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The Role, Structure and Effect of Medical Tourism in Africa: A Systematic Scoping Review Protocol

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The Role, Structure and Effect of Medical Tourism in Africa: A Systematic Scoping Review Protocol

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Abstract

Introduction: Africa both sends and receives patients who form part of a growing global phenomenon variously referred to as medical or health tourism, the practice of travelling abroad to consume health care services. Evidence suggest that, if resources generated through medical tourism are equitably used in supplementing local primary health care, medical tourism can significantly impact health care provision in Africa. Currently, however, the understanding of this important component of health care in Africa is inadequate. This study seeks to determine the level of knowledge on the role, structure and effect of medical tourism in Africa.

Methods: We will conduct a systematic scoping review to outline the role, structure and effect of medical tourism in Africa. Databases: Academic Search Complete, Business Source Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO). Studies will be mapped in two stages. Stage 1: Mapping the studies based on the relevance of their titles and subject descriptors. Stage 2: Applying further inclusion criteria on studies from stage 1. Two reviewers will independently assess study quality and abstract data. Both quantitative and qualitative data analysis will be performed, using STATA 13 and NVIVO respectively.

Ethics and dissemination: This protocol has been registered in PROSPERO (**Regn. No. CRD42016039745**) available at http://www.crd.york.ac.uk/PROSPERO. The study will be disseminated electronically and in print. It will also be presented at conferences related to medical tourism, public health, health systems strengthening, health care delivery and tourism.

Discussion: Medical tourism spurs cutting-edge medical technologies, techniques and best practices in healthcare delivery. While castigated for promoting healthcare inequity by some, medical tourism is likely to be a solution to many economical healthcare problems in Africa. By elucidating

the role, structure and effect of this phenomenon, this study will contribute to health systems strengthening in Africa.

Strengths and limitations of this study

- This study offers a 'big picture' analysis of medical tourism (MT) in Africa by synthesizing vast amounts of literature on the subject.
- This scoping review offers an ideal platform for synthesizing literature on MT in Africa whose methodological approaches, settings, study populations and behaviours are wide-ranging.
- This approach of synthesising literature, however, presents a limitation in that a detailed analysis of case specific interventions and quality assessment of individual studies is not applicable.
- As the study will only include literature published in English, studies published in other languages will be omitted. Searching literature using only one language, in this case English, is a limitation. However, research shows that almost 70% -90% of published works are in English [1]. This fact minimizes adverse effects of searching publications written only in English.
- To our knowledge there is paucity of scientific study on MT in Africa. While this may be a possible limitation in terms of the amount of data for this scoping review, it may be an important finding of this study and a basis for calling for more research in this area.

1. Pickering, C. and J. Byrne, *The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers.* Higher Education Research & Development, 2014. **33**(3): p. 534-548.

Introduction

Africa both sends and receives patients as part of a global phenomenon of over five million patients a year travelling abroad to consume health care services that are either unaffordable, too delayed, unavailable, or proscribed at home[1, 2]. This practice has been referred to as medical, health or wellness tourism among other names [1, 3-5].

The role medical tourism(MT) plays in the economies of many African countries, though imprecise, has nevertheless been recognized[6-8]. This role includes health care provision. The wealthy middle class in Africa, for instance, regularly seek advanced medical care abroad [9]. Beside the economic contribution above, the role MT plays in either aggravating or alleviating health care ills in Africa is inadequately known[10-13]. These healthcare ills range from high morbidity and mortality from infectious diseases such as malaria, tuberculosis and HIV/AIDS, to increased incidences of non-communicable conditions in the form of cardiovascular diseases, cancer and respiratory diseases [14, 15], besides an exodus of vital health care workforce from Africa[16-18].

Specialized medical services and procedures offered to medical tourists include elective, non-elective and diagnostic as depicted in Fig.1. However, current availability, pricing and geo-distribution of these procedures and services in Africa is not well-known.

Medical tourism entails highly trained and experienced physicians, high-tech medical equipment and specialised ultramodern medical facilities. Some African countries are said to have invested in or attracted ample pool of specialist physicians in quality private hospitals whose medical investigation facilities are at par with international yardsticks, similar to the ones in developed countries[19]. Costs associated with these MT infrastructure are substantial[10]. Similarly, MT is said to cause competition for best local

resources including qualified medical professionals [8, 10] and transplant organs. The accrued benefits to the local host population, in turn, is however, not well-known.

Many arguments have been advanced for and against MT in Africa. Fig.2 [10] summarizes these advantages and disadvantages.

The extent and dimension of these pros and cons in Africa, however, is inexact [2, 3, 10, 11, 13, 20-22].

The growing phenomenon of MT in Africa needs to be well understood and documented in the face of Africa's pervasive poverty and pricy private health care, in an effort to strengthen healthcare systems.

It is likely that many MT facilities in Africa meet international health care standards; but do they meet local population expectations? Does MT consume and diminish local resources it is built on? What are the terms of reference for most public agencies promoting MT across Africa? What is the policy and regulatory framework for MT across Africa?

Individual health care, population health and public policy decisions must be premised on best available evidence to avoid poor and inappropriate interventions [4, 13, 21, 23-25]. However, for MT in Africa, this is clearly difficult because of paucity of scientific evidence on the subject. Secondly, even with the available evidence, the information generated individually by the studies may be biased, methodologically flawed, time and context constrained, resulting in conflicting conclusions. This does not allow MT in Africa to be understood in its entirety [26]. Hence the necessity and justification of this scoping review.

The purpose of this study, therefore, is to assess current level of knowledge on MT in Africa by systematically reviewing available literature on the subject.

The main aim of this study is to outline the role, structure and effect of medical tourism in Africa by answering the following specific questions:

i. What is published about the availability, pricing and geo-distribution of specialized medical procedures and services offered to medical tourists in Africa?
ii. Who are the main medical tourism actors in Africa, as identified in the literature?
iii. What is published about the main guidelines from government agencies and professional societies that influence the regulation and practice of medical tourism in Africa?
iv. What are the identified ethical issues associated with medical tourism in Africa?

Methods

The study will employ Arksey and O'Malley scoping review framework as well as incorporate recent scoping review suggestions by Levac et al[27, 28].

Identification of relevant studies

a) Key terms

Multiple terms are used to refer to MT in literature. Therefore, an extensive list of primary and secondary search terms as well as filtering methods will be developed. Search terms will include: medical tourism, stem cell tourism, fertility tourism, dental tourism, health tourism and transplant tourism with Africa as the bounding parameter. The university librarian will help in finalizing the keyword and search strategy in this study. Publications will be obtained as open source and institutional subscriptions (University of KwaZulu Natal). However, an attempt will be made to obtain relevant documents that are not readily available through concerned authors or publishers.

b) Databases:

Academic databases: Academic Search Complete, Business Source Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO), Health Source - Consumer Edition, Health Source- Nursing/Academic Edition and sabinet.

Search engines: Google and google scholar.

Relevant MT industry associations, OECD, WHO, Worldbank and other multilateral organizations' websites will be used to search for government policy papers, practice guidelines and industry reports.

Relevant research dissertations through worldcat via oclc, and reference list scanning of included studies.

c) Search strategy:

The databases selected will cover a broad range of disciplines to ensure sensitivity. Search queries will be tailored to specific requirements for each database. For academic databases, keywords will be combined using Boolean operators (AND, OR, NOT). A snowball technique will be used to find relevant related and cited works.

However, since this will be an iterative process, details will be documented in the analysis and write up of the full review.

Researchers will keep an updated record on dates and the numbers of publications identified during each session of literature search using the table below:

Date	Keyword searched	Search engine used	Number of publications retrieved

Table 1: Electronic search record

Study Selection (Screening)

A two-stage screening process will be used to assess the relevance of studies identified in the search. Two reviewers will independently evaluate and apply the identified selection criteria to the candidate literature titles and abstracts. Titles and abstracts will be screened as "include", "exclude" or "uncertain". Full text of articles screened as "uncertain" will be reviewed by the third reviewer for verification against the inclusion criteria. During the first stage, only the title and abstract of citations will be reviewed to preclude articles that do not meet the minimum inclusion criteria. A title and abstract relevance screening form will be developed and pretested on a convenience sample of 10 academic citations to evaluate reviewer agreement. A kappa calculation will be done based on the results of this pre-test. This will in turn be used to show the reviewers' inter-rater agreement level. Generally, a kappa score over 0.8 is considered a high level of agreement [29]. In accordance with recommendations by Levac et al.[28], after reviewing every batch of 20 to 30 publications, the reviewers will meet to resolve any conflicts and ensure consistency with the research question and purpose.

Executive summaries in grey literature will be treated as abstracts. Relevant titles whose abstracts are not available will be taken to screening stage two for full review. During screening stage two, reviewers will independently screen the rest of the search results using the pre-defined inclusion-exclusion criteria. Any ensuing discrepancies will be resolved by discussion or the involvement of the third reviewer.

To capture and present the screening process, the Preferred Reporting Items for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [30] will be used.

