

Medical Travel For Surgical Procedures: A Systematic Review Of The Literature

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Abstract

Background: Thousands of patients travel each year to access surgical procedures in other locations but there is limited evidence on the types of procedures they seek, the coordination of care across countries, the role played by their companion-caregivers and the presence of complications.

Aim: The current review aims to provide an overview of the current evidence on medical travel for surgical procedures.

Methods: A systematic review of peer-reviewed articles was conducted by searching the databases PubMed, Web of Science, ProQuest Central and CINAHL for papers on medical travel for surgeries. Data were extracted through a form developed in REDCap. The MMAT was used to assess the quality of the studies. We followed PRISMA.

Results: The review included a total of 58 articles. Patients travelled with their caregiver-companions to gain access to surgical procedures. Pre-assessments in the destination countries were limited. Access to follow-up care was challenging, threatening the continuity of care. There was limited information exchange between sending and destination countries. Significant health risks for patients were identified in the form of postoperative complications.

Conclusion: Future research needs to explore the full pathway of care of patients and their caregiver-companions traveling to access surgical procedures.

Protocol registration: CRD: 42018114495

Introduction

Traveling to access medical treatments, often referred to as 'medical travel' (1), is not new (2). The treatments patients seek through traveling are diverse, ranging from medical check-ups to the treatment of cancer (6), cosmetic surgery (7), bariatric surgery (8) and experimental or unavailable treatments in their home country (9). Medical travel affects the domestic health care systems of the destination and sending countries and has caught the attention of policymakers and the media (10). Medical travel is rapidly growing and worth billions of dollars (6), with elaborate marketing strategies and a wide range of medical services available to patients seeking cheaper, quicker or better procedures as well as more culturally-appropriate care (3).

A number of reviews have explored medical travel, focusing on economics, utilization and ethical considerations (41). Others have focused on cosmetic tourism (7) or addressed patients' motivations, travel flows and health system implications (3,4). Crooks et al. conducted a review in 2010 assembling the experience of patients undergoing medical travel, the bulk of the sources were media articles and five empirical studies (9). Ten years have passed and new empirical articles about medical travel have been published, therefore, this review offers new insight into medical travellers' experiences, specifically in the context of surgical procedures.

The main concern regarding travel for surgery is the quality of care obtained elsewhere: there are no existing reliable figures regarding outcomes of procedures, or frequency and type of surgical postoperative complications (12,32). Patients are interested in having surgery at a reduced cost, but there are often uncertainties about care such as access to the surgeon in the destination country, preoperative counselling and monitoring after the procedure (33). Consideration also needs to be given to patients returning to their home country with complications as many of the countries have inadequate or no malpractice laws in place (11,27). Overall, there are questions regarding how surgical care is organized and regulated, including information exchange, preassessment, follow-up and how and where surgical complications are addressed.

Patients traveling to receive surgery are frequently accompanied by informal caregivers, called 'caregiver-companions' (34,35). The different roles caregiver-companions take on and their experience along surgical travel journeys has only recently begun to catch the attention of researchers and reflected in a few published studies (34–38). The general tasks of caregivers include wound dressing, checking patients' general health and voicing their desires to staff (34). Ormond (2013) pointed out that more focus needs to be placed on caregivers, as they not only support patients in hospitals but help at different levels including during the journey, at hotels and back home (39). Caregiver-companions suffer from stress due to mental, physical but also financial reasons as they provide unpaid help to patients (40).

The focus of this review is on patients and their caregiver-companions undergoing medical travel for surgical procedures. There is limited evidence of the roles patients' caregiver-companions take and how they cope with situations in the destination countries (15), the coordination of care across sending and destination countries (4), the frequency and type of surgical postoperative complications and how these are treated (12,32). The review includes empirical studies as well as case reports, case series, and retrospective analyses based on routinely collected patient data to identify common surgical procedures that involve medical travel, the experiences of traveling patients and their caregivers, cases of post-surgical complications and how these are addressed.

RESEARCH QUESTIONS

The review was guided by the following research questions:

1. What are the surgical procedures that frequently involve medical travel?
2. What are popular sending and destinations countries?
3. How is care organised to deliver care to traveling patients?
4. Is there information exchange between local healthcare professionals/hospitals and travel destinations?
5. Who are the patients and caregiver-companions that travel?
6. What are patients' experiences?

7. What are the roles carers take on and how do they cope with challenges?
8. What are the postoperative complications and how/where are they dealt with?
9. What are future areas of exploration?

Methods

A systematic review of peer-reviewed articles without a meta-analysis was conducted. The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (42). The review protocol was registered with PROSPERO (CRD: 42018114495).

