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Geo-location and range of medical tourism services in Africa

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Abstract

Africa is both a source and a destination for patients who depart from and arrive in the region to consume healthcare that is either unavailable, unaffordable or of low quality at their home countries. This movement of patients represents a growing global phenomenon referred to as medical tourism (MT). Despite its surge in preference, research on the actors and players of MT in Africa is limited. Based on existing literature, this paper explores the structure of MT in Africa in terms of the available medical procedures and their geo-distribution in the region, and key MT actors. The systematic scoping review method used in this study followed the Arksey and O'Malley (2005) framework. The design comprised a five-step process that involved identification of the questions to be addressed; identification of the relevant literature sources; selection of literature sources to be included in the review synthesis; recording key themes emerging from the literature; and collation, summary, and reporting of the results. Various databases were searched. The search identified 1346 potentially relevant articles in the scoping review. Findings showed that there are five categories of MT actors and players; each having its unique roles and expectations. At the micro level, MT is organized around multi-specialty hospitals and physician specialists with medical care services organized on specific diseases, organ systems, and/or populations. A few of MT services are offered through freestanding specialty hospitals; more are centers within multi-specialty hospitals with physician specialists.

Keywords: medical care, tourism, healthcare systems, medical infrastructure

Introduction

Global and regional patient movements affects planned healthcare delivery in Africa, further aggravating already asymmetrical specialized medical care geo-distribution in the region (Ahwireng-Obeng and Van Loggerenberg, 2011). Africa concurrently exports and imports healthcare services, with patients departing or arriving in the region to consume healthcare that is either unavailable, unaffordable or of low quality in their home countries. This movement of patients represents a growing global phenomenon referred to as medical tourism (MT) (Agwa-Ejon and Pradhan, 2014, Alsharif et al., 2010, Bies and Zacharia, 2007, Bookman and Bookman, 2007, Larocco and Pinchera, 2011, Mothiravally et al., 2010, Woo and Schwartz, 2014).

MT has a concomitant positive and negative effect on both source and destination healthcare systems. Primarily, MT avails medical services and procedures previously thought far-off, in terms of immediacy of technology and distance(Agwa-Ejon and Pradhan, 2014, Bergmann, 2011, Burkett, 2007, George and Nedelea, 2008, Weisz, 2011, Zarocostas, 2009). It avails medical care locally unaffordable but affordable elsewhere, either due to currency exchange differentials, low cost of labor, or lower medical malpractice and administration costs. In some healthcare jurisdictions, MT avails higher quality medical care than locally possible, usually validated by international healthcare accreditation organizations, which certify medical centers' or physicians' dedication to excellence(International-Joint-Commission, 2016).

Personal attention and long supervised recovery are two remarkable characteristics of MT. Dedication of round-the-clock support staff often-time defines quality of care offered to patients, helping them recover in a relaxed atmosphere. Healthcare is an emotive issue and being placed on a long waiting list, for some with life-threatening conditions, is not always an option. For healthcare systems that allocate medical care on the basis of time rather than payments at point-of-care, MT offers a chance to avoid long waiting lists, affording patients immediate access to healthcare. Lastly, even though medical tourism is about obtaining medical care, the opportunity to travel far from home can be beneficial, especially if personal privacy and the allure of adventure and vacation in countries far from home is desired.

Despite these apparent benefits, there are potential negative consequences attributed to MT in both source and destination healthcare systems. MT presents population and personal health threats at national, regional and global scales(Snyder et al., 2011, Stanbrook and Fletcher, 2014, Turner, 2007, Umeora et al., 2014, Wu et al., 2016, Yang et al., 2009). They include exacerbated healthcare access disparities, internal brain-drain of healthcare professionals, misplaced priorities in subsidizing healthcare costs for foreign patients, and diverting resources from issues affecting the poor and disadvantaged to those enhancing the health of the able-to-pay patients.

The availability of MT presents a challenge to countries that wish to regulate their citizens' access to particular technologies either for reasons of safety (for example organ transplantation carried out in countries without the appropriate medical infrastructure) or ethical concerns about the medical technology/procedure itself(Hunter and Oultram, 2010). MT, supported by neo-liberalism, exacerbates the relative disadvantage of the poor and powerless in society mostly in destination countries, unintentionally creating conditions for 'bioavailability', that is, the willingness to exchange organs, eggs and other body parts and tissues for monetary gains (Pfeffer, 2011).

Some national health regulations prohibit open advertisement of medical services for commercial gain (Crush et al., 2013). Some MT services essentially flout these regulations openly, creating a trail of health ethical issues in its wake, especially in the efficacy of information provided to patients concerning high-quality medical care or pre-costed medical vacations. Any kind of misinformation in the treatment or cost, essentially defeats the whole purpose of choosing to travel abroad for medical care.

MT, as a healthcare subsystem, operates within the institutional framework of the broader national health systems, and relates with other system components such as government policy frameworks and healthcare professional training. Its impacts on healthcare delivery and patient safety is huge, though under-reported. Its role in healthcare provision, however, is gradually being recognized not only by researchers, the media and policy makers, but patients themselves. MT is viewed as optimized healthcare in quality, efficiency and cost effectiveness for various medical diagnostics and treatment options. Figure 1 shows the general position of MT in any healthcare system in terms of quality of care.