Inclusion criteria:

- Evidence published in English.
- There will be no publication date restrictions up to 06 June 2016.
- Literature with substantial focus on MT in Africa including: peer-reviewed journal articles, systematic reviews, scoping reviews, meta-analysis and rapid reviews, government and NGO reports and academic dissertations.
- Primary research focusing on MT in Low and Medium Income Countries(LMICs) and whose conclusions and discussion demonstrate transferable findings to African settings.
- All study designs will be considered including qualitative, quantitative and mixed methods studies.
- Studies focusing on health care provision through specified bi- or multilateral government agreements in Africa.

Exclusion criteria:

- Evidence focusing on MT outside Africa and whose results are non-transferable to African settings, because the cultures and nature of MT may be substantially different from our target group.
- Evidence focusing on people forced to seek emergency medical care in conflict or post-conflict settings as opposed to organised medical travel in non-conflict settings.
- Evidence with focus on emergency medical care for conventional tourists.
- Evidence where medical care provision to medical tourists is not explicitly differentiated from the day to day provision of health care offered to the general public.
- Evidence with main focus on wellness tourism

Charting the Evidence (Data Abstraction)

After title and abstract screening, successful candidate citations will be exported to Endnote bibliographic dataset for subsequent full text review. Endnote library application will be utilized to discard any duplicates. A data abstraction spreadsheet will be developed collectively by the reviewers to extract pre-determined variables and themes. Structuring this spreadsheet database will involve selecting and defining data categories and subcategories, as advised by the MT conceptual framework [26]. It will be secured online so that involved reviewers will have access and can make updates freely.

Bibliographic details, study design, number of participants, intervention(s), comparison(s), study setting, funding source and conclusions for the primary and secondary outcomes of interest will be extracted. This dataset will be populated from each selected paper. This step will be done iteratively as more familiarity of literature is gained and revisions done as appropriate. The data extraction form is attached as Appendix I.

Risk of bias (quality) assessment of individual studies

Methodological quality of quantitative, qualitative and mixed methods primary studies will be assessed using the Mixed Methods Appraisal Tool (MMAT) [31]. Studies will not be excluded on account of low quality scores, but quality scores will be reported and considered in the narrative synthesis of the evidence.

Collating, Summarizing, and Reporting the Data

The extracted data will be summarized and presented. This is in line with the purpose of a scoping review which is geared towards establishing the scope

of the current evidence, summarizing the results as presented across articles, and not synthesizing or distilling specific results [27, 28, 32]. The data will be analysed accordingly to address the main aim and the four specific study questions. Further to this, the study team will scrutinize the meanings of the findings as they relate to overall purpose of the study, discuss the implications for future research, practice and policy.

Data analysis will employ both quantitative and qualitative methods.

After the coding and validation of the spreadsheet file, the data will be exported into STATA 13 for analysis. Descriptive statistics will be used to summarize the data. Frequencies and percentages will be used to describe nominal data. A basic statistical account of the amount, type, and distribution of the studies included in the review will be presented.

Also, a thematic analysis and concept map of the results will be presented. Thematic analysis will be carried out collectively by researchers using NVIVO.

This analysis will generally answer questions like: how large is the literature on MT in Africa (number of papers), when was it published (age), where was the research conducted (geographic distribution), at what scale, and by whom (geographic/institution); where, when, and by whom research was published; the geographical spread of the research; types of methods used; types of subjects examined; types of variables measured; different disciplines assessing the topic; and patterns found in research results. We will use statistical means to produce tables and charts that depict cross-tabulations like: MT in Africa as it relates to study designs used, type of treatments, medical facilities, and selected patient characteristics (such as age, sex, geography, ethnicity).

Ethics and dissemination

The protocol for the systematic review has also been registered in PROSPERO (**Regn. No: RD42016039745,** http://www.crd.york.ac.uk/PROSPERO). The results will be disseminated by publication in peer-reviewed journal and presented at a relevant conference.

Discussion

Medical tourism is different from medical care administered to conventional tourists in need of emergency medical care. Unlike the latter, the former specifically refers to 'foreign patients' who travel abroad for the express purpose of obtaining medical care [21]. Medical tourism is defined as a set of socioeconomic activities carried out either by or for medical tourists [33]. The activities carried out by medical tourists correspond to the travel of patients in search of health services outside the jurisdiction of their home health systems [26], while those carried out for them correspond to attempts on the part of destinations to attract international patients by promoting their health care services and facilities [26]. Although there is no standard meaning that is assigned to it, the term "tourism" could refer to the measures taken by destination countries (supply side) to attract and meet the needs of international patients. The term could also refer to the tourism channels the medical tourist utilizes to get to the destination countries. Medical tourism therefore, is not more about tourism as it is about medical care provided to able-to-pay patients from abroad.

In light of the above, therefore, evidence with focus on emergency medical care for conventional tourists will be excluded, as well as evidence where medical care provision to medical tourists is not explicitly differentiated from provision to the general public.

This study will include literature on formal bi- and multilateral medical care agreements that enable patients to be attended to in other countries, but exclude those papers that focus on 'forced' cross-border medical care,

especially if public health facilities of destination countries are 'forced' to provide the care on humanitarian grounds. This condition exists especially in conflict and post-conflict zones.

Evidence focusing on MT outside Africa will be excluded because the cultures and nature of MT may be substantially different from this study's target group, unless their findings and conclusions have significant link to African settings.

Africa presents exceptionally unique and fascinating context in which to situate this MT study. This is because of the stark contrast in the African health care landscape: whereas medical tourism demands highly specialized medics, capable of executing most complicated surgeries, clad in advanced medical technologies and luxury, specialized hospitals, Africa, on the other hand, has a large local populations enduring rudimentary health, insufficient clean water and inadequate sanitation.

To our knowledge, this is the first systematic scoping review that attempts to expound on the role, structure and effect of MT in Africa. Most MT evidence in Africa is emergent and multi-disciplinary in nature, hence the critical necessity of a scoping review in mapping the range of available evidence and systematically identify research gaps to more clearly illumine the role, structure and effect of MT in Africa.

It is anticipated that while findings from this study will lead to clearer understanding of MT in Africa, they will also contribute to the resolving of paradoxical healthcare issues on MT in the African context. For instance, reproductive tourism utilizes expensive and uncommon medical expertise to bring new children into this world [34, 35], yet yearly, malaria, pneumonia and other preventable infections kill millions of under-fives in Africa[14, 15].

MT is promoted as a solution to healthcare queues in other parts of the globe [1, 10, 11, 19, 20, 36]. Wealthy patients opt to fly into Africa to avoid

these long queues in order to get faster service. But, in sharp contrast, local patients are forced to experience similar long queues in overly over-subscribed and underfunded local public health systems [15, 17, 19, 37-39].

Globally, MT is growing at a high rate, including in Africa [10, 40, 41]. This growth, however, seems to be based solely on MT advantages to medical tourists, destination countries and healthcare providers. Medical tourists benefit from preferential treatment, based on their ability to pay for medical services [26]. Destination countries benefit in revenue generation [6, 9, 10]. A bigger patient pool translates to higher profits for healthcare providers.

Motivated by these benefits, many African countries are competing for the global medical tourism dollar [12]. Unfortunately, MT in most of these countries is based on unsustainable, haphazard regulatory frameworks [42].

Given its potential contextual significance, it is imperative that a scientific reconnaissance study be carried out on MT in Africa. This scoping study is, therefore, an attempt to do this by providing more information about MT in Africa to policy makers, healthcare providers, potential patients and future researchers, hoping to contribute to improved healthcare systems in Africa.

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Footnotes

Contributors: JJOM and JMTG conceptualised, JJOM and TPMT designed the study. LMM and JJOM prepared the draft of the research proposal. JMTG and JJOM developed the background. JJOM and TPMT contributed to developing

methods relating to review and synthesis of data. All authors planned the output of the review. All authors reviewed draft versions of the manuscript and approved the final version of the manuscript.

Competing interests: Authors declare no competing interests.