Search strategy

PICOS (Population, Intervention, Comparison, Outcomes, Setting) framework was used to establish the search strategy (**Appendix 1**) (43). The keywords for the search were informed by other reviews, relevant to the field (3,9,44–47). A review of published literature was conducted by searching the following databases; PubMed, Web of Science, ProQuest Central and CINAHL. Searches in the different databases were performed on the 5th of May 2020. For the search, a combination of keywords for the two concepts of medical travel and surgery was employed (**Appendix 2**). Boolean operators were utilised in order to maximize the arrangements of terms combining the concepts of medical travel and surgery. Medical subject headings (MeSH) were used, where possible, and the search strategy was translated across the different databases (**Appendix 3**).

Selection

Results were combined in the reference manager Mendeley and duplicates were removed. Articles were screened in three steps, by title, abstract and full-text based on the subsequent inclusion criteria; 1) published in a peer-reviewed journal, 2) research or case report focused on the use of medical travel for surgical procedures and 3) published in the English-language. Surgical procedures were defined as procedures taking place under the care of anaesthetist with a surgeon or dentist. Medical travel was defined as travel for the primary purpose of obtaining medical or dental services. Medical travel included international, cross-border and national medical travel. Articles were excluded when; 1) they focused on medical travel, but did not include surgical procedures, 2) they were published in a non-English language, 3) the full text was not available and 4) retrospective analysis which did not contain postoperative complications. The reason for exclusion and screening stage were recorded in an Excel spreadsheet. A second reviewer cross-checked included articles at all stages of the screening process. The rationale behind only including published and peer-reviewed journal articles and narrowing it to the English language was to preserve the feasibility of the systematic review.

The reference lists of included empirical studies were reviewed to identify additional related publications and these were screened using the same process. Medical travel also incorporates healthcare professionals traveling to offer their services in other countries (5) although these travel flows will not be examined in this review.

In this review, the definition of medical travel will be based on the proposal made by Vindrola-Padros (2020), to consider medical travel as encompassing all types of journeys made, including intranational, to receive medical care (6).

Type of samples

The review was limited to studies or case reports focusing on patients or their caregiver-companions. Studies were also included if the sample were consultants or surgeons who answered questions about patients or caregiver-companions.

Categorisation of articles

Papers that met the eligibility criteria were placed into two different sets based on their design. The first set included studies that were designed with the purpose of collecting data (e.g. interviews, observation or ethnographic fieldwork). The second set were studies such as case reports, case series and retrospective analysis, that have primarily drawn from routinely collected patient data (e.g. based on chart reviews or registers). Some of the case series and retrospective analysis included cost analysis, this was beyond the scope of this review.

Set 1 was used to answer the different research questions, but for some, it only offered limited content especially on medical travel complications, as well as how and where these are taken care of. Set 2 was, therefore, used to obtain more detailed insights on the aforementioned areas not addressed by Set 1.

Data extraction

Data from the included articles were extracted through a form developed in Research Electronic Data Capture (REDCap). For set 1 and set 2, two different REDCap extraction forms were developed, which were examined by the second reviewer. The different types of categories in the extraction forms can be found in **Appendix 4** and **Appendix 5**. The forms were developed after a screening of all full-text articles. The forms were then piloted using 3 articles from both sets and further refined based on the findings. Whenever there was a study comparing a domestic with a tourist group, the data were extracted only from the tourist group, as that was the focus of the review. Data from the domestic group were considered if these were used to compare the outcomes to the tourist group.

Data synthesis

The data from the REDCap forms were exported and used to assemble the main characteristics of the articles. In-depth entries from the categories were analysed using framework analysis (48). An excel spreadsheet formed the matrix, allowing the development of an analytical framework where codes were organised into different categories (48). The different categories were guided by the review questions, which were broken down into sub-categories forming clusters around a specific concept. The relevant information extracted from REDCap was entered into the framework, where the columns corresponded to the codes and the studies were organised across the rows. Restructuring of information through the framework allowed the reduction of the data and identification of the main results. Subsequently, by comparing categories between studies, patterns started to emerge, and these were used to address the research questions.

Quality assessment

The Mixed Methods Appraisal Tool (MMAT) was used to determine the methodological quality of the articles that met the eligibility criteria (49,50). The tool is content validated and was selected as it is unique, allowing quality assessment of several study designs including qualitative, quantitative and mixed methods (50,51). The MMAT was used to analyse peer-reviewed research papers that present empirical findings and scores were cross-checked. The MMAT is not suitable for evaluating other types of articles, such as case reports and case series, so set 2 was excluded from the quality assessment.

Results

The databases search rendered 4268 results. After the three screening phases were completed, 58 articles were included (**Figure 1**). Articles that included data on surgical and non-surgical procedures but did not allow disaggregation were excluded. One additional article was excluded in the data extraction phase, as the content did not relate to any of the research questions

The main emphasis was placed on set 1, composed of 20 articles based on 17 studies, which laid the groundwork for this review. Set 2 consisted of 38 articles and was used to extend the knowledge to provide further insight into the sending, destination countries and complications. The MMAT was used to evaluate the quality of set 1 studies, overall scores are displayed in **Table 1** (detailed ratings **Appendix 6**).