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The end result of an intervention in any healthcare system is improved health for individuals and populations. Generally, efforts are put in place to increase quality of care by shifting the entire quality curve to the right and increase the height of the right-hand tail of the curve. Most public health systems in Africa are concerned with patient safety improvement achieved by lowering or truncating the lower tail of the quality distribution. Both quantity and quality of good healthcare, however, are low. Private healthcare in the region, on the other hand, tries to chip in to increase the quality of good care. But the good care offered at conventional private healthcare facilities is just that, good. Excellent medical care, however, rests with facilities offering MT. All the three kinds of quality of care improvements increase safety for patients, but their foci are essentially different.

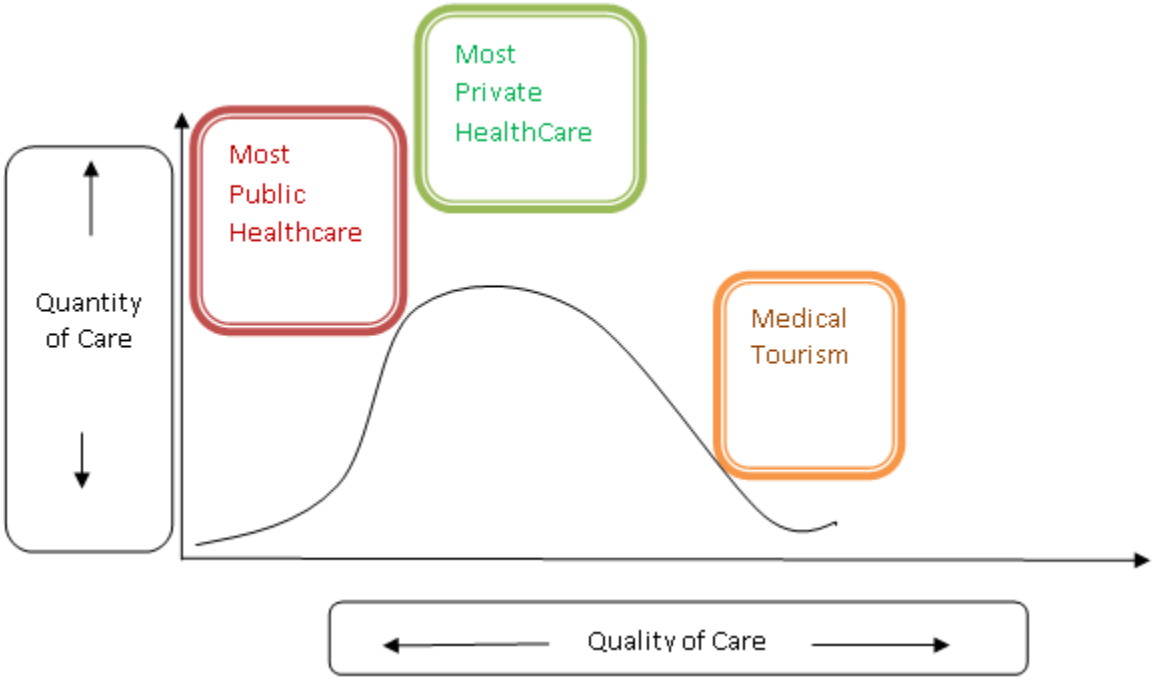

Figure1: Care-quality position of MT in Africa (source: Authors)

Despite the surge in preference for MT in Africa, research on the actors and players of MT has been limited. The need to understand the phenomenon of MT is further spurred by the fact that a growing number of governments, especially in Africa, are developing and promoting medical tourism as a path toward economic development. Investing in the health industry for MT is seen as a way to increase gross domestic product, upgrade services, create jobs, generate foreign exchange, and boost tourism (Bookman and Bookman, 2007, Chen and Flood, 2013). Effects on health systems often lag behind economic considerations (Crooks et al., 2015, De Arellano, 2011, Lautier, 2008).

Based on existing literature, this paper explores the what and who of MT in Africa in terms of what medical procedures are offered through MT in Africa, MT actors and players and their role within the subsystem in the region. It intends to provide an understanding of how MT is structured in Africa. Though not exhaustive, the paper intends to articulate structural intervening variables that drive MT in Africa. This is in the hope that if these structural variables are understood, then it is easier for health policymakers, providers and patients to assess, adopt, offer and obtain

healthcare in a way that identifies, reassures and prioritizes value and equity in healthcare. Lastly, this paper explores the geo-distribution of available specialized medical procedures offered through MT in Africa.

Specific questions that this research attempted to answer were:

1. Who are the main MT actors in Africa?
2. What are the major medical procedures that are associated with MT in Africa?
3. How are MT procedures and services geographically distributed in Africa?

Methodology

The systematic scoping review method was selected for the present study because it facilitates identification of knowledge gaps and opportunities that exist regarding an emerging subject of interest(H. and L., 2005, Levac et al., 2010, Pham et al., 2014). The review followed Arksey and O'Malley's framework for systematic scoping reviews (H. and L., 2005, Levac et al., 2010). In this scoping review, methodological quality assessment of quantitative, qualitative and mixed methods primary studies was done on admitted studies using the Mixed Methods Appraisal Tool (MMAT) (Pluye et al., 2011). However, this assessment was not done to exclude studies on account of quality scores, rather, quality scores were considered in the narrative synthesis of the evidence.

The design comprised a five-step process that involved: identification of the questions to be addressed; identification of the relevant literature sources; selection of literature sources to be included in the present review synthesis; recording key themes emerging from the literature; and collation, summary, and reporting of the results.

Inclusion and exclusion criteria

Provisional criteria based on the review objectives were devised and refined during the first stage of selection for retrieval. (see Appendix I for the complete Inclusion/Exclusion criteria and the search results).

