific medical conditions that drive them to pursue healthcare outside Oman and where do Omani patients receive treatment abroad? This is a critical question for health planners and policymakers involved in the management and allocation of resources for reducing the disease burden and achieving optimal population health outcomes. Our research objective, therefore, is to analyse the DoTA national database to systematically investigate the age–sex profiles and the disease burden of patients travelling overseas for medical treatment.

MATERIALS AND METHODS

DoTA database contains demographic information, diagnoses and diseases classification data of patient referrals from only public hospitals within Oman. DoTA coordinates the logistical arrangements to send the patients abroad for treatment. As part of the treatment agreement, overseas hospitals provide regular medical updates and interim reports to DoTA through the designated country Health Attaché of the Embassy of Sultanate of Oman. The medical updates are then communicated to the local physicians in Oman to keep them informed about their patients' status. Additional treatments could be recommended while a patient receives care abroad. In such circumstances, the treatment plan is updated and presented to the local physician and the National Treatment Abroad Committee for further approval.

DoTA registry system keeps track of the patient's admission status and treatment regimen in the overseas hospital. If a patient dies while seeking treatment abroad in the host country, then DoTA conducts a thorough post-death evaluation for documentation and quality assurance purposes. DoTA reports to MoH with monthly updates and records suggested improvements that could benefit the patients and enhance the diagnosis and care provision within Oman's healthcare institutions.

DoTA database is a population-based registration system, which provides details of basic demographic data, initial diagnosis, classification and type of diseases, referral outcomes for treatment abroad and country where the treatment was sought. Electronic records of referral applications are available only since 2022. Data for 2364 patients were recorded for the years 2022 and 2023. Of these, 936 patients (39.6%) were directed to local private health providers since treatment facilities were available locally in private hospitals. Patients who had treatment within Oman sought care mostly for assisted reproductive technology/fertility treatment, pre-implantation genetic diagnosis/IVF for sickle cell disease/thalassemia, maternal and child healthcare, including global development delay conditions, initial investigations of neurological conditions and rehabilitation. We excluded patients who received care locally as they did not seek treatment abroad and were outside the scope of our analysis.

The present analysis included 1428 patients referred from public hospitals, with the number of patients seeking treatment abroad rising from 650 in 2022 to 778 in 2023, representing a growth of approximately 19.7%. We present the analysis of descriptive data in visual format. As the analysis is based on complete population data rather than a sample, the use of CIs is not required.

Patient and public involvement

No patients and/or the public were involved in the design, recruitment, or conduct, or reporting, or dissemination plans of this research.

RESULTS

Characteristics of patients seeking treatment abroad

Of the total 1428 Omani patients who had treatment abroad, 46.4% were children (0–17 years), 8.9% young people (18–24), 11.1% early adults (25–34), 14.2% middle-aged adults (35–49), 7.6% older adults (50–59) and 10.3% older people (60+). Approximately 11% of patients were infants aged 0–1 years, while patients aged 65 and above accounted for 6.5%. Age was missing for 22 patients (1.5%).

Female and male patients represented 43.6% and 56.4%, respectively. About 51% of female patients were children, 12% each represented early and middle-aged adults and 9% older people (60+). In comparison, 43% of male patients were children, 10% early adults, 16% middle-aged and 12% older people. The age distribution of male and female patients seeking treatment abroad by single year of age is illustrated in figure 1.

India was the top destination for treatment abroad (82%), followed by Turkey (14%), Thailand (0.9%), the UAE (0.8%), Iran (0.6%) and the Kingdom of Saudi Arabia (0.5%). The rest of the patients (1%) sought care from the UK, Germany, Lebanon, Russia, Jordan, Singapore and Spain.

Disease classification

Among children under 17 years who sought treatment abroad, most had conditions related to ophthalmology followed by haematology, neurology and orthopaedics. The disease classification was determined following initial diagnosis in local hospitals. Figure 2 illustrates the age–sex profile of patients receiving treatment abroad by disease classification. The most prevalent conditions among children included epilepsy, eye and retinal disorders, scoliosis and genetic blood-related disorders, such as thalassaemia and sickle cell disease. Epilepsy-related conditions were most prevalent in the 18–34 age group, particularly among males aged 18–24 and females aged 25–34. A similar pattern was observed in both males and females aged 35–49.