Characteristics of studies

The main characteristics of the included studies from set 1 and set 2 can be found in **Table 1** and **Table 2**. The majority of set 1 studies assessed the experience or motivations of patients traveling to receive surgery, some of these did this through the perspectives of doctors or clinicians (52–60). Two studies focused on patients that presented with complications after traveling to receive surgery (61,62). Three articles based on one study looked at various aspects of caregiver-companions by focusing on their experience, roles, or coping strategies (37,38,63). Two articles based on one study examined the roles and experience of caregiver-companions from the perspective of International Patient Coordinators (IPCs) (34,35). Three studies were interested in transplant tourism, focusing on outcomes, adequacy of care or the motivation and experience of patients (64–66). One study focused on the complex flows of cosmetic surgery tourism (67).

The majority of study designs were qualitative [9], five studies were quantitative and three mixed methods. The most frequent qualitative methods were interviews [7], observations combined with interviews [1] and online narratives [1]. Quantitative methods were exclusively survey-based [5]. The three studies that used mixed methods were based on data collected from online narratives [1] interviews in combination with ethnographic fieldwork (identified as mixed methods by the authors, although qualitative in design) or [1] interviews in combination with surveys [1].

Set 2 was composed of twenty case reports, eight case series and ten retrospective analyses that were reliant on routinely collected patient data such as chart reviews or registers.

Table 1. Characteristics of set 1

Reference	Year of publication	Sending country	Destination country	Surgical procedures	Study design	Data collection	Sample	Quality assessment
(52)	2011	US, UK	India	Orthopaedic	Qualitative	Observations/ Interviews	Two patients	****
(61)	2011	US	NS	Cosmetic	Quantitative	Surveys	368 American Society of Plastic Surgeons members	**
(62)	2011	UK	Eastern Europe, Western Europe, Asia, Africa, South America, Middle East, North America, Australasia	Breast augmentation, abdominoplasty, breast reduction, face/neck lift	Quantitative	Surveys	63 UK consultants	***
(64)	2011	Korea	Mainland China	Liver, kidney transplantation	Quantitative	Surveys	462 kidney, 504 liver transplants patients	**
(34)	2013	North America, Europe, Australia, Africa	Bolivia, Costa Rica, Barbados, Mexico, US, Croatia, India, Israel, Thailand, Turkey	Cosmetic-, bariatric-, orthopaedic-, oncology-, spinal-, cardiac surgery, veinoplasty	Qualitative	Interviews	21 IPCs	*****
(35)								
(53)	2014	Germany, Romania, Libya, Serbia, Slovakia, Slovenia, Spain, Ireland, UK, US	Hungary	Orthopaedic surgeries: hip replacement, knee prosthesis, arthroscopy, spinal surgery	Mixed Methods	Survey/ Interviews	115 orthopaedic patients	***
(54)	2014	UK, Republic of Ireland	Pakistan, China, Egypt, India, Columbia, Iran, Nigeria, Philippines, Sri Lanka, Cyprus, Iraq, Turkey, Saudi Arabia	Kidney transplantation	Quantitative	Surveys	62 renal consultants	***
(55)	2014	Canada	Bulgaria, Egypt, India, Mexico, Poland, US	CCSVI	Qualitative	Interviews	15 CCSVI-patients	*****
(67)	2015	(1) UK (2) Australia	(1) Europe (focus: Tunisia) (2) East Asia (Thailand, South Korea, Malaysia, China)	Breast augmentation, eyelid surgery, face/neck lift, rhinoplasty, others	Mixed Method	Interviews/ Ethnographic fieldwork	213 individuals (patients, carers, doctors, healthcare workers, key industry players)	***
(56)	2015	Canada	India, US, South Africa, Thailand, Poland, China, Israel, Germany, Cuba, Costa Rica	Hip resurfacing, CCSVI, retinosis pigmentation, knee-, bariatric-, cosmetic-, dental-, gastrointestinal surgery	Qualitative	Interviews	32 medical travellers	*****
(63)	2015	Canada	Mexico, US, India, Germany, Poland,	Hip/knee replacement, CCSVI, bariatric-, cataract-,	Qualitative	Interviews	20 caregiver-companions	*****
(37)	2017							