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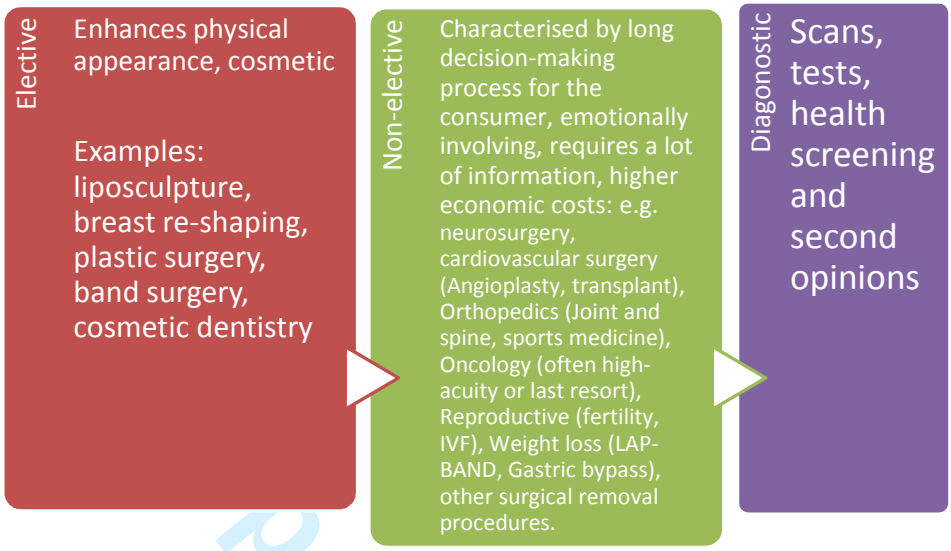

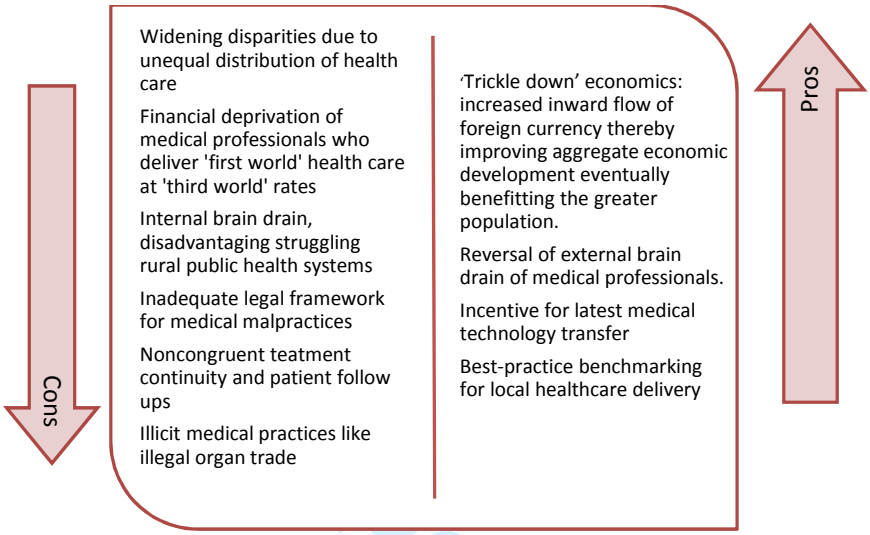

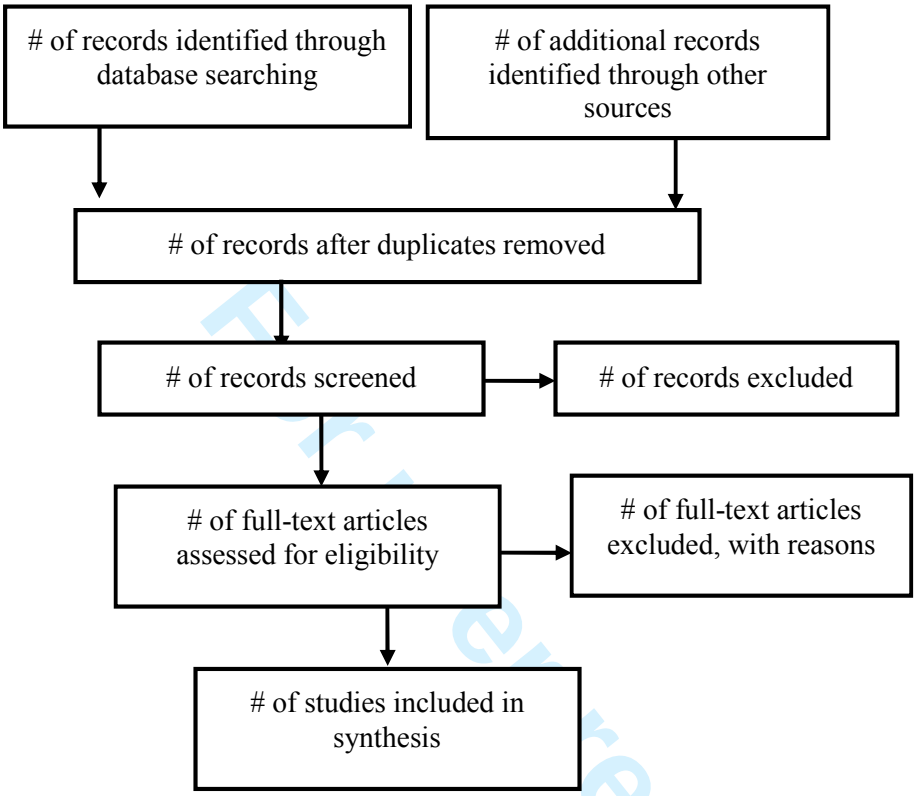

Appendix I

"The Role, Process and Effect of Medical tourism in Africa: A Systematic Scoping Review"

Data Extraction Instrument

		Document ID:
1	Reviewer/Person extracting data	
2	Date of Data Extraction	
3	Author, Year, Publication Type	
4	Journal/Publisher	
5	Title, full citation	
6	Funding Source (If Applicable)	
7	Target Participant(s)	

8	Methodology			
9	Method			
10	Aims of study			
11	Setting			
12	Geographical Context			
13				
14	Relevant Findings on	a	MT Advertising and Distribution Channels(Agencies, Hospital reps, Internet, other media)	
		b	MT Regulatory Conditions	
		c	Ethical Issues	
		d	Hospital/Physician Specialty	
		e	Hosp./Physician	

			Accreditation	
		f	Medical Service and Procedure Prices	
		g	Main MT Actors	
		h	Infrastructure /Superstructure (Hospitals, Clinics, Private Participation, Public Participation)	
		i	MT Promotion	
			Any MT Benefits, Costs, Prospects or Challenges identified	
		j	MT Product Differentiation (Add-ons, Language used)	
15	Reviewer Comments			

Notes:

Methodology: Theoretical underpinnings of the research; also whether the nature of the research is sociological, medical, legal etc

Method: How the data was collected; data collection tools.

Setting: Seeks to identify cultural features such as employment, lifestyle, ethnicity, age, gender, socio-economic class, location and time.

Participants: Information related to the inclusion and exclusion (Sampling) criteria of the research, includes descriptions of age, gender, number of included subjects, ethnicity, level of functionality, and cultural background, if available.

Promotion: Includes Promotional Strategies by Local/National Governments, Hospital Boards, Tourism Boards; Special Task Force Committees; Overseas Promotion; National Campaigns and Quality (Accreditation, Certification).

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The Role, Structure and Effects of Medical Tourism in Africa: A Systematic Scoping Review Protocol

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Abstract

Introduction: Africa both sends and receives patients who travel abroad to consume health care services, through a growing global phenomenon referred to as medical or health tourism. Evidence suggest that, if resources generated through medical tourism are even-handedly used in strengthening local healthcare systems, medical tourism can significantly impact health care provision in Africa. Currently, however, the understanding of this important component of health care in Africa is inadequate. This study seeks to determine the level of knowledge on the role, structure and effect of medical tourism in Africa as it relates to healthcare systems in the region.

Methods: We will conduct a systematic scoping review to outline the role, structure and effect of medical tourism in Africa. Databases: Academic Search Complete, Business Source Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO). Studies will be mapped in two stages. Stage 1: Mapping the studies based on the relevance of their titles and subject descriptors. Stage 2: Applying further inclusion criteria on studies from stage 1. Two reviewers will independently assess study quality and abstract data. Both quantitative and qualitative data analysis will be performed, using STATA 13 and NVIVO respectively.

Ethics and dissemination: This protocol has been registered in PROSPERO (**Regn. No. CRD42016039745**) available at http://www.crd.york.ac.uk/PROSPERO. The study will be disseminated electronically and in print. It will also be presented at conferences related to medical tourism, public health, health systems strengthening, health care delivery and tourism.

Discussion: Medical tourism spurs cutting-edge medical technologies, techniques and best practices in healthcare delivery. While castigated for promoting healthcare inequity by some, medical tourism is likely to be a solution to many economical healthcare problems in Africa. By elucidating

the role, structure and effect of this phenomenon, this study will contribute to health systems strengthening in Africa.

Strengths and limitations of this study

- This study offers a 'big picture' analysis of medical tourism (MT) in Africa by synthesizing vast amounts of literature on the subject.
- This scoping review offers an ideal platform for synthesizing literature on MT in Africa whose methodological approaches, settings, study populations and behaviours are wide-ranging.
- This approach of synthesising literature, however, presents a limitation in that a detailed analysis of case specific interventions and quality assessment of individual studies is not applicable.
- As the study will only include literature published in English, studies published in other languages will be omitted. However, research shows that almost 70% -90% of published works are in English [1]. This fact minimizes adverse effects of searching publications written only in English.
- To our knowledge there is paucity of scientific study on MT in Africa. While this may be a possible limitation in terms of the amount of data for this scoping review, it may be an important finding of this study and a basis for calling for more research in this area.