Neurology-related diseases were common across young people and adult age groups. The disease profiles showed a diverse pattern for middle-aged adult patients between 35 and 49 years, especially among males, with conditions related to neurology, oncology, hepatology and pain management. Similar patterns were observed for older people aged 60+, including oncology and ophthalmological conditions.

Liver cirrhosis was the most common diagnosis among middle-aged and older adult males. The most common diagnoses in older adult males were liver cirrhosis, Parkinson's disease, prostate cancer and thyroid eye disease, whereas neuroendocrine tumour, liver cirrhosis and eye-related disorder dominated the diagnoses among their female counterparts.

Treatment abroad by destination

Most patients who had medical care in India received treatment for ophthalmology, oncology, neurology,

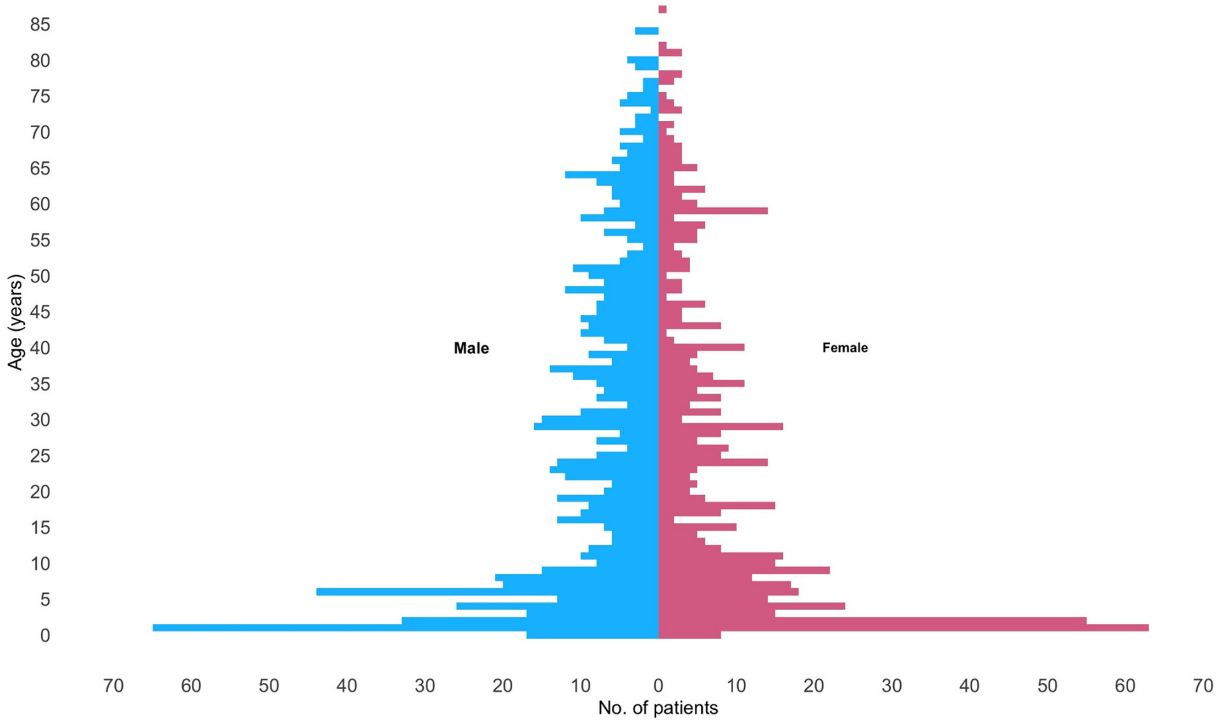

Figure 1 Age–sex profile of Omani patients receiving treatment abroad.

haematology and cardiology conditions (figure 3a), and the patterns were similar for both males and females. However, males sought treatment for a wider range of disease conditions. Of those who had treatment in Turkey (figure 3b), the most common diseases included conditions related to orthopaedic, neurological, oncology, haematology and pulmonology-related diseases. Males had treatment for also vascular surgery, dental and hepatology-related conditions.