(38)	2017		Egypt, Turkey, Costa Rica, Spain, Philippine, Venezuela, Aruba	colorectal-, hernia repair surgery				
(65)	2016	Macedonia/Kosovo, Netherlands, Sweden	Pakistan, India, Iran, Russia, Colombia, China, Iraq	Kidney transplantation	Qualitative	Interviews	22 transplantation patients	*****
(66)	2016	UK	China, Egypt, India, South Africa, France, US	Liver transplantation	Quantitative	Surveys	Clinicians from 6 UK liver transplant units	****
(57)	2017	UK, Ireland, Norway, Australia, Spain, Netherlands, US, Belgium, Switzerland, Malta, Other	Belgium, Turkey, Hungary, Slovakia, Poland, Others	Cosmetic or dental	Mixed Methods	Medical tourism portal reviews	Postprocedural experiences of 603 respondents	***
(58)	2017	Mainly: Australia	Thailand, Malaysia	Cosmetic	Qualitative	Narratives: blog/reviews	43 narratives of medical travellers	**
(59)	2019	Canada	Mexico	Bariatric: adjustable Lap band, vertical sleeve, gastric bypass	Qualitative	Interviews	20 bariatric surgery patients	****
(60)	2020	Australia: non-metropolitan areas	Australia: metropolitan areas	Breast reconstruction	Qualitative	Interviews	31 surgeons, 37 health professionals, 22 women	****

Table 2. Characteristics of set 2

Reference	Year	Sending country	Destination
Cosmetic surgeries			
(68)	2011*	NS	Panama
(69)	2012***	UK	Europe, Indian subcontinent, Southeast Asia, Middle East
(70)	2012*	UK	NS
(71)	2014**	US	Dominican Republic
(72)	2014**	Switzerland	Dominican Republic, Ecuador, Mexico
(73)	2014*	US	Mexico
(74)	2014*	UK	India
(75)	2015*	Australia	Vietnam
(76)	2015*	Switzerland	Dominican Republic
(77)	2015***	Australia	Thailand
(78)	2015*	Switzerland	Mexico
(79)	2015*	Germany	Turkey
(80)	2016**	US	Dominican Republic, Mexico
(81)	2016*	US	Dominican Republic
(82)	2016*	Colombia	Venezuela
(83)	2016*	US	Dominican Republic
(84)	2017**	US	Dominican Republic
(13)	2017***	US	NS
(85)	2017*	US	Dominican Republic
(86)	2018*	Spain	Ecuador
(87)	2018***	US	Dominican Republic, Colombia
(88)	2019***	Ireland	Turkey, Belgium, Poland, Turkey, India, Estonia
(89)	2019***	UK	Turkey, Belgium, Czech, Cyprus, France, Tunisia, Colombia, Spain, India
(90)	2019*	US	Dominican Republic
(91)	2020*	US	Dominican Republic
Bariatric surgeries			
(92)	2009*	UK	India
(93)	2010**	Canada	NS
(94)	2012*	UK	South America
(95)	2015*	US	France
(96)	2016*	UK	Tunisia
Transplantation			
(97)	2010***	Saudi Arabia	Pakistan, Philippines, Egypt, US
(98)	2010**	Turkey	Egypt
(99)	2014***	Taiwan	China
(100)	2017***	Nigeria	India, Pakistan, Egypt
(101)	2018***	Oman	Pakistan, China, Egypt, Iraq, Iran
Other			
(102)	2007*	Australia	India
(103)	2010**	Australia	Overseas
(104)	2011**	Canada	Eastern Europe, India, Mexico, US

*Case report: symptoms, diagnosis, treatment of specific patient

**Case series: multiple case reports

***Retrospective analysis

Sending, destination countries and surgeries

The unit of analysis in this section was study rather than paper, to assess trends in sending, destination countries and surgical procedures.

Sending and destination countries

Across the different set 1 studies, common sending countries were; the United Kingdom (UK) (52–54,57,62,66,67), Australia (35,57,58,60,67) the United States (US) (52,53,57,61) and Canada (55,56,59,63). Frequently mentioned destination countries were; India (35,52,54–56,63,65,66), China (54,56,64–67), US (35,55,63,66) Thailand (35,56,58,67), Mexico (35,55,59,63), Egypt (54,55,63,66) and Poland (55–57,63) (**Table 1**).

Set 2 focused on returning patients with surgical complications, common sending countries were: the US (13,71,91,95,73,80,81,83–85,87,90), UK (69,70,74,89,92,94,96), Australia (75,77,103) and Switzerland (72,76,78). Frequent destination countries were; the Dominican Republic (13,71,90,91,72,76,80,81,83–85,87), India (74,88,89,92,100,102,104), Mexico (72,73,78,80,104) and Egypt (97,98,100,101) (**Table 2**).

Surgeries

The majority of surgeries from set 1 were; [1] cosmetic, [2] orthopaedic, [3] bariatric, [4] organ transplantation or [5] experimental chronic cerebrospinal venous insufficiency (CCSVI) surgeries. Cosmetic operations were frequently reported such as breast augmentation and face/neck lift (35,57,58,60–62,67). Orthopaedic surgeries were included in five studies (35,52,53,56,63). Four studies focused on bariatric procedures (35,56,59,63). Organ transplantations were accounted for in four studies (54,64–66). Three studies noted CCSVI treatment (37,55,56) (**Table 1**).