Two researchers independently read the first 30% of abstracts and decided whether the inclusion criteria applied. Their decisions were compared; and a kappa index (Mchugh, 2012)calculated. The score was again calculated at the end of full article inclusion stage. Disagreements were discussed among the reviewers and differences in interpretation were clarified. All papers meeting the inclusion criteria were selected for retrieval.

Sources of literature

Databases that were searched included: Regional Business News; PsycINFO; MasterFILE Premier; Health Source: Nursing/Academic Edition; GreenFILE; ERIC; Education Source; Business Source; Ultimate Business Source Complete; Newspaper Source; Library, Information Science & Technology Abstracts; Health Source - Consumer Edition; eBook Collection (EBSCOhost); AHFS Consumer Medication Information; PsycARTICLES; MEDLINE with Full Text; Academic Search Ultimate; and Academic Search Complete (n=18) A Google scholar search was performed to identify relevant gray literature, which included unpublished conference papers and abstracts, government websites, books and news articles. The websites of key medical tourism organizations and associations were also searched.

The team collected potentially relevant citations from reference lists and applied the refined inclusion criteria on them. Data on the study setting and the key findings described in each article were recorded and organized into different themes in NVIvo. Information obtained included the place where the research was conducted (e.g. Africa, other Low and Medium Income Countries(LMIC) and High Income Countries(HIC)); the type of study (e.g. empirical, review, expert opinion); and findings applicability to the African settings (Africa local, regional or global).

Results

The methodological suitability of systematic scoping review employed in this study was informed by the fact that, unlike other types of systematic reviews, systematic scoping reviews are characterized by breadth of coverage and ability to include a wide range of publications and study designs (Colquhoun et al., 2014, Dijkers, 2015, Grimshaw, 2010, H. and L., 2005, Levac et al., 2010), which particularly helped in mapping the literature in this study. The search identified 1346 potentially relevant articles in the scoping review. Using Endnote reference management software, duplicate studies were removed. The remaining 1155 were screened for title relevance. 499 articles underwent a detailed abstract screening against inclusion criteria. 191 articles were selected for full-article screening by two researchers with 19 being selected for independent detailed data abstraction for this synthesis. They were also included for methodological quality assessment. The inter-reviewer kappa score was 0.89 at abstract screening stage and 0.83 at full article screening stage.

Figure 2 shows the Preferred Report Items for Systematic and Meta-Analysis (PRISMA) flow chart for the selection and screening of studies done in this research.

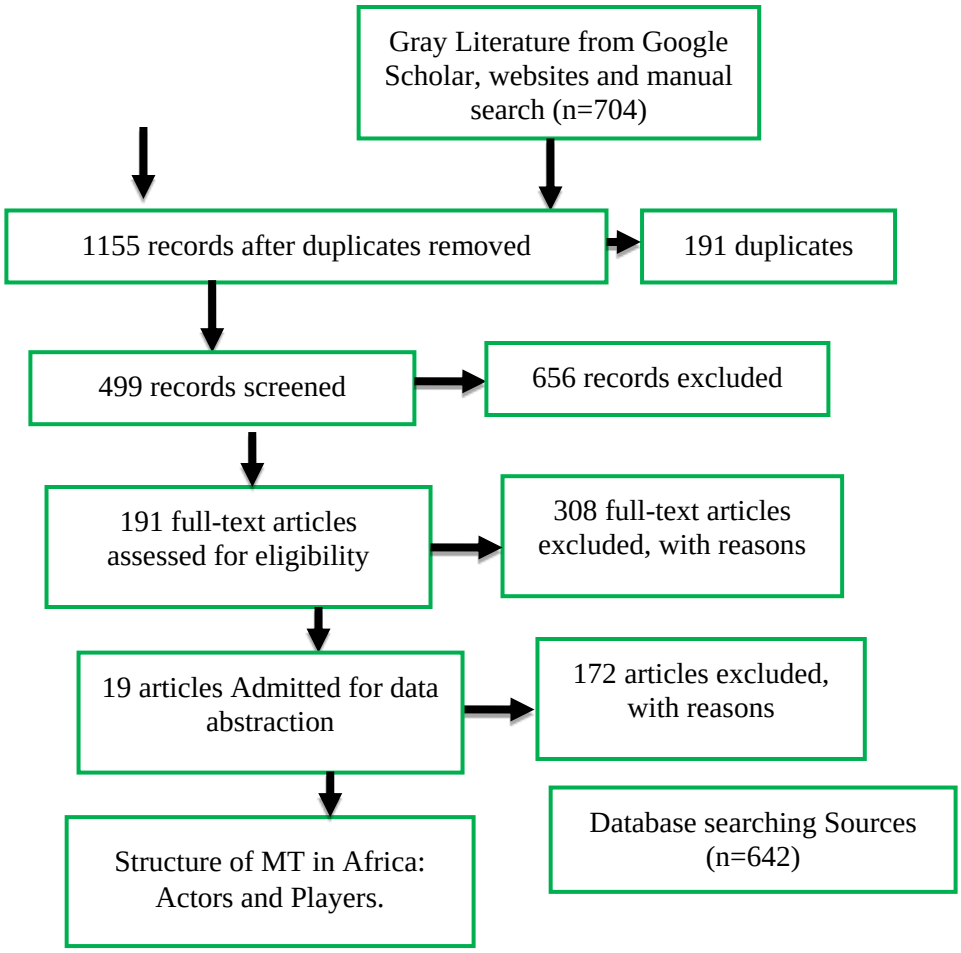

Figure 2. PRISMA Record Screening Flow-chart. (Source: Adapted from Moher et al.(Moher et al., 2009))

Of the 499 included papers at abstract screening stage, 308 were excluded with reasons as shown in Table 1.