Very few travelled to other countries (figure 3c) for treatment of various diseases. For example, females had mostly orthopaedics, obstetric and gynaecological conditions, and oncology, whereas males sought treatment for neurology, pulmonology and orthopaedic diseases.

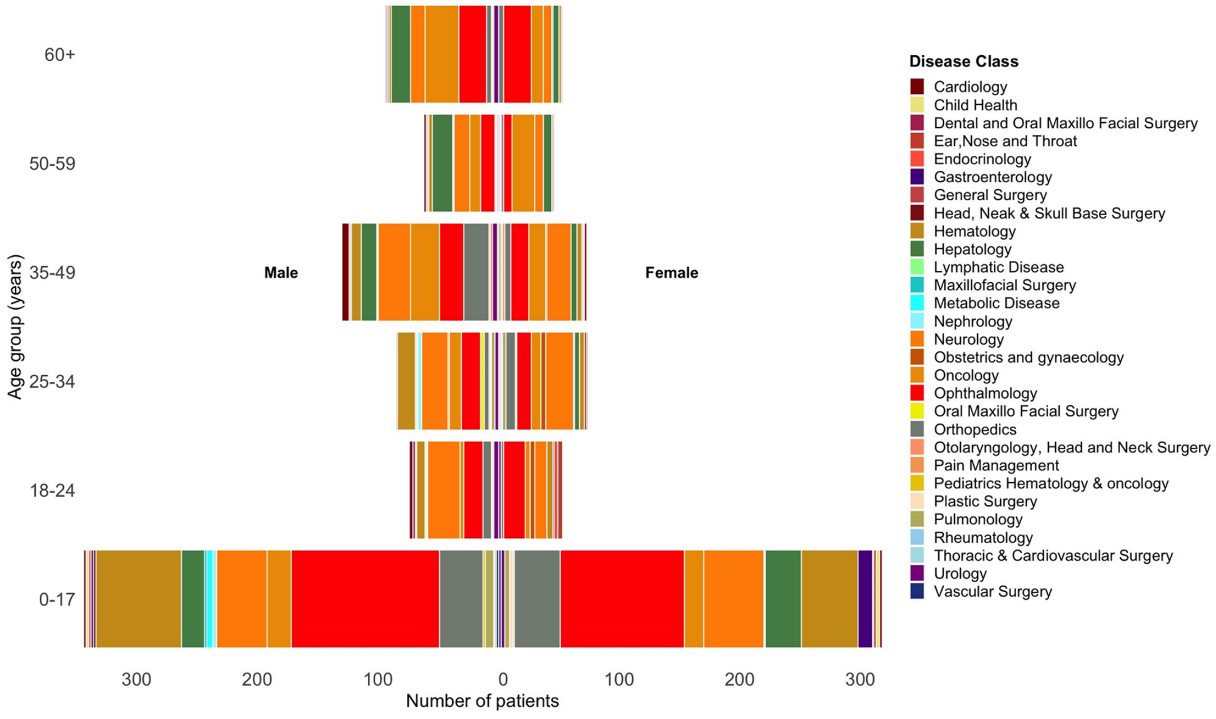

Figure 2 Age–sex profile of patients receiving treatment abroad by disease classification.