Set 2 included patients returning with complications to their sending countries. Most common surgeries were cosmetic, bariatric and organ transplantation (**Table 2**). Cosmetic surgeries such as; abdominoplasty, liposuction and breast augmentation (13,68,78–87,69,88–91,70–73,75–77). Organ transplantation complications were reported in five studies (97–101). Similarly, bariatric surgery complications were reported in five studies (92–96).

Patients and caregiver-companions characteristics

Patients

From seventeen studies, five reported the age of patients see **Table 3**. In three studies, more female patients compared to male patients received procedures such as CCSVI, orthopaedic and cosmetic/dental surgeries (53,55,57). This trend was reversed in an organ transplantation study in which more male than female patients were present (65). The ethnographic study accounted for two male patients (52). None of the set 1 studies reported on patient comorbidities. Set 2 provided insights into common patient comorbidities such as; diabetes (13,89,103) high BMI (89,93,96) or hypertension (13,98).

Table 3. Patients age

Reference	Procedure	Age (years)
(55)	CCSVI	28-65, median; 50
(65)	Transplantation	29-65, median; 49
(53)	Orthopaedic	41.9
(52)	Orthopaedic	Late fifties
(57)	Cosmetic/dental	51% of the sample was 45+

Caregiver-companions

Caregiver-companions age and gender were reported in two studies. The age range was between 23-67 years and more male compared to female carers were accounted (63). The ethnographic study accounted for one female carer in the late fifties (52). Patients travelled with family members, such as spouses, parents, siblings or children (34,52,63,65,67), they were also often accompanied by friends (34,63,67).

Organisation of care

Pre-scanning/assessment

In five articles, various pre-assessment contexts have been noted. Canadian citizens traveling abroad to acquire bariatric surgery successfully bypassed a stringent system of pre-operative checks before surgery (59). Patients noted that, in the destination country Mexico, none of the pre-scanning existed, granting them immediate access to the surgery (59). They were aware that bypassing the Canadian system meant forfeiting their access to readily available medical services for questions and prompt treatment (59). Ethnographic research in India reported on elaborate pre-assessment of a patient waiting for

orthopaedic surgery lasting several days (52). Noting direct access to medical tests prior to spine surgery, such as MRI, the waiting time in the home country would have been more than eight months (52). An article on organ transplantation noted, that medical assessments were carried out for all cases, in the destination countries (65). However, two articles documented suboptimal care for pre-operative treatment (54,66). The authors indicated that education, counselling and screening for blood-borne viruses were inadequate (54,66).

Postoperative follow-up

Some articles indicated that, if postoperative follow-up had been obtained, this was done in the sending countries (53–55,59). Articles noted that obtaining postoperative follow-up in the sending health care system was problematic (55,59). The aforementioned Canadian bariatric patients have bypassed the extensive pre-assessment system to acquire faster access to surgeries but were unable to access the standard postoperative care in Canada (59). Few patients were able to access aftercare domestically, and this was only if their primary domestic doctor supported their decision to receive surgery abroad. Lack of help from a family practitioner endangered continuity of care resulting in inadequate follow-up treatment (59). Patients travelled to access experimental CCSVI treatment, unavailable in Canada (55). They were aware, through the media, that returning patients had been refused follow-up care by domestic physicians, but still underwent surgery, thus threatening their access to emergency treatment (55). When looking at orthopaedic surgery, an article reported that half of the patients who had undergone surgery had received follow-up in the sending countries (53). Caregiver-companions played an important role in postoperative follow-up, noted in one article, as they often arranged appointments in the sending countries (34). Patients obtaining transplantation abroad returned to their sending countries to acquire specialist continuity of care (54). The lack of patient counselling in the destination country on post-transplant health risks has been reported (54,66).

None of the articles reported on follow-up care in the destination countries. Only one article mentioned the experience of a caregiver-companion who travelled for experimental surgery with a family member and reported his frustration, due to the lack of follow-up care and contact with the surgeon in the destination country (63).

Information exchange

Two articles noted that caregiver-companions transfer information between sending and destination countries (34,52). In the case of organ transplantation, one article noted the poor transfer of patient information from destination to sending country, while the other reckoned that, if discharge sheets were provided to patients, these were inadequate and provided limited information (65,66). One article on orthopaedic surgery in Hungary, noted that 65% patients received discharge documents and almost half of the surgeons were in contact with the physicians in the sending countries (53). None of the other studies indicated information exchange between doctors of sending and destination countries.

Medical travel patients experience

It was possible to group patients' experience into three main categories: [1] travel journey and acquiring an improved health perception, [2] service/facilities and [3] challenges.