Excluded Records	% of total included ($^{n}/_{499}$)	Reasons for Exclusion
169	34	Medical care provision to medical tourists is not explicitly differentiated from the day to day provision of health care offered to the general public.
61	12	Main focus is on wellness tourism
78	15	Focus on MT outside Africa and results/conclusions are non-transferable to African settings.

Table 1. Criteria for excluding papers at abstract screening stage (n=308) (Source: Authors)

Of the 191 articles assessed for eligibility for full screening, $^{19}/_{191}$ (less than 10%)articles focused specifically on MT in Africa (Agwa-Ejon and Pradhan, 2014, Ahwireng-Obeng and Van Loggerenberg, 2011, Bezabih and Wamisho, 2013, Boekstein, 2014, Crush and Chikanda, 2015, Crush et al., 2012, Crush et al., 2013, Dangor et al., 2015, El Taguri, 2007, Goldberg, 2013, Helmy and Travers, 2009, Idowu and Adewole, 2015, Maaka, 2006, Meissner-Roloff and Pepper, 2013, Nicolaides et al., 2011, Nwafor, 2012, Umeora et al., 2014, Uppiah et al., 2014, Lautier, 2008).

Table 2 shows a clear dichotomy of MT services and procedures in Africa: MT exporting (destination) countries are skewed towards North Africa and South Africa, while the rest of Africa generally import medical care. Evidently, more patients from Africa seem to be travelling to India, despite South Africa, Egypt, Tunisia and Mauritius being top MT destinations in Africa. Table 2 below provides more findings concerning country and study settings of various studies done on MT services and corresponding MT actors and players, and their geo-distribution within the African region. Study settings have been set as local if the findings and/or observations of the study apply within the African country the study is focusing on, regional if the findings and observations apply to the whole of Africa and global if the observed variables and/or findings are affecting other regions outside Africa as well as Africa.

Continues

Author, Year	Country/ Study setting	Identified MT services	Identified MT Actors/players	Location of identified MT service	Research Method/ Report Format
Agwa-Ejon, JF Pradhan, A 2014	S. Africa/Local	Modern Medical technology in diagnosis and surgery.	Hospitals (Private and Public)	Gauteng, South Africa	Empirical Case study
Ahwireng-Obeng, Frederick van Loggerenberg, Charl 2011	S. Africa/ Regional	Recuperative holidays. Breast cancer treatment	Breast-cancer patients; medical centres of excellence (Netcare Breast Care Centre of Excellence); Physician referrals	Gauteng, S. Africa	Empirical, qualitative
Bezabih, B Wamisho, BL 2013	Ethiopia/ Local	Total hip replacement, ACL reconstruction and total knee replacement.	Patients referred abroad; MT facilitators based in Addis Ababa	Addis Ababa, Ethiopia	Use of medical records, review
Boekstein, MS 2014	South Africa/Local	Balneotherapy: medicinal effects of thermal waters	Thermal springs of South Africa	South Africa	Review
Crush, Jonathan Chikanda, Abel 2015	S. Africa/ Regional	organ transplant, Elective and non-elective medical procedures offered in South Africa.	Government (S. Africa); Private hospital groups (Netcare); healthcare facilitators and inter-mediaries.	South Africa	Secondary data sources
Crush, Jonathan Chikanda, Abel Maswikwa, Belinda 2012	S. Africa/ Regional	organ transplant, Elective and non-elective medical procedures offered in South Africa.	Government (S. Africa); Private hospital groups (Netcare); healthcare facilitators and inter-mediaries	South Africa	Secondary data sources
Crush, J Chikanda, A et al 2013	S. Africa/ Regional	organ transplant, Elective and non-elective medical procedures offered in South Africa.	Government (S. Africa); Private hospital groups (Netcare); healthcare facilitators and inter-mediaries	South Africa	Secondary data sources
Dangor, Faheem Hoogendoorn, Gijsbert Moolla, Raeesa 2015	South Africa/ Global	Ophthalmological treatments; Ayurvedic treatments; heart treatments; urological, gastric bypass, and kidney surgeries.	Patients from South African travelling to India for medical care	India	Empirical, Qualitative
El Taguri, Adel 2007	Libya/ Local	Diverse medical care sought abroad	Libyan government, hospitals in Tunisia and Turkey.	Tunisia, Egypt and Turkey	Expert opinion

Helmy, Eman M. Travers, Robert 2009	Egypt/ Local	Diverse MT services offered in Egypt	Government	Egypt	Report
Goldberg, Allyson M 2013	USA/ Africa	Musculoskeletal surgery, facial trauma surgery, neurosurgery prostate cancer, renal transplant, other non-elective medical procedures	African patients traveling to India, private hospitals in India	India	Qualitative
Idowu, Emmanuel Olufemi Adewole, Oladipo Adeboluji	Nigeria/ Local	Neurosurgery	MT facilitators in Nigeria	India	Empirical, medical records
Lautier, Marc 2008	France/ Tunisia	Cardiovascular surgery; cardiology cosmetic surgery and other MT services in Tunisia	Private clinics; major travel insurance companies	Tunisia	Empirical, qualitative
Maaka, Tshepo P 2006	S. Africa/ Regional	Cosmetic surgery in South Africa	Private small-scale organizations, patients from the USA and UK, Kenyan patients to India; Indian companies in Kenya Nigerian and Malian patients travel out	South Africa, India	Expert opinion/Review
Meissner-Roloff, Madelein Pepper, Michael S 2013	S. Africa/ Regional	Stem cell therapy	'Determined' patients; private clinics	South Africa	Expert opinion
Nicolaides, A. Smith, A. 2012	S. Africa/ Regional	Organ transplant	Brokers, medical personnel	South Africa	Review
Nwafor, Okechukwu 2012	Nigeria/ Regional	MT in South Africa	Government	South Africa	Expert Opinion
Umeora, Odidika Ugochukwu et al 2014	Nigeria/ Regional	Surrogacy	Surrogacy agencies; childless couples	Nigeria	Review
Uppiah, MV Gunputh, RP Nunkoo et al 2014	Mauritius/ Local	MT services in Mauritius	Medical-legal professionals	Mauritius	Report

Table 2: Summary of results showing African countries involved in MT and type of available MT services.