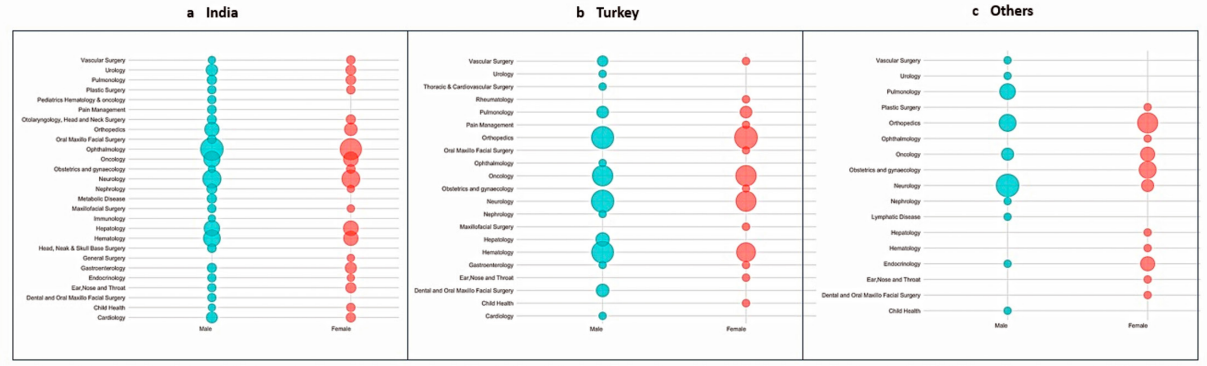

Figure 3 Disease classification of patients receiving treatment abroad by sex and country destination. The size of the bubble indicates the magnitude of patients receiving treatment abroad for various diseases. The scale varies between countries in terms of absolute numbers, with India representing 82.2% of the total cases followed by Turkey (14%), Thailand (0.9%), the UAE (0.8%), Iran (0.6%), the Kingdom of Saudi Arabia (0.5%) and elsewhere (1%).

Figure 4 shows the treatment received in India, the most popular outbound destination for Omani patients, for top 10 diseases. Liver transplant ranked as the topmost procedure, followed by bone marrow transplant, penetrating keratoplasty surgery and retinoblastoma. Epilepsy surgery is featured in the top 10 diseases for treatment abroad. Female patients received advice on treatment plans and follow-up, mostly for retinoblastoma and epilepsy surgery. The top 10 diseases for treatment abroad in Turkey and elsewhere did not show any specific order or pattern.

DISCUSSION

Our research is the first of its kind to generate robust quantitative evidence on the demographic profiles and disease burden of patients seeking treatment abroad for different types of disease outcomes in Oman. The magnitude of treatment abroad referrals for specific non-communicable diseases and chronic health conditions varies considerably across different age groups. The findings underscore the need to strengthen and expand advanced healthcare in local public health systems in Oman, particularly in paediatric care for the diagnosis