Keywords: Global Health, Health services research, Healthcare systems, Medical tourism, Public Health

Introduction

Africa is concurrently a source and destination of patients who form part of a global phenomenon referred to as health or medical tourism,[2-5] the practice of travelling abroad to consume health care that is either too delayed, unavailable, unaffordable or proscribed at their home countries[2, 6].

Medical tourism (MT) challenges the role played by traditional, nation-state-bound health systems. It affects the performance of the public health systems' core functions of assessment, policy development, and assurance with regard to the health of citizens within the state[7, 8].

On the one hand, MT affords patients individual solution to what is traditionally considered a government concern, health for its citizens[9], thereby creating more equitable options for individuals. The wealthy middle class in Africa, for instance, regularly seek advanced medical care abroad[10].

Conversely however, MT can indicate a breakdown of service delivery in home health systems. Patients may lack confidence in the ability of home systems to meet their medical needs and move abroad in relatively large numbers.[7, 11].

Whereas MT may pose potentially attractive economic benefits to most governments in Africa, it may particularly proof challenging to local health systems, whose officials maybe tasked with both its regulation domestically and promotion internationally, while at the same time grappling with risks such endeavours pose to the national health systems.[9].

Specialized medical services and procedures offered to medical tourists include elective, non-elective and diagnostic as depicted in Fig.1. However, current availability, pricing and geo-distribution of these procedures and services in Africa is not well-known.

Medical tourism entails highly trained and experienced physicians, high-tech medical equipment and specialised ultramodern medical facilities. Some African countries are said to have invested in or attracted ample pool of

specialist physicians in quality private hospitals whose medical facilities are similar to the ones in developed countries[10]. Costs associated with these MT infrastructure are substantial[12]. Similarly, MT is said to cause competition for best local resources including qualified medical professionals [12, 13] and transplant organs. The accrued benefits to the local host population, in turn, is however, not well-known.

Many arguments have been advanced for and against MT in Africa. Fig.2 [12] summarizes these advantages and disadvantages.

The extent and dimension of these pros and cons in as far as healthcare systems in Africa are concerned, however, is inexact [3, 6, 9, 12, 14-17]. The role and effects of MT in Africa needs to be investigated and documented in the face of Africa's two-tier healthcare systems, featuring a relatively efficient private and relatively overburdened public medical care sectors.

MT services are generally provided by the private sector and payments are mostly out-of-pocket. Whereas private health care providers have little incentive to consider population-based services, the public at large must be served through public health interventions focused on the health needs of the entire population or population groups. Individual health care, population health and public policy decisions must, therefore, be premised on best available evidence to avoid poor and inappropriate interventions [4, 15, 17-20]. However, for MT in Africa, this is clearly difficult because of paucity of scientific evidence on the subject. Secondly, even with the available evidence, the information generated individually by the studies may be biased, methodologically flawed, time and context constrained, resulting in conflicting conclusions. This does not allow MT in Africa to be understood well[21]. Hence the necessity and justification for this scoping review, whose purpose is to assess current level of knowledge on MT in Africa with a

reference to Africa's healthcare systems, by systematically reviewing available literature on the subject. The study will focus on MT out of, into and intra-Africa flows.

In this study, we take the geo-scheme for Africa approach used by the African Union and United Nations in dividing the region directionally[22]:

- North Africa lies north of the Sahara and runs along the Mediterranean coast.
- West Africa excludes Northern Africa and the Maghreb and includes the large portions of the Sahara Desert and the Adamawa Mountains.
- East Africa stretches from the Horn of Africa to Mozambique, including Madagascar, Seychelles and Mauritius
- Central Africa is the large mass at the center of Africa which either does not fall squarely into any other region or only partially does so.
- Southern Africa consists of the portion generally south of -10° latitude and the great rainforests of Congo.

The main aim of this study is to outline the role, structure and effect of medical tourism in Africa as it relates to Africa's healthcare systems by answering the following specific questions:

i. What is published about Africa's MT infrastructure: the availability, pricing and geo-distribution of specialized medical procedures and services offered to medical tourists in Africa?
ii. Who are the main medical tourism actors in Africa, as identified in the literature?
iii. What are the identified effects of medical tourism on healthcare systems in Africa?
iv. What are the identified ethical issues associated with medical tourism in Africa?

Methods

The study will employ Arksey and O'Malley scoping review framework as well as incorporate recent scoping review suggestions by Levac et al[23, 24].

Identification of relevant studies

a) Key terms

Multiple terms are used to refer to MT in literature. Evidence indicate that while literature on MT is generally growing, it is mostly focused either on individual case studies or specific aspects of MT [11].Therefore, an extensive list of primary and secondary search terms will be developed. Search terms will include: medical tourism, stem cell tourism, fertility tourism, dental tourism, health tourism and transplant tourism, among other terms with Africa as the bounding parameter. The university librarian will help in finalizing the keyword and search strategy in this study. Attempt will be made to obtain relevant documents that are not readily available through concerned authors or publishers.

b) Databases:

Academic databases: Academic Search Complete, Business Source Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO), Health Source - Consumer Edition, Health Source- Nursing/Academic Edition and sabinet.

Search engines: Google and google scholar.

Relevant MT industry associations, OECD, WHO, Worldbank and other multilateral organizations' websites will be used to search for government reports, practice guidelines and industry reports.

Relevant research dissertations will be searched through worldcat via oclc, and reference list scanning of included studies.

c) Search strategy:

The databases selected will cover a broad range of disciplines to ensure sensitivity. Search queries will be tailored to specific requirements for each database. For academic databases, keywords will be combined using

Boolean operators (AND, OR, NOT). A snowball technique will be used to find related works.

However, since this will be an iterative process, the detailed search strategy will be documented in the analysis and write up of the full review.

Researchers will keep an updated record on dates and the numbers of publications identified during each session of literature search using a search records table[25] as shown below:

Date	Keyword searched	Search engine used	Number of publications retrieved

Table 1: Electronic search record(source: Adapted from Mashamba-Thomson T.P. et al [25])

Study Selection (Screening)

A two-stage screening process will be used to assess the relevance of studies identified in the search. Two reviewers will independently evaluate and apply the identified selection criteria to the candidate literature titles and abstracts. Titles and abstracts will be screened as "include", "exclude" or "uncertain". Full text of articles screened as "uncertain" will be reviewed by the third reviewer for verification against the inclusion criteria. During the first stage, only the title and abstract of citations will be reviewed to preclude articles that do not meet the minimum inclusion criteria. A title and abstract relevance screening form will be developed and pretested on a convenience sample of 10 academic citations to evaluate reviewer agreement. A kappa calculation will be done based on the results of this pre-test. This will in turn be used to show the reviewers' inter-rater agreement level. Generally, a kappa score over 0.8 is considered a high level of agreement [26]. In accordance with recommendations by Levac et al.[24],

after reviewing every batch of 20 to 30 publications, the reviewers will meet to resolve any conflicts and ensure consistency with the research question and purpose.

Executive summaries in grey literature will be treated as abstracts. Relevant titles whose abstracts are not available will be taken to screening stage two for full review. During screening stage two, reviewers will independently screen the rest of the search results using the pre-defined inclusion-exclusion criteria. Any ensuing discrepancies will be resolved by discussion or the involvement of the third reviewer.

To capture and present the screening process, the Preferred Reporting Items for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [27] will be used.

Inclusion criteria:

- Evidence published in English.
- There will be no publication date restrictions up to 06 June 2016.
- Literature with substantial focus on MT in Africa including: peer-reviewed journal articles, systematic reviews, scoping reviews, meta-analysis and rapid reviews, government and NGO reports and academic dissertations.
  Research focusing on MT in Low and Medium Income Countries(LMICs) and whose conclusions and discussion demonstrate transferable findings to African settings.
- All study designs will be considered including qualitative, quantitative and mixed methods studies.
- Studies focusing on health care provision through specified bi- or multilateral government agreements in Africa.

Exclusion criteria:

- Evidence focusing on MT outside Africa and whose results are non-transferable to African settings.
- Evidence focusing on people forced to seek emergency medical care in conflict or post-conflict settings as opposed to organised medical travel in non-conflict settings.
- Evidence with focus on emergency medical care for conventional tourists.
- Evidence where medical care provision to medical tourists is not explicitly differentiated from the day to day provision of health care offered to the general public.
- Evidence with main focus on wellness tourism

Charting the Evidence (Data Abstraction)

After title and abstract screening, successful candidate citations will be exported to Endnote bibliographic dataset for subsequent full text review. Endnote library application will be utilized to discard any duplicates. A data abstraction spreadsheet will be developed collectively by the reviewers to extract pre-determined variables and themes. Structuring this spreadsheet database will involve selecting and defining data categories and subcategories, as advised by the MT conceptual framework [21]. It will be secured online so that involved reviewers will have access and can make updates freely.

Bibliographic details, study design, number of participants, intervention(s), comparison(s), study setting, funding source and conclusions for the primary and secondary outcomes of interest will be extracted. This dataset will be populated from each selected paper. This step will be done iteratively as more familiarity of literature is gained and revisions done as appropriate. The data extraction form is attached as Appendix I.