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As shown in Figure 3, the majority of studies reported on MT in Africa have either been done in, or about South Africa.

However, this does not mean MT is not happening in other African countries, notably Egypt, Tunisia and Mauritius. Furthermore, not much literature is on Africa's source countries, the countries that are sending patients out for medical care. Figure 3 presents a summary of type of study and source location in Africa.

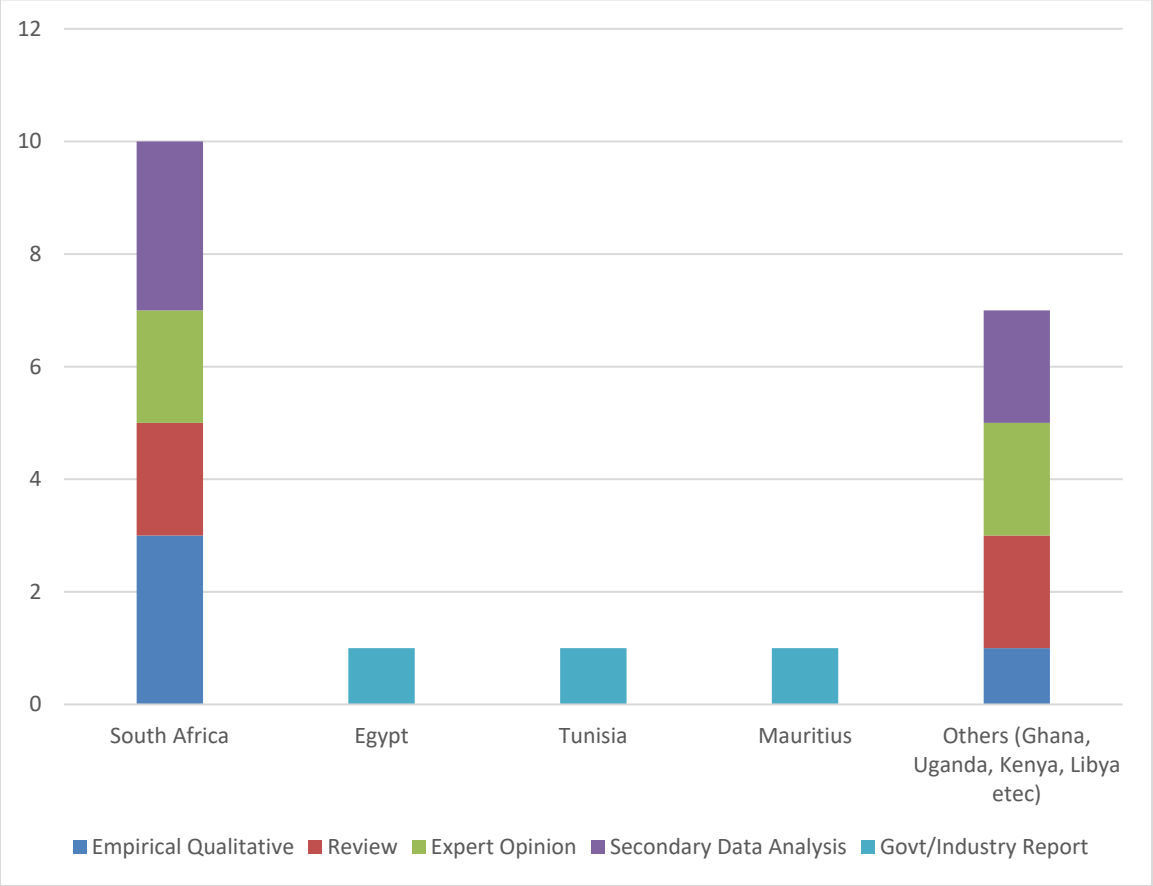

Figure 3: Type of study of MT and source location in Africa

In order to answer the specific study question "How are MT procedures and services geographically distributed in Africa?" and for the purpose of this study, the medical procedures/services were divided into nine main groups (Fig.4 and Table 3) by country within the African continent. Further analysis of the presented data revealed that Egypt, South Africa, and Tunisia are the dominant countries in Africa involved in MT. However, the distribution of these procedures and services reveals diverse patterns within each country.

Egypt is mainly popular for fertility treatments, dental works, bariatric surgery and orthopedics. Similarly, medical tourists visiting South Africa seem to mainly come for cosmetic surgeries, dermatology, hair transplant and stem cell therapies while Tunisia is popular for cardiology. Orthopedics and bariatric surgery were less popular in South Africa compared to Egypt. Although,

Tunisia is popular in heart treatment, it lags behind South Africa and Egypt in the other eight identified MT procedures and services. Mauritius is the fourth of the most dominant MT destination countries in Africa, albeit a late entrant. It offers cosmetic surgery, heart treatment, dentistry and hair transplant.