Patients traveling by plane could choose between different flight routes. In one article, low-cost flights with multiple layovers were chosen over direct flights due to cost considerations (67). Patients in remote Australian areas needed to consider other factors when planning their journey to metropolitan areas, such as road conditions and weather seasons, influencing their decision to travel by car or plane (60). Traveling also meant bypassing barriers or delays in their home country to access diagnostic tests or surgeries immediately (52,55,56,59). A patient reported that in India they were able to diagnose his condition, operate and relieve his pain, something that doctors in the UK were incapable of (52). Experimental CCSVI patients noted their experience of hope in terms of symptom relief, a surgery unattainable in the sending country (55). Even though some patients did not achieve the symptom relief that they had expected or the long-lasting effect that they had hoped for, they still felt their journeys were worthwhile (55). Others were angered by the experience of needing to become a medical traveller as surgeries were inaccessible within their local health system (55). The experience of some bariatric patients regarding traveling for surgery felt very stigmatized and they informed their families about their plans only when they had arrived in the destination country (59).

Six articles noted patients' experience regarding services and facilities. The viewpoints offered were diverse and included both positive and negative experiences. Positive accounts contained information such as patients being surprised by the competence and skills of the surgeons or the kind and attentive staff, compared to their home country (52,53,65). It was emphasized that physicians took their time to explain everything in detail to patients (53,55). Patients reported their surprise about the first-class facilities (52,55). Two articles noted patients which saw the voyage for surgery as an opportunity to also experience it as a holiday (56,67).

Negative accounts documented the poor condition of facilities, lack of hygiene and shortage of English-speaking staff (58,65). In one account, a patient was trying to communicate her allergy to an anaesthetic, that was nevertheless given to her causing severe allergic reactions (58). Patients further noted that inadequate skills of cosmetic surgeons were causing unsatisfactory results (58). An article identified that the quality of service received was the most significant determining factor in the experience of patients (57).

The challenges patients faced while seeking treatments abroad included: isolation by staying within the confines of medical facilities, being completely oblivious (and consequently overwhelmed) by the Libyan conflict, unexpected costs and language barriers (52,53,56,58,67).

Roles of caregiver-companions and challenges they face

An article identified three roles that caregiver-companions occupy: 'navigator', 'knowledge broker' and 'companion' (34). The role of 'navigator' related to the organisation of the travel journey and coordination within the facilities. 'Knowledge broker' referred to the role of assimilating and transferring information

regarding medical information between the sending and destination country and facilitating the communication between the patient and staff. The 'companion' role related to offering emotional and physical assistance (34). The tasks behind these roles were also reflected in other accounts of caregiver-companions. Caregiver-companions made travel arrangements and kept track of medical records (63). In one account, the caregiver-companion arranged vaccinations, sorted travel documents, booked flights and assimilated a medical record to be taken along their voyage (52). Caregiver-companions guided medical travellers in their decision-making process, helped monitor patients' symptoms and made patients calmer as they had someone to rely on (37,56,63). In the case of organ transplantation, one task performed by some caregiver-companions was to help identify donors (65).

Caregiver-companions, by choosing to accompany patients, also encountered challenges. These were commonly encountered because of the; [1] travel journey [2] unfamiliar environment and [3] concerns over the patient. The challenges started with the travel journey. Specifically, the accounts noted aircraft journeys, as caregiver-companions were accompanying some patients with underlying health conditions that impacted mobility (34,37,63). Other accounts reported the increased vulnerability of caregiver-companions due to the unfamiliar environment in the destination location (52,63). One caregiver-companion noted being exposed to crowds, strange smells and poverty upon arrival in India (52). Stresses experienced were due to mistrust, language barriers, anxiety, negative preconceptions of the country and facilities, but these decreased as caregiver-companions became familiar with the environment (35,63). Additional postsurgical stress factors were identified, such as the concerns regarding the outcome of surgery, post-treatment responsibilities, complications and financial concerns (35,63). Caregiver-companions were able to better address these challenges reducing stress, due to prior travel and caregiver experience, knowledge of patients' health conditions and close a relationship to the patients (37). The interaction and meeting with other caregiver-companions at the destination facilities also helped to better manage the experience (63). Caregivers noted that to protect caregiver-companions health, they should prepare for demanding physical tasks and take the necessary health precautions, such as getting vaccinated (38).

Postsurgical complications

Few articles from set 1 commented on postsurgical complications. It was noted that patients returning to the UK had complications commonly following face/neck lift, breast reduction, breast augmentation and abdominoplasty (62). Cosmetic surgery patients returning to the US had complications linked to infections, wound opening, contouring deformities and localized bleedings (61). Patients' accounts of complications included wound opening and infections (58). Patients presented with postsurgical complications to hospitals in their home country (61,62), treatment included; surgeries, hospitalisation, antibiotic therapy and outpatient care (62).

Two articles documented complications following travel for organ transplantation. Infections (e.g. cytomegalovirus (CMV), sepsis, Hepatitis C, tuberculosis) and rejections were noted as kidney transplantation complications (64,65). Liver transplantations were connected with biliary complications and hepatitis B or C infections (65).