Risk of bias (quality) assessment of individual studies

Methodological quality of quantitative, qualitative and mixed methods primary studies will be assessed using the Mixed Methods Appraisal Tool (MMAT) [28]. Studies will not be excluded on account of low quality scores, but quality scores will be reported and considered in the narrative synthesis of the evidence.

Collating, Summarizing, and Reporting the Data

The extracted data will be summarized and presented. This is in line with the purpose of a scoping review which is geared towards establishing the scope of the current evidence, summarizing the results as presented across articles, and not synthesizing or distilling specific results [23, 24, 29]. The data will be analysed accordingly to address the main aim and the four specific study questions. Further to this, the study team will scrutinize the meanings of the findings as they relate to overall purpose of the study, discuss the implications for future research, practice and policy.

Data analysis will employ both quantitative and qualitative methods.

After the coding and validation of the spreadsheet file, the data will be exported into STATA 13 for analysis. Descriptive statistics will be used to summarize the data. Frequencies and percentages will be used to describe nominal data. A basic statistical account of the amount, type, and distribution of the studies included in the review will be presented.

Also, a thematic analysis and concept map of the results will be presented. Thematic analysis will be carried out using NVIVO research software.

This analysis will generally answer questions like: how large is the literature on MT in Africa (number of papers), when was it published (age), where was the research conducted (geographic distribution), at what scale, and by whom (geographic/institution); where, when, and by whom research was

published; the geographical spread of the research; types of methods used; types of subjects examined; types of variables measured; different disciplines assessing the topic; and patterns found in research results. We will use statistical means to produce tables and charts that depict cross-tabulations like: MT in Africa as it relates to study designs used, type of treatments, medical facilities, and selected patient characteristics (such as age, sex, geography, ethnicity).

Ethics and dissemination

The protocol for the systematic review has also been registered in PROSPERO (**Regn. No: RD42016039745,** http://www.crd.york.ac.uk/PROSPERO). The results will be disseminated by publication in peer-reviewed journal and presented at a relevant conference.

Discussion

Medical tourism is different from medical care administered to conventional tourists in need of emergency medical care. Unlike the latter, the former specifically refers to 'foreign patients' who travel abroad for the express purpose of obtaining medical care [17]. Medical tourism is defined as a set of socioeconomic activities carried out either by or for medical tourists [30]. The activities carried out by medical tourists correspond to the travel of patients in search of health services outside the jurisdiction of their home health systems [21], while those carried out for them correspond to attempts on the part of destinations to attract international patients by promoting their health care services and facilities [21]. Although there is no standard meaning that is assigned to it, the term "tourism" could refer to the measures taken by destination countries (supply side) to attract and meet the needs of international patients. The term could also refer to the tourism channels the medical tourist utilizes to get to the destination countries.

In light of the above, therefore, evidence with focus on emergency medical care for conventional tourists will be excluded.

This study will include literature on formal bi- and multilateral medical care agreements that enable patients to be attended to in other countries, but exclude those papers that focus on 'forced' cross-border medical care, especially if public health facilities of destination countries are 'forced' to provide the care on humanitarian grounds. This condition exists especially in conflict and post-conflict zones.

Evidence on MT that is global in outlook will be included in-as-far-as its findings are relevant to Africa and its healthcare systems. Relevance will be informed as progressive familiarity with literature is gained in this study.

Africa presents exceptionally unique and fascinating context in which to situate this MT study. This is because of the stark contrast in the African health care landscape: whereas medical tourism demands highly specialized medics, capable of executing most complicated surgeries, clad in advanced medical technologies and luxury, specialized hospitals, Africa, on the other hand, has a large local populations enduring rudimentary health, insufficient clean water and inadequate sanitation.

To our knowledge, this is the first systematic scoping review that attempts to expound on the role, structure and effect of MT as it relates to healthcare systems in Africa. Most MT evidence on Africa is emergent and multi-disciplinary in nature, hence the critical necessity of a scoping review to map the range of extant evidence and systematically identify research gaps to more clearly illumine the role, structure and effects of MT in Africa.

It is anticipated that while findings from this study will lead to clearer understanding of MT in Africa, they will also contribute to the resolving of paradoxical healthcare issues in the Africa. The needs of 'foreign' patients may be prioritized over those of locals, especially if economic incentives

overweigh public health considerations, thereby unfairly shifting resources towards the development of more expensive clinical interventions that cater for exclusive few, while promoting healthcare inequity [7, 9, 31]. For instance, reproductive tourism utilizes expensive and uncommon medical expertise to bring new children into this world [32, 33], yet yearly, malaria, pneumonia and other preventable infections kill millions of under-fives in Africa[34, 35].

MT is promoted as a solution to healthcare queues in some parts of the world [2, 10, 12, 14, 16, 36]. Able-to-pay patients opt to fly into Africa to avoid these long queues in order to get faster service. But, in sharp contrast, local patients are forced to experience similar long queues in overly over-subscribed and underfunded local health systems [10, 35, 37-40].

Globally, MT is growing at a high rate, including in Africa [12, 41, 42]. This growth, however, seems to be based solely on MT advantages to medical tourists, destination countries and healthcare providers. Medical tourists benefit from preferential treatment, based on their ability to pay for medical services [21]. Destination countries benefit in revenue generation [12, 43, 44].

Motivated by these benefits, many African countries are competing for the global medical tourism dollar [45-48]. Unfortunately, MT in most of these countries is based on unsustainable, haphazard regulatory frameworks [49].

Given its potential contextual significance, it is imperative that a scientific reconnaissance study be carried out on MT in Africa. This scoping study is, therefore, an attempt to do this by providing more information about MT in Africa to policy makers, healthcare providers, potential patients and future researchers, hoping to contribute to improved healthcare systems in Africa.

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Footnotes

Contributors: JJOM and JMTG conceptualised, JJOM and TPMT designed the study. LMM and JJOM prepared the draft of the research proposal. JMTG and JJOM developed the background. JJOM and TPMT contributed to developing methods relating to review and synthesis of data. All authors planned the output of the review. All authors reviewed draft versions of the manuscript and approved the final version of the manuscript.

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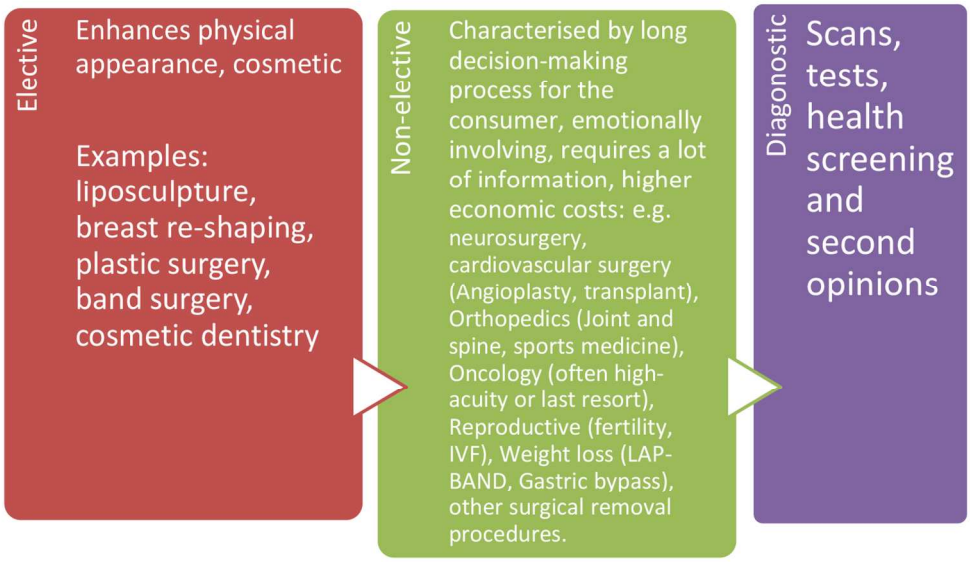

Fig.1 Medical procedures sought by medical tourists (source: author)

129x79mm (300 x 300 DPI)

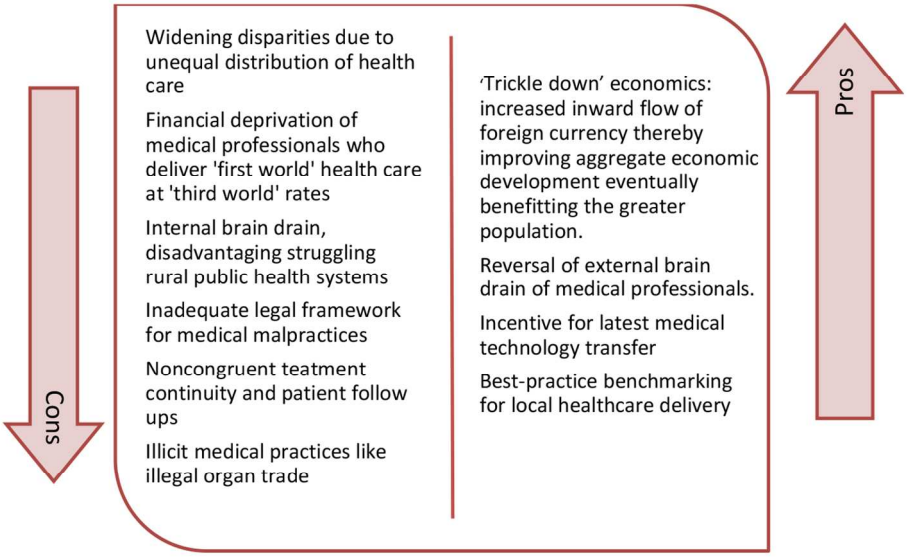

Fig.2 Advantages and disadvantages of MT in Africa
(Source Adapted from Bookman & Bookman.)