Table 3 below presents the nine selected medical procedures offered through MT in Africa and their geo-distribution in the region. The presented data is further evidence that almost all the procedures offered through MT in Africa are elective in nature, including elective fertility treatments like egg and sperm banks, pre-implantation genetic diagnosis; cosmetic surgeries and emerging oncology treatments. A summary of these findings on the geo-distribution of MT services in Africa is provided in Table 3 which follows on the next two pages.

MT procedures and Treatments	Type of Medical Procedure	Location in Africa	Number of clinics	% of total clinics in Africa*
Fertility Treatments	Egg donor; Pre-implantation Genetic Diagnosis (PGD); Artificial Insemination (AI); In-vitro Fertilization (IVF); IUI; TESA; Egg Freezing, Sperm Freezing; Ovulation Induction	Egypt	13	43
		South Africa	7	23
		Tunisia	4	13
		Kenya	2	6
		Uganda	2	6
		Nigeria	1	3
		Ghana	1	3
Cosmetic Surgery	Cheek and Chin Augmentation; Breast Augmentation and Implantation; Liposuction; Tummy Tuck; Gynecomastia; Eyelid Surgery; Breast lift; Breast reduction; Fat transfer; Rhinoplasty; Inverted Nipple surgery; Otoplasty; Abdominoplasty; Anatomical prosthesis; Body lift.	South Africa	41	43
		Egypt	39	41
		Tunisia	12	12
		Mauritius	3	3
		Ghana	1	1
Stem Cell Therapies	Adult stem cell; Bone-marrow Aspiration/biopsy	South Africa	3	50
		Egypt	1	16
		Mauritius	1	16
		Tunisia	1	16
Dentistry	Dental Crowns; Bridges; Veneers; Implants; Invisible Braces; Dentures	Egypt	213	56
		South Africa	115	30
		Tunisia	28	8
		Mauritius	12	3
		Tanzania	10	2.6
		Uganda	2	0.5
		Morocco	2	0.5
		Ghana	1	0.25
Dermatology	Pigmentation Treatment; Fractional Laser Injections; Rosacea Treatment; Milia Removal; Skin diagnostics	South Africa	27	63
		Egypt	12	28
		Tunisia	2	5
		Sudan	1	2
		Tanzania	1	2
Bariatric	Gastric Band; Gastric Bypass; Gastric Plication; Gastric Sleeve; Gastric Balloon; Gastric Stapling;	Egypt	18	75
		Tunisia	4	17

		South Africa	2	8
Orthopedic	Total Knee Arthroplasty; Knee Replacement; Uni-Compartment Knee Arthroplasty; Hip Replacement; Hip Resurfacing; Shoulder Resurfacing; Knee-Cap removal, Webbed toes Surgery; Kinesiology; Spinal Fusion; Vertebroplasty; Kyphoplasty; Prolotherapy.	Egypt	12	52
		South Africa	6	26
		Tunisia	4	17
		Uganda	1	4
Heart Clinics	Aortic Valve Replacement; Coronary Angioplasty; Heart bypass; Calcium score scan; coronary Artery bypass; Cardiac Monitoring	Tunisia	2	33
		Egypt	1	16
		South Africa	1	16
		Uganda	1	16
		Mauritius	1	16
Hair Transplant	Micrograft and mini-graft Transplant; FUT; FUE; HRI; Facial hair transplant; Eyebrow transplant; Robotic hair transplant; Scalp Advancement	South Africa	21	48
		Egypt	12	28
		Tunisia	4	9
		Kenya	3	7
		Namibia	2	5
		Mauritius	1	3

Table 3: Geo-distribution of medical tourism services in Africa (Source: (Whatclinic.Com, 2016)

Figure 4 presents different medical procedures offered through MT in Africa and their geo-distribution in the region. Compared to other procedures, dentistry, cosmetic surgery, dermatology and hair transplant dominate the African MT landscape. This is surprising given that the majority of medical travel into and within the continent is related to non-elective medical procedures (Ahwireng-Obeng and Van Loggerenberg, 2011). However, this can be explained by the fact that most MT activities in Africa are directed at attracting foreign patients who are more interested in elective procedures, mostly combining medical care with tour safaris and excursions. Conversely, other The majority of travelers from the African region go to MT hubs like India (outside Africa) for readily available non-elective treatments. These findings and other aspects of MT in Africa and its geo-distribution are summarized in Figure 4.