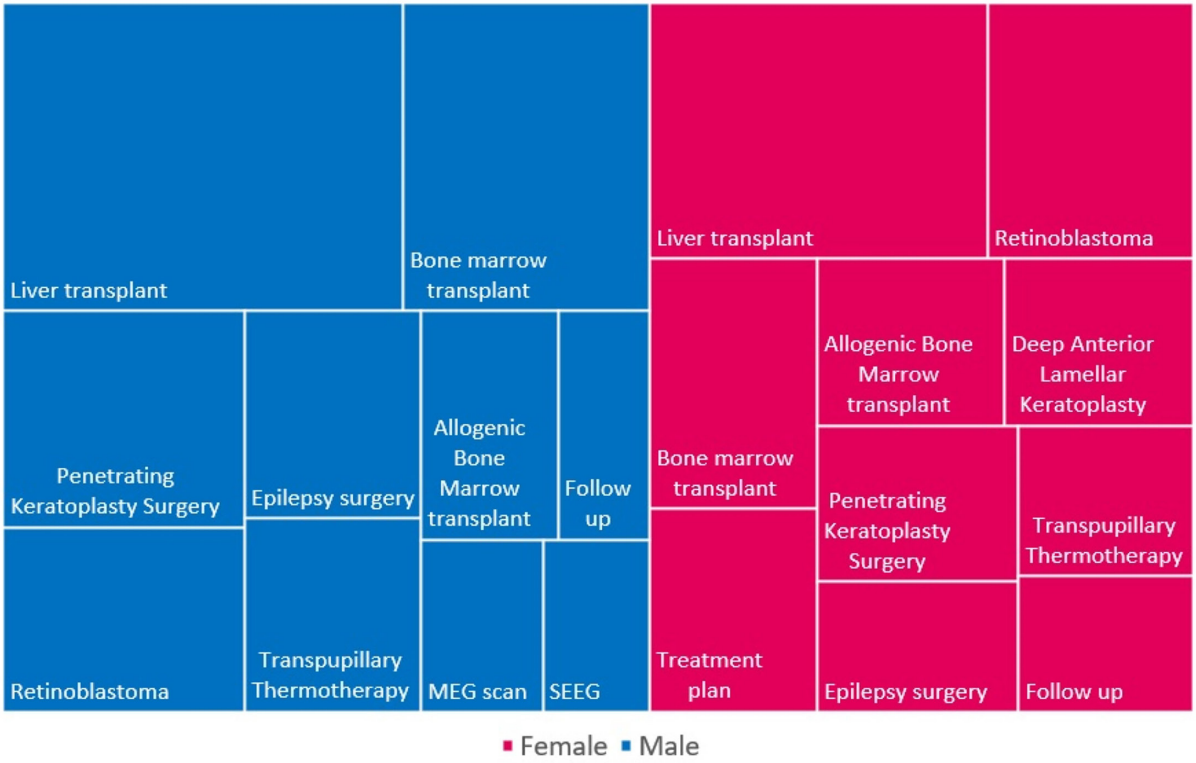

Figure 4 Treatment received in India for top ten diseases by sex. The size of the mosaic indicates the most common reason for seeking treatment abroad for various diseases. Transpupillary thermotherapy box includes intravenous topotecan and intra-arterial chemotherapy. MEG, magnetoencephalography; SEEG, stereoelectroencephalography.

and treatment of ophthalmological, haematological, neurological and orthopaedic conditions.

Further clinical investigation is required to understand the reasons for treatment abroad and the aetiology underlying the high burden of neurological and epilepsy-related conditions among young people and adults in Oman. The high prevalence of genetic disorders in Omani children,[40–42] mostly congenital abnormalities associated with potential brain malformation, suggests the dire need for urgent early interventions targeting newborns and infants. Properly diagnosed and timely treated epilepsy could enable patients to live without seizures and avert premature deaths.[43]

Patients seeking advanced medical treatment abroad for blood inherited disorders such as sickle cell anaemia and thalassaemia remain a critical cause of concern across the life course.[44 45] In addition, high rates of liver diseases, including cirrhosis especially among males,[46] have also a genetic origin through consanguineous marriages in Oman[47] and lifestyle behaviours,[48] subsequently requiring advanced medical interventions such as liver and bone marrow transplant procedures. Alongside, old-age diseases such as prostate cancer and Parkinson's disease suggest potential early onset among older adults.

The high prevalence of neurological disorders among young adults is determined by genetic factors through high rates of consanguineous marriages leading to increased risk of autosomal-recessive neurological conditions. Consanguinity is highly prevalent in Oman, with approximately one in two individuals entering marriages with first or second cousins.[49 50] This practice persists despite a growing awareness of its potential health risks,[42 51] reflecting a deeply ingrained cultural preference.[50] Evidence suggests that distinct genetic mutations within specific population groups may account for the higher prevalence of inherited neurological disorders among young adults.[52 53] Young adults in Oman are also vulnerable to neurological disorders resulting from road accidents.[54 55]

Our findings indicate that one in two patients who received treatment abroad was a child. Research evidence points out a higher prevalence of neurological disorders among paediatric patients, particularly for problems related to development delays, epilepsy and muscular dystrophy.[52] The limited availability of specialised paediatric facilities in Oman for managing complex conditions may explain the higher proportion of children receiving treatment abroad. The government should prioritise investment in specialised medical centres for the diagnosis and treatment of neurological disorders in children to reduce reliance on treatment abroad and improve local care capacity.

Four out of five patients received treatment abroad in India, predominantly for liver and allogenic/bone marrow transplant, penetrating keratoplasty surgery and retinoblastoma. India has already emerged as a major market for medical tourism for Omani citizens. India is geographically the closest to Oman among large countries outside the Arabian Peninsula. Advanced healthcare facilities are widely available across major cities in India at relatively lesser costs compared with many other destinations. The actual costs of liver transplants are relatively cheaper in India. Medical tourism health providers attribute minimal waiting time for surgery as the major pull factor for sustainable and quality healthcare, followed by international accreditation, physician's competency and expertise, healthcare information, hospital infrastructure, patient safety and other factors such as costs and holiday opportunity.[4] The quality of care offered in Indian private hospitals is often a critical factor for patients' choices and decision-making, including those who are cost-sensitive,[56] alongside information search, surgery waiting time, hospital employees, hospital precision and quality accreditation.[57]