127x75mm (300 x 300 DPI)

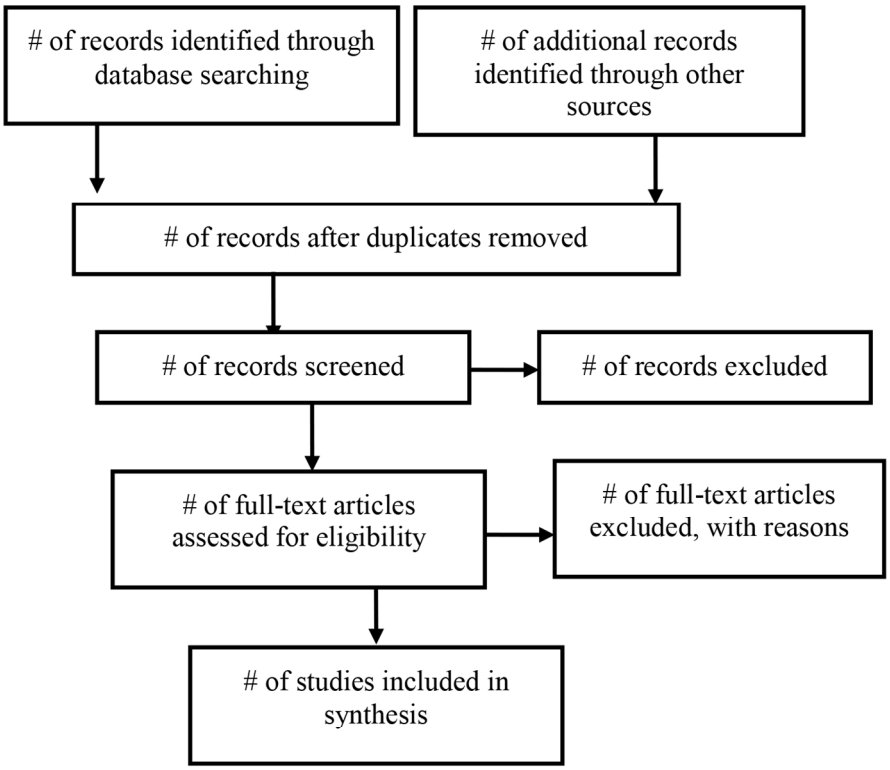

Fig.3 PRISMA flow diagram. (Adapted from Moher et al.)

136x114mm (300 x 300 DPI)

Appendix I

"The Role, Process and Effect of Medical tourism in Africa: A Systematic Scoping Review"

Data Extraction Instrument

		Document ID:
1	Reviewer/Person extracting data	
2	Date of Data Extraction	
3	Author, Year, Publication Type	
4	Journal/Publisher	
5	Title, full citation	
6	Funding Source (If Applicable)	
7	Target Participant(s)	

8	Methodology			
9	Method			
10	Aims of study			
11	Setting			
12	Geographical Context			
13				
14	Relevant Findings on	a	MT Advertising and Distribution Channels(Agencies, Hospital reps, Internet, other media)	
		b	MT Regulatory Conditions	
		c	Ethical Issues	
		d	Hospital/Physician Specialty	

		e	Hosp./Physician Accreditation	
		f	Medical Service and Procedure Prices	
		g	Main MT Actors	
		h	Infrastructure /Superstructure (Hospitals, Clinics, Private Participation, Public Participation)	
		i	MT Promotion	
			Any MT Benefits, Costs, Prospects or Challenges identified	
		j	MT Product Differentiation (Add-ons, Language used)	
15	Reviewer Comments			

Notes:

Methodology: Theoretical underpinnings of the research; also whether the nature of the research is sociological, medical, legal etc

Method: How the data was collected; data collection tools.

Setting: Seeks to identify cultural features such as employment, lifestyle, ethnicity, age, gender, socio-economic class, location and time.

Participants: Information related to the inclusion and exclusion (Sampling) criteria of the research, includes descriptions of age, gender, number of included subjects, ethnicity, level of functionality, and cultural background, if available.

Promotion: Includes Promotional Strategies by Local/National Governments, Hospital Boards, Tourism Boards; Special Task Force Committees; Overseas Promotion; National Campaigns and Quality (Accreditation, Certification).

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The Role, Structure and Effect of Medical Tourism in Africa: A Systematic Scoping Review Protocol

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The Role, Structure and Effects of Medical Tourism in Africa: A Systematic Scoping Review Protocol

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Abstract

Introduction: Some patients travel out of, while others come into Africa for medical care through a growing global phenomenon referred to as medical tourism: the travel in search of medical care that is either unavailable, unaffordable or proscribed in own healthcare systems. While some castigate medical tourism as promoting healthcare inequity, others endorse it as a revenue generator, promising local healthcare system strengthening. Currently, however, the understanding of this component of health care in Africa is inadequate. This study seeks to determine the level of knowledge on the role, structure and effect of medical tourism in Africa as it relates to healthcare systems in the region.

Methods: Conduct a systematic scoping review to outline the role, structure and effect of medical tourism in Africa. Databases: Academic Search Complete, Business Source Complete. Studies mapped in two stages. 1): Mapping the studies based on the relevance of their titles and subject descriptors. 2): Applying further inclusion criteria on studies from stage 1. Two reviewers will independently assess study quality and abstract data. Both quantitative and qualitative data analysis will be performed, using STATA 13 and NVIVO respectively.

Ethics and dissemination: PROSPERO registered (**CRD42016039745**) http://www.crd.york.ac.uk/PROSPERO. The study will be published and findings presented at conferences related to medical tourism, public health, health systems strengthening and tourism.

Discussion: Medical tourism spurs cutting-edge medical technologies, techniques and best practices in healthcare delivery. The two-tier health care landscape in Africa, however, presents an exceptionally unique context in which to situate this study. Much has been written about MT globally, but not much is known about the phenomenon in Africa; hence the appropriateness of this scientific assessment of MT in Africa. By elucidating

the role, structure and effect of this phenomenon in Africa, this study hopes to contribute to health systems strengthening in the region.

Strengths and limitations of this study

- This study offers a 'big picture' analysis of medical tourism (MT) in Africa by synthesizing vast amounts of literature on the subject.
- This scoping review offers an ideal platform for synthesizing literature on MT in Africa whose methodological approaches, settings, study populations and behaviours are wide-ranging.
- This approach of synthesising literature, however, presents a limitation in that a detailed analysis of case specific interventions and quality assessment of individual studies is not applicable.
- As the study will only include literature published in English, studies published in other languages will be omitted. However, research shows that almost 70% -90% of published works are in English [1]. This fact minimizes adverse effects of searching publications written only in English.
- To our knowledge there is paucity of scientific study on MT in Africa. While this may be a possible limitation in terms of the amount of data for this scoping review, it may be an important finding of this study and a basis for calling for more research in this area.

Keywords: Global Health, Health services research, Healthcare systems, Medical tourism, Public Health

Introduction

Africa is concurrently a source and destination of patients who form part of a global phenomenon referred to as health or medical tourism,[2-5] the practice of travelling abroad to consume health care that is either too delayed, unavailable, unaffordable or proscribed at their home countries[2, 6].

Medical tourism (MT) challenges the role played by traditional, nation-state-bound healthcare delivery systems. Public health core functions of assessment, policy development, and assurance with regard to the health of citizens within the state-nation are fundamentally affected by developments and expansion of MT[7, 8].

On the one hand, MT affords patients individual solution to what is traditionally considered a government concern, health for its citizens[9], thereby creating more equitable options for individuals. The wealthy middle class in Africa, for instance, regularly seek advanced medical care abroad[10].

Conversely however, MT can indicate a breakdown of service delivery in home health systems. Patients may lack confidence in the ability of home systems to meet their medical needs and move abroad in relatively large numbers.[7, 11].

Whereas MT may pose potentially attractive economic benefits to most governments in Africa, it may particularly prove challenging to local health systems, whose officials maybe tasked with both its regulation domestically and promotion internationally, while at the same time grappling with risks such endeavours pose to the national health systems.[9].