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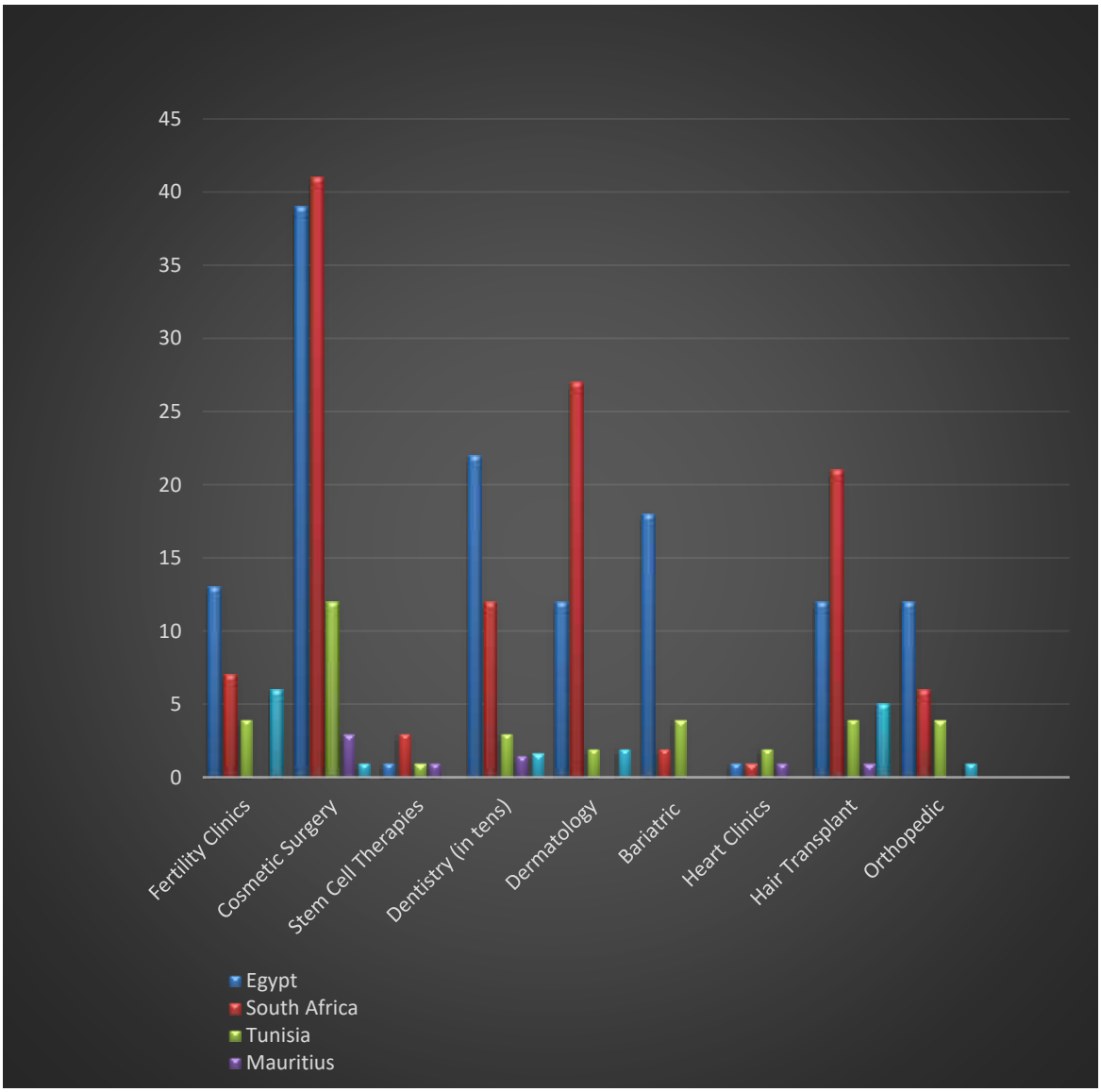

Figure 4. Geo-distribution of medical tourism procedures and services in Africa

Table 4 presents the five key MT actor and player categories (classifications) in Africa. MT actors are individuals or groups with an interest, influence or participation in the MT healthcare subsystem. Those with active participation or those with direct interest rather than indirect influence become MT players.

Participating healthcare providers, patients, MT facilitators and some governments that actively participate in MT such as its marketing are therefore actor-players whereas medical technology research and development entities and governments that merely provide encouraging environment through their MT policies are MT actors. Examples of each of these MT actors are given in Table 3 above. Table 4 below provides a summary of key MT actors in Africa, their roles and expectations.

Actors	Roles and Expectations
Patients	Funds (out-of-pocket payment), Provider choice (creates demand). Enhanced and improved patient experience, reduced waiting time (delay), affordable care, availability of care, privacy.
Providers (Physicians, hospitals, clinics etc)	Provide diagnostic and medical treatments. Improved clinical outcomes.
Medical tourism organizations, facilitators and promoters	Match patients to providers, arrange recuperative tours/excursions. Enhanced efficiency of internal operations, cost containment, profitability.
Medical/Healthcare Technology Innovators (R&D)	Develop, test and market new healthcare/medical technology by idea generation, evaluation, development, commercialization, and diffusion. Increased productivity, improved and quality clinical outcomes
State and Government Agencies	Healthcare regulation and accreditation. Reduced risks and improved patient safety.

Table 4: Key MT actors and players in Africa (source: authors)

Discussion

The findings reveal a shortage of primary data about MT in the African continent, especially quantitative. The bulk of the evidence comes from secondary sources such as government/industry reports, expert opinion and reviews. Within the African continent, the most common destination countries and most active MT players are South Africa, Egypt, Tunisia and Mauritius. There are other participating countries who are mainly importers of medical services (send patients out) but there is little information about them, indicating paucity of research in that direction.

As indicated elsewhere in this paper, most information about MT in Africa is about, and comes from, South Africa. However, the available information on South Africa still comes from secondary sources. The findings further provide evidence for in-bound, out-bound and intra-African MT activities in Africa. There are various MT services patients seek for, both inside and outside Africa, include fertility treatments, orthopedic and cosmetic surgery among others. We discuss each of the key MT actors and players below.

Key medical tourism actors and players in Africa

According to the reviewed literature there are five categories of MT actors and players; each having its unique roles and expectations. This is summarized in the key MT actors and players (Table 4). These are patients, healthcare providers, medical technology and healthcare innovators, medical facilitators and intermediaries and governments.