The present findings feed directly into the Omani government policy and decision-making in terms of ensuring appropriate, cost-effective interventions, including follow-ups, management of medical complications post-return,[10 58] health risk reduction strategies, patient safety protocols and reforms aimed at strengthening local healthcare infrastructure and resources. The findings are equally relevant, globally in destination countries, in terms of informing and formulating appropriate policy measures in countries which provide treatment to Omani patients. Our findings also direct the need for further investigation to understand the dynamics and impact of medical tourism in Oman. Further research is required to understand the reasons for emergency and non-emergency patient referrals for treatment abroad, as well as the effectiveness of treatment outcomes, recovery, patient experiences, satisfaction and well-being.[52 58]

Our research has a few limitations mostly in relation to the data available within the DoTA database. The number of Omani citizens travelling abroad for healthcare and treatment is likely to be underestimated due to the exclusion of referrals from local private providers and those seeking remote consultations or travelling abroad for healthcare on their own without any consultation with local healthcare providers.[58] Therefore, the DoTA database may not be fully representative at the population level in Oman. Moreover, we do not have the treatment abroad information for the diaspora population. Health-seeking behaviours of the diaspora population are not well documented in Oman, and more generally across the GCC region due to the complexity of data collection, as they usually seek care in private clinics and hospitals or during their annual holidays in their respective countries. Despite these limitations, the present study generated a firmer population-level evidence which can help inform and develop policy interventions aimed at addressing the challenges and complexities underlying medical tourism trends in Oman.

CONCLUSION

We analysed the DoTA database to quantify the age–sex profile of Omani patients seeking treatment abroad for a range of chronic and non-communicable diseases. Our findings show that one in two patients seeking treatment abroad are children. Young individuals seek treatment abroad for epilepsy surgeries, while middle-aged adults typically travel for liver transplants due to cirrhosis. Older male adults commonly seek treatment for prostate cancer and Parkinson's disease. A significant proportion of Omani patients seek medical treatment in India.

The demographic analysis of outbound medical tourism data is crucial for informing evidence-based policy decisions. Our findings can be used to facilitate more effective healthcare resource allocation, ensuring that the healthcare system is equipped to manage both domestic and international patient populations, while also enabling a comprehensive assessment of the broader societal and economic implications of medical travel. Health policy interventions in Oman should address systemic and financial barriers within the local healthcare system that prompt citizens to seek medical care abroad. Efforts should focus on the strategic allocation of resources to strengthen public hospitals in Oman, enabling them to provide effective diagnosis and treatment for specific chronic and non-communicable diseases.

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Contributors AA-A conceptualised the study, conducted the literature review, prepared the data set for research and led the statistical analysis, with supervision and support from SAA-B, AA-M, HAA-H and SSP. AA-A substantially contributed to the data analysis and preparation of the initial draft. SAA-B, KAR, AAA-M, AA-M and HA-S led the study design and substantially contributed to the interpretation of data and revision of the manuscript for intellectual content. SSA-H prepared the initial data set, contributed to the analysis, critical interpretation of the data and drafted the methodology part. KAR, HAA-H, SSA-H and KA-A substantially contributed to the literature review, data interpretation for policy implications and drafting of the manuscript. SSP substantially contributed to the study design, methodology, analysis, interpretation, drafting and revision of the paper for intellectual content. SAA-B as the guarantor accepts full responsibility for the finished work and/or the conduct of the study, had access to the data and controlled the decision to publish.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants. The study was approved by the institutional Medical Research and Ethics Committee of the College of Medicine and Health Sciences, Sultan Qaboos University and the Ministry of Health (MREC# 3401). Data were obtained in anonymous format from the Department of Treatment Abroad, Ministry of Health. All procedures adhered to the ethical guidelines outlined in the revised Declaration of Helsinki.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Data availability is subject to formal review and approval of proposals submitted to the Department of Treatment Abroad, Ministry of Health, Government of Oman.

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