Specialized medical services and procedures offered to medical tourists include elective, non-elective and diagnostic as depicted in Fig.1. However, current availability, pricing and geo-distribution of these procedures and services in Africa is not well-known.

Medical tourism entails highly trained and experienced physicians, high-tech medical equipment and specialised ultramodern medical facilities. Some African countries are said to have invested in or attracted ample pool of specialist physicians in quality private hospitals whose medical facilities are

similar to the ones in developed countries[10]. Costs associated with these MT infrastructure are substantial[12]. Similarly, MT is said to cause competition for best local resources including qualified medical professionals [12, 13] and transplant organs. The accrued benefits to the local host population, in turn, is however, not well-known.

Many arguments have been advanced for and against MT in Africa. Fig.2 [12] summarizes these advantages and disadvantages.

The extent and dimension of these pros and cons in as far as healthcare systems in Africa are concerned, however, is inexact [3, 6, 9, 12, 14-17]. The role and effects of MT in Africa needs to be investigated and documented in the face of Africa's two-tier healthcare systems, featuring a relatively efficient private and relatively overburdened public medical care sectors.

MT services are generally provided by the private sector and payments are mostly out-of-pocket. Whereas private health care providers have little incentive to consider population-based services, the public at large must be served through public health interventions focused on the health needs of the entire population or population groups. Individual health care, population health and public policy decisions must, therefore, be premised on best available evidence to avoid poor and inappropriate interventions [4, 15, 17-20]. However, for MT in Africa, this is clearly difficult because of paucity of scientific evidence on the subject. Secondly, even with the available evidence, the information generated individually by the studies may be biased, methodologically flawed, time and context constrained, resulting in conflicting conclusions. This does not allow MT in Africa to be understood well[21]. Hence the necessity and justification for this scoping review, whose purpose is to assess current level of knowledge on MT in Africa with a reference to Africa's healthcare systems, by systematically reviewing

available literature on the subject. The study will focus on MT out of, into and intra-Africa flows.

In this study, we take the geo-scheme for Africa approach used by the African Union and United Nations in dividing the region directionally[22]:

- North Africa lies north of the Sahara and runs along the Mediterranean coast.
- West Africa excludes Northern Africa and the Maghreb and includes the large portions of the Sahara Desert and the Adamawa Mountains.
- East Africa stretches from the Horn of Africa to Mozambique, including Madagascar, Seychelles and Mauritius
- Central Africa is the large mass at the center of Africa which either does not fall squarely into any other region or only partially does so.
- Southern Africa consists of the portion generally south of -10° latitude and the great rainforests of Congo.

The main aim of this study is to outline the role, structure and effect of medical tourism in Africa as it relates to Africa's healthcare systems by answering the following specific questions:

i. What is published about Africa's MT infrastructure: the availability, pricing and geo-distribution of specialized medical procedures and services offered to medical tourists in Africa?
ii. Who are the main medical tourism actors in Africa, as identified in the literature?
iii. What are the identified effects of medical tourism on healthcare systems in Africa?
iv. What are the identified ethical issues associated with medical tourism in Africa?

Methods

The study will employ Arksey and O'Malley scoping review framework as well as incorporate recent scoping review suggestions by Levac et al[23, 24].

Identification of relevant studies

a) Key terms

Multiple terms are used to refer to MT in literature. Evidence indicate that while literature on MT is generally growing, it is mostly focused either on individual case studies or specific aspects of MT [11].Therefore, an extensive list of primary and secondary search terms will be developed. Search terms will include: medical tourism, stem cell tourism, fertility tourism, dental tourism, health tourism and transplant tourism, among other terms with Africa as the bounding parameter. The university librarian will help in finalizing the keyword and search strategy in this study. Attempt will be made to obtain relevant documents that are not readily available through concerned authors or publishers.

b) Databases:

Academic databases: Academic Search Complete, Business Source Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO), Health Source - Consumer Edition, Health Source- Nursing/Academic Edition and sabinet.

Search engines: Google and google scholar.

Relevant MT industry associations, OECD, WHO, Worldbank and other multilateral organizations' websites will be used to search for government reports, practice guidelines and industry reports.

Relevant research dissertations will be searched through worldcat via oclc, and reference list scanning of included studies.

c) Search strategy:

The databases selected will cover a broad range of disciplines to ensure sensitivity. Search queries will be tailored to specific requirements for each database. For academic databases, keywords will be combined using Boolean operators (AND, OR, NOT). A snowball technique will be used to find related works.

However, since this will be an iterative process, the detailed search strategy will be documented in the analysis and write up of the full review.

Researchers will keep an updated record on dates and the numbers of publications identified during each session of literature search using a search records table[25] as shown below:

Date	Keyword searched	Search engine used	Number of publications retrieved

Table 1: Electronic search record(source: Adapted from Mashamba-Thomson T.P. et al [25])

Study Selection (Screening)

A two-stage screening process will be used to assess the relevance of studies identified in the search. Two reviewers will independently evaluate and apply the identified selection criteria to the candidate literature titles and abstracts. Titles and abstracts will be screened as "include", "exclude" or "uncertain". Full text of articles screened as "uncertain" will be reviewed by the third reviewer for verification against the inclusion criteria. During the first stage, only the title and abstract of citations will be reviewed to preclude articles that do not meet the minimum inclusion criteria. A title and abstract relevance screening form will be developed and pretested on a convenience sample of 10 academic citations to evaluate reviewer agreement. A kappa calculation will be done based on the results of this pre-test. This will in turn be used to show the reviewers' inter-rater agreement level. Generally, a kappa score over 0.8 is considered a high level of agreement [26]. In accordance with recommendations by Levac et al.[24], after reviewing every batch of 20 to 30 publications, the reviewers will meet

to resolve any conflicts and ensure consistency with the research question and purpose.

Executive summaries in grey literature will be treated as abstracts. Relevant titles whose abstracts are not available will be taken to screening stage two for full review. During screening stage two, reviewers will independently screen the rest of the search results using the pre-defined inclusion-exclusion criteria. Any ensuing discrepancies will be resolved by discussion or the involvement of the third reviewer.

To capture and present the screening process, the Preferred Reporting Items for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [27] will be used.

Inclusion criteria:

- Evidence published in English.
- There will be no publication date restrictions up to 06 June 2016.
- Literature with substantial focus on MT in Africa including: peer-reviewed journal articles, systematic reviews, scoping reviews, meta-analysis and rapid reviews, government and NGO reports and academic dissertations.
  Research focusing on MT in Low and Medium Income Countries(LMICs) and whose conclusions and discussion demonstrate transferable findings to African settings.
- All study designs will be considered including qualitative, quantitative and mixed methods studies.
- Studies focusing on health care provision through specified bi- or multilateral government agreements in Africa.

Exclusion criteria:

- Evidence focusing on MT outside Africa and whose results are non-transferable to African settings.
- Evidence focusing on people forced to seek emergency medical care in conflict or post-conflict settings as opposed to organised medical travel in non-conflict settings.
- Evidence with focus on emergency medical care for conventional tourists.
- Evidence where medical care provision to medical tourists is not explicitly differentiated from the day to day provision of health care offered to the general public.
- Evidence with main focus on wellness tourism

Charting the Evidence (Data Abstraction)

After title and abstract screening, successful candidate citations will be exported to Endnote bibliographic dataset for subsequent full text review. Endnote library application will be utilized to discard any duplicates. A data abstraction spreadsheet will be developed collectively by the reviewers to extract pre-determined variables and themes. Structuring this spreadsheet database will involve selecting and defining data categories and subcategories, as advised by the MT conceptual framework [21]. It will be secured online so that involved reviewers will have access and can make updates freely.

Bibliographic details, study design, number of participants, intervention(s), comparison(s), study setting, funding source and conclusions for the primary and secondary outcomes of interest will be extracted. This dataset will be populated from each selected paper. This step will be done iteratively as more familiarity of literature is gained and revisions done as appropriate. The data extraction form is attached as Appendix I.

Risk of bias (quality) assessment of individual studies

Methodological quality of quantitative, qualitative and mixed methods primary studies will be assessed using the Mixed Methods Appraisal Tool (MMAT) [28]. Studies will not be excluded on account of low quality scores, but quality scores will be reported and considered in the narrative synthesis of the evidence.

Collating, Summarizing, and Reporting the Data

The extracted data will be summarized and presented. This is in line with the purpose of a scoping review which is geared towards establishing the scope of the current evidence, summarizing the results as presented across articles, and not synthesizing or distilling specific results [23, 24, 29]. The data will be analysed accordingly to address the main aim and the four specific study questions. Further to this, the study team will scrutinize the meanings of the findings as they relate to overall purpose of the study, discuss the implications for future research, practice and policy.

Data analysis will employ both quantitative and qualitative methods.

After the coding and validation of the spreadsheet file, the data will be exported into STATA 13 for analysis. Descriptive statistics will be used to summarize the data. Frequencies and percentages will be used to describe nominal data. A basic statistical account of the amount, type, and distribution of the studies included in the review will be presented.