Set 2 surgical procedures were grouped into the following 4 categories for the evaluation of common postsurgical complications and their treatment; [1] cosmetic, [2] bariatric, [3] transplantation and [4] other procedures (**Table 2**). Twenty-five articles reported on cosmetic complications. Most common complications were infections reported in 23 articles (13,69,79–88,71,89–91,72–78). *Mycobacterium* surgical site infections were the most common cause, specifically *M. abscessus* infections (13,69,80,81,83–88,90,91,71–76,78,79). Other causes of infections included *streptococci*, *staphylococci* (77) and a fungus (*S. erythrospora*) (82). Five articles reported on complications following bariatric surgery, common complications were infections or related to the use of gastric bands (92–95). Five studies reported that, in the case of organ transplantation common complications were infections (e.g. CMV, hepatitis C) (97–101). The last category was composed of three articles. Two articles, one on orthopaedic and on dental surgeries reported infections as common complications (102,103). The article on CCSVI procedures reported complications such as stent migration, thrombosis and nerve injury (104).

When considering postoperative cosmetic complications, the majority of papers indicated that these had been treated in the sending countries (13,69,78–87,70,89–91,71–77). Looking across articles common treatments included: surgery, antibiotic therapy, debridement or wound drainage (13,68,78–81,83–85,87–89,69,90,91,71–77). Complications after bariatric surgery were exclusively treated in the sending country, treatment generally required surgery and antibiotic therapy (92–96). Four papers on organ transplantation stated that patients returned to the sending country to receive treatment (97,98,100,101). Two of those reported that patients' needed to be placed on immunosuppressive drugs, prophylaxis, and some required surgeries (98,101). Complications in the fourth category following CCSVI, orthopaedic and dental procedures were all treated in the sending countries (102–104). Treatment of CCSVI complications were not specified, orthoptic and dental complications commonly required surgery and antibiotic therapy (102–104). See **Appendix 7** for detailed complications.

Discussion

We found a diverse range of medical travel destinations in the literature. Common destination countries were: India, Thailand and China and these are likely popular as they have developed strong medical travel industries (24,106). General patient flows could not be established, as only a few studies indicated the direction of patient movement. It was difficult to establish reported numbers of foreign patients receiving care and even harder to compare between countries (107). Hanefeld et al. have indicated that most estimates of travelling patients regarding sending and destination countries are based on media reports or inaccessible sources (3), leading to inaccurate global figures of patient flows.

The procedures accessed by medical travellers were primarily provided in the private sector, with no referral systems in place (108). Limited preoperative assessment took place in the destination facilities and postoperative care was sought exclusively in the sending countries. Accessing postoperative treatment in the sending country was challenging as doctors were unwilling to provide care due to concerns about the lack of information on the procedure and quality of care in the destination country (9,45). Returning patients needed to be persistent in securing access to postoperative care.

Concerns were raised about the potential lack of information exchange between doctors from sending and destination countries (47). This was considered dangerous as doctors in the sending countries needed to make decisions on postoperative treatment without a full picture of prior care (66). This was particularly important in the case of postoperative complications. The most common complication identified in this review were *Mycobacterium* infections and these were also identified as common complications in a cosmetic surgery tourism review (7). Most of the infections in this review required extensive surgical and medical management. Other reviews on kidney transplantations abroad have indicated that medical travel transplantations were associated with higher levels of CMV infections, HIV and Hep B infections (115). A higher CMV infection rate was also reported as complication in this review (64,97).

The lack of reported patient characteristics limits a deeper understanding of surgical travellers and this limitation was also identified in other literature (3). Crooks et al. conducted a review on patients' medical travel experience in 2010 (the majority of sources were media articles) and highlighted that patients tended to reflect on the condition of the facilities, the level of care received and worries regarding language barriers and facing stigma around the decision to go abroad (9). Our review identified additional aspects of patient experience such as being accompanied by caregiver-companion and contextual circumstances in the destination countries. A gap that remains is the analysis of patient experience across the entire treatment pathway.

Informal caregiver-companions were identified to be family members or friends (34,52,63,65,67). Caregiver-companions assumed vital roles when accompanying patients, but also faced various challenges. The cumulative amount of stressors caregivers were exposed to is referred to as caregiver burden (109,110). The difficulties faced by caregiver-companions were much more profound as they were experienced in unfamiliar environments such as planes, hospitals and hotels (37). The strain on informal caregivers has also been reported in other publications (111,112).

Inadequate or non-existent follow-up arrangements were made in the destination countries. There were cases of medical travellers returning to their sending country, with postoperative complications and in need of medical and surgical management. Some articles raised the problem of medical travellers returning to countries where health care is in part or completely financed publicly (113,114) and treatment of complications can lead to financial burden on the local health system (47,69). Postoperative complications link back to the inadequate organisation of care, with gatekeeping and counselling of patients lacking and inadequate follow-up arrangements.