Patients

Referred to as medical tourists, these are patients who decide to side-step the usual referral system and pursue medical care outside their familiar healthcare systems, usually paying for the care out-of-pocket. Due to the fact that MT is largely government unregulated, and much of the information many medical tourists are exposed to is open source on the internet, mostly without medical expert backing, many are left to manage their own medical cases and end up carrying

great responsibility for their clinical outcomes (Idowu and Adewole, 2015).Patients require either diagnostic, elective or non-elective medical procedures depending on whether their conditions require health maintenance, life (body) enhancement or life-saving operation respectively. In Africa, most of the patients who require diagnostic or non-elective treatments originate from within the continent. Most patients from developed countries coming to Africa as medical tourists require elective procedures, including cosmetic surgery. This corresponds to what Crush et al(Crush et al., 2013, Crush et al., 2015) refer to as South-South and North-South patient movement.

In their works, Crush et al(Crush et al., 2013, Crush et al., 2015) further observe that the UK, Germany, USA, and the Netherlands are the most significant sources of medical tourists to South Afri ca, from the North, in that order. The same research observed that there were over two million patients representing 85% of South Africa's medical tourists entered South Africa from the rest of Africa compared with only 300,000 from non-African countries. Although the number for patients from within Africa might have potentially included mere cross-border healthcare seekers, these figures point to the fact that Africa participates in MT, simultaneously importing and exporting patients.

Providers

Apart from profiting from the cash-flow due to MT, healthcare providers benefit with the latest and greatest technologies. They can be individual physician practices, large medical facilities, or large corporate hospital groups, though almost all are commercial, for-profit entities. Some are extension of hospital group operations from developed countries or more established groups from Asia, notably India. Provider role in cross-referral has been identified as one of the two reasons for medical tourists travelling to South Africa (Ahwireng-Obeng and Van Loggerenberg, 2011).

Medical tourism organizations, facilitators and intermediaries

MT has created a new healthcare cadre that provides individualized services to medical tourists (Gray and Poland, 2008, Hadi, 2009, Jagyasi, 2009, Stolk, 2009). Challenging travel arrangements for patients and difficulties in reaching clients in foreign markets for providers entrench the position of MT patient-oriented facilitators and provider-oriented intermediaries (Jagyasi, 2009). The patient-facilitator-provider axis is mostly characterized by commission-referral payments. There is no evidence of any industry association or forum catering exclusively for MT intermediaries and facilitators within the region. Besides, there is no evidence of MT facilitators regulation, licensing or accreditation, implying that, generally, save for the traditional travel agency regulation, any entity can carry out MT agency. Their services usually include all arrangements of patient's journey, including arrangements for treatment, recuperation, flight, accommodation, leisure activities, and mediation between patient and provider in case of disputes (Stolk, 2009).

In South Africa, which is a reflection of the African region's MT subsystem, (as reflected in Figure 2 above), MT is largely driven by small-scale mixture of travel agencies and provider groups, acting as intermediaries for international patients and offering a wide range of services, independently marketing the country as a destination to foreign patients(Williams, 2013).

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Medical/healthcare technologies, innovators and research & development

One of the key drivers of MT is advanced medical technology(Agwa-Ejon and Pradhan, 2014). Healthcare research and development organizations are typically motivated by the needs and demands of patients, patient advocacy groups, healthcare organizations, physicians and other healthcare professionals.

In their research Agwa-Ejon, JF & Pradhan, A (Agwa-Ejon and Pradhan, 2014) found that patients from other African countries lacking modern technology travel to South Africa to benefit from technology and infrastructure. This source, however, focuses only on Gauteng Province of South Africa, and essentially on the application of medical technology. More information is needed that focuses on Africa as a region and the process of medical technology, besides its application. This is because, despite the fact that much has been written about technological advancement being a major driver of MT, little research and information exist concerning its processes, and to what extent it influences MT in Africa as a region.

State and government agencies

Many African nations are developing their MT mainly because of its perceived economic benefits(Lautier, 2008, Lautier, 2014). MT is a non-polluting industry that is viewed as a natural off-shoot or naturally part of the wider tourism industry, despite existing stark differentiation(Bookman and Bookman, 2007). Many nations regard MT as an excellent revenue generator besides being a source of national pride as a validation of their superior healthcare(Uppiah et al., 2014).

The role of the state as a MT actor therefore is to provide an enabling environment for MT to develop. Through their national ministries of tourism, state local/regional tourism promotion organizations, most African governments play a role in promoting MT, but they rarely involve health authorities. Despite this promotional stance, there seems to be a lag in legislation and accreditation in MT to assure patient safety and quality of care(Uppiah et al., 2014). From the reviewed literature, however, the extent of the involvement of the African governments in encouraging, developing, structuring and promoting MT is not clear. More research is needed to establish the extent to which various governments in Africa incentivizes MT through taxation regimes, medical visa procedures, investment in healthcare infrastructure, and other subsidies.

Conclusion

Evidently, the structure of MT in Africa is both complex and multi-dimensional. At the micro level, MT is organized around multi-specialty hospitals and physician specialists with medical care services organized on specific diseases, organ systems, and populations. A few of MT services are offered through freestanding specialty hospitals; more are centers within multi-specialty hospitals with physician specialists; but an increasing number of them are physician-owned ambulatory specialty facilities. In some instances, hospitals and physicians collaborate in running a specialty service; in other cases, they tend to be competing against each other. The complexity of MT in Africa is further exacerbated by several actors and players involved actively or passively within the sub-system.

Only a few African countries actively involved in MT were identified in the reviewed literature. Little is known about MT in the rest of the African countries. The lack of empirical data necessitates further investigation to provide a better understanding of the structure of MT in Africa, identify the inter-relationship among the major actors and players and how they influence each other in particular and MT in Africa in general.

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