Also, a thematic analysis and concept map of the results will be presented. Thematic analysis will be carried out using NVIVO research software.

This analysis will generally answer questions like: how large is the literature on MT in Africa (number of papers), when was it published (age), where was the research conducted (geographic distribution), at what scale, and by whom (geographic/institution); where, when, and by whom research was

published; the geographical spread of the research; types of methods used; types of subjects examined; types of variables measured; different disciplines assessing the topic; and patterns found in research results. We will use statistical means to produce tables and charts that depict cross-tabulations like: MT in Africa as it relates to study designs used, type of treatments, medical facilities, and selected patient characteristics (such as age, sex, geography, ethnicity).

Ethics and dissemination

The protocol for the systematic review has also been registered in PROSPERO (**Regn. No: RD42016039745,** http://www.crd.york.ac.uk/PROSPERO). The results will be disseminated by publication in peer-reviewed journal and presented at a relevant conference.

Discussion

Medical tourism is different from medical care administered to conventional tourists in need of emergency medical care. Unlike the latter, the former specifically refers to 'foreign patients' who travel abroad for the express purpose of obtaining medical care [17]. Medical tourism is defined as a set of socioeconomic activities carried out either by or for medical tourists [30]. The activities carried out by medical tourists correspond to the travel of patients in search of health services outside the jurisdiction of their home health systems [21], while those carried out for them correspond to attempts on the part of destinations to attract international patients by promoting their health care services and facilities [21]. Although there is no standard meaning that is assigned to it, the term "tourism" could refer to the measures taken by destination countries (supply side) to attract and meet the needs of international patients. The term could also refer to the tourism channels the medical tourist utilizes to get to the destination countries.

In light of the above, therefore, evidence with focus on emergency medical care for conventional tourists will be excluded.

This study will include literature on formal bi- and multilateral medical care agreements that enable patients to be attended to in other countries, but exclude those papers that focus on 'forced' cross-border medical care, especially if public health facilities of destination countries are 'forced' to provide the care on humanitarian grounds. This condition exists especially in conflict and post-conflict zones.

Evidence on MT that is global in outlook will be included in-as-far-as its findings are relevant to Africa and its healthcare systems. Relevance will be informed as progressive familiarity with literature is gained in this study.

Africa presents exceptionally unique and fascinating context in which to situate this MT study. This is because of the stark contrast in the African health care landscape: whereas medical tourism demands highly specialized medics, capable of executing most complicated surgeries, clad in advanced medical technologies and luxury, specialized hospitals, Africa, on the other hand, has a large local populations enduring rudimentary health, insufficient clean water and inadequate sanitation.

To our knowledge, this is the first systematic scoping review that attempts to expound on the role, structure and effect of MT as it relates to healthcare systems in Africa. Most MT evidence on Africa is emergent and multi-disciplinary in nature, hence the critical necessity of a scoping review to map the range of extant evidence and systematically identify research gaps to more clearly illumine the role, structure and effects of MT in Africa.

It is anticipated that while findings from this study will lead to clearer understanding of MT in Africa, they will also contribute to the resolving of paradoxical healthcare issues in the Africa. The needs of 'foreign' patients may be prioritized over those of locals, especially if economic incentives

overweigh public health considerations, thereby unfairly shifting resources towards the development of more expensive clinical interventions that cater for exclusive few, while promoting healthcare inequity [7, 9, 31]. For instance, reproductive tourism utilizes expensive and non-routine medical expertise to bring new children into this world [32, 33], yet yearly, malaria, pneumonia and other preventable infections kill millions of under-fives in Africa[34, 35].

MT is promoted as a solution to healthcare queues in some parts of the world [2, 10, 12, 14, 16, 36]. Able-to-pay patients opt to fly into Africa to avoid these long queues in order to get faster service. But, in sharp contrast, local patients are forced to experience similar long queues in overly over-subscribed and underfunded local health systems [10, 35, 37-40].

Some literature suggest that MT has been growing globally[12, 41, 42]. This growth, however, seems to be based solely on MT advantages to medical tourists, destination countries and healthcare providers. Medical tourists benefit from preferential treatment, based on their ability to pay for medical services [21]. Destination countries benefit in revenue generation [12, 43, 44].

Motivated by these benefits, many African countries are competing for the global medical tourism dollar [45-47]. Unfortunately, MT in most of these countries is based on unsustainable, haphazard regulatory frameworks [48].

Given its potential contextual significance, it is imperative that a scientific reconnaissance study be carried out on MT in Africa. This scoping study is, therefore, an attempt to do this by providing more information about MT in Africa to policy makers, healthcare providers, potential patients and future researchers, hoping to contribute to improved healthcare systems in Africa.

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Footnotes

Contributors: JJOM and JMTG conceptualised, JJOM and TPMT designed the study. LMM and JJOM prepared the draft of the research proposal. JMTG and JJOM developed the background. JJOM and TPMT contributed to developing methods relating to review and synthesis of data. All authors planned the output of the review. All authors reviewed draft versions of the manuscript and approved the final version of the manuscript.

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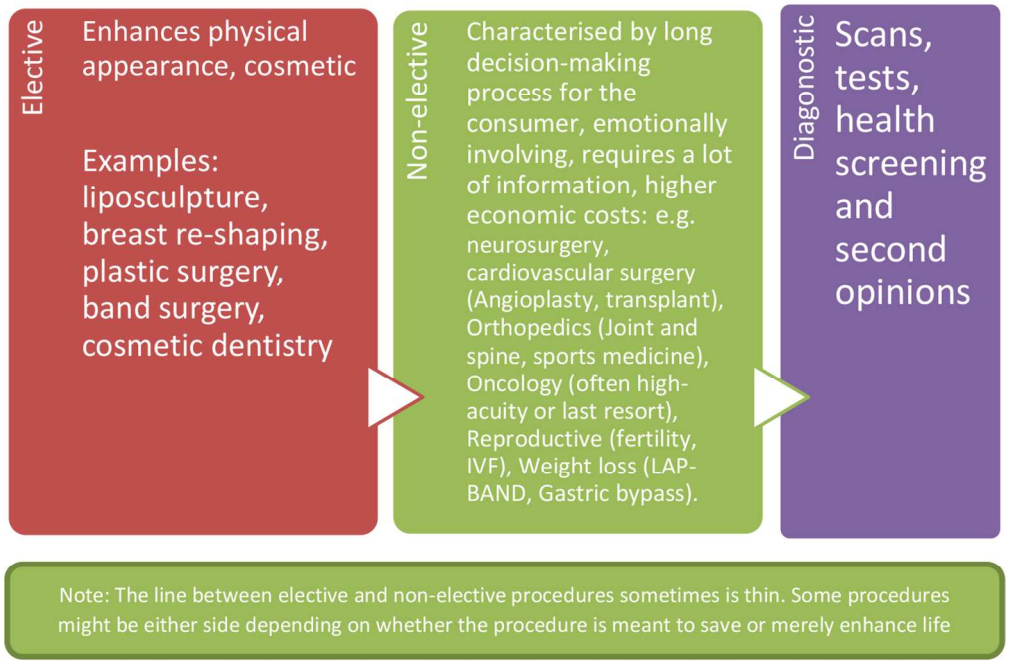

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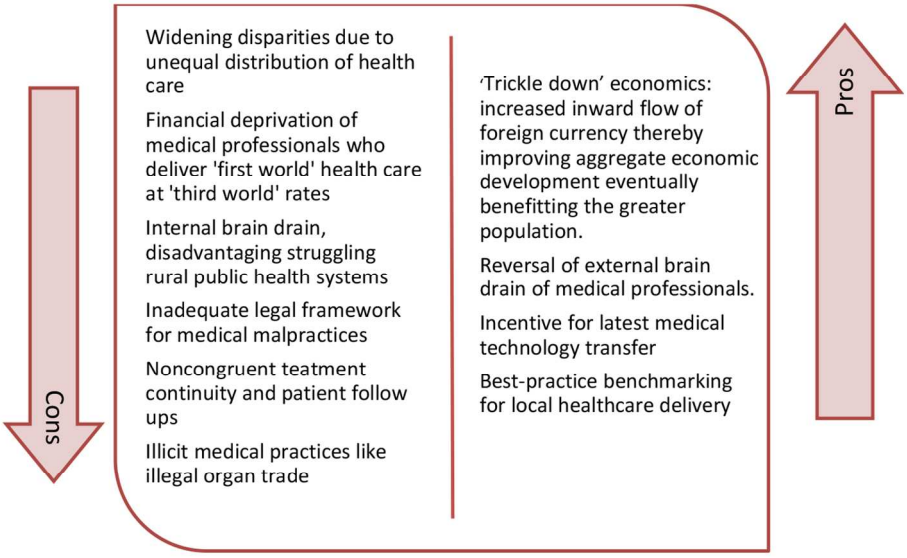

Fig.2 Advantages and disadvantages of MT in Africa
(Source Adapted from Bookman & Bookman.)

127x75mm (300 x 300 DPI)