STRENGTH AND LIMITATIONS

Measures have been introduced in the process of conducting the review to serve as strengths: having a second reviewer, discussing the search strategy with a librarian, requesting input from clinical consultants for questions and searching a wide range of databases. These steps have added robustness to the systematic review process. In addition, the use of case reports and case series provided insight into aspects of medical travel that have not yet been examined in depth by empirical research studies.

Multiple broad search terms were used, however, there is a chance that publications have been overlooked. The review focused on articles published in journals, omitting potential important sources in the grey literature. The review was limited to the English-language articles, missing out on information regarding medical travel for surgeries published in other languages. A few of the papers included in the review had citations from sources in a non-English language, suggesting that most of the articles were available in English.

A wide variety of designs and methodologies were covered by the review, making it hard to draw general conclusions. Case reports and case series were included, which are of the lowest rank in the hierarchy of evidence (116). Some papers had a combination of surgical and non-surgical procedures, but data disaggregation was not feasible, potentially omitting important information. The MMAT was used for quality assessment and the limitations of this tool have been discussed elsewhere (117,118).

Conclusions

Few papers have explored the journeys of traveling patients across the entire perioperative pathway. The majority of qualitative methodologies within the review were interviews, meaning that individuals' experience was solely recorded in relation to perceptions and practices were not captured. Researchers were not able to explore the entire spectrum of experiences of patients and caregiver-companions during the perioperative period. Therefore, researchers should aim to observe and accompany patients and carers along their journeys, to gain a more comprehensive picture of how medical travel for surgery is performed in practice.

We found that continuity of care during medical travel could be threatened, patients were unaware of potential health risks, complications and pre-assessments were lacking in the destination countries. Policymakers should address these potential issues through the delivery of educational resources in the sending countries, so patients and caregiver-companions are aware of their rights (34,37). It is essential that more research is carried out on how and where postoperative complications are addressed and how the exchange of information can be optimized to improve continuity of care and, therefore, maintain patient safety.

Declarations

Ethics approval and consent to participate

This is a systematic review so ethical approval was not required.

Consent for publication

Not applicable

Availability of data and material

All data analysed during this study are included in this published article and its supplementary information files.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

CVP and FW carried out the review. RM and DW provided clinical input. All authors reviewed and approved the final version of the manuscript.

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Figures

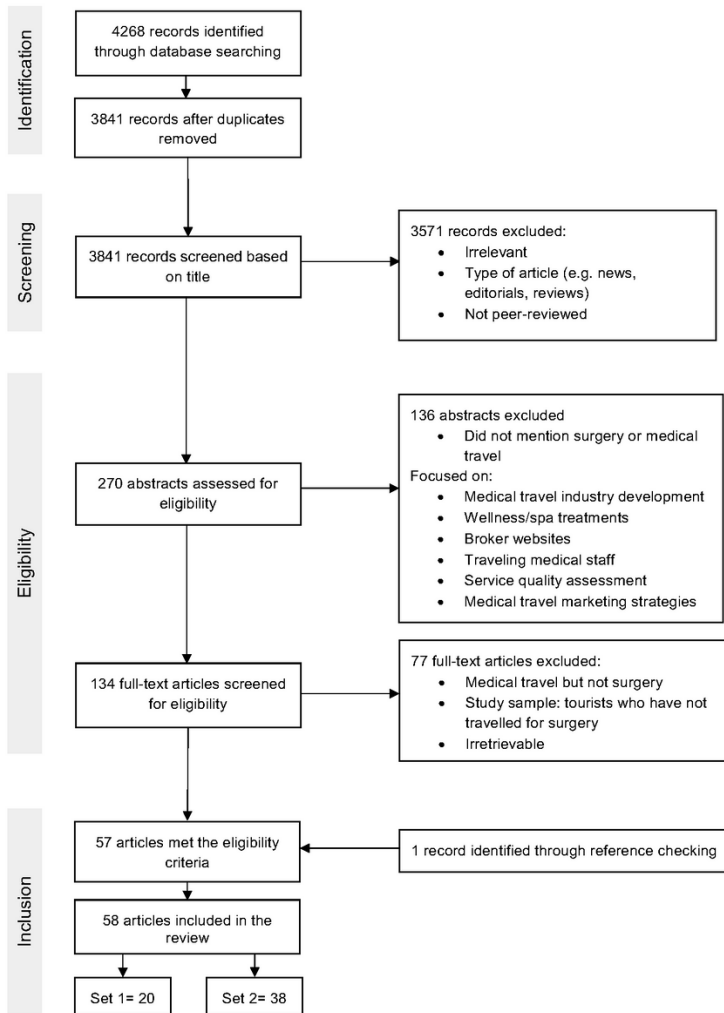


Figure 1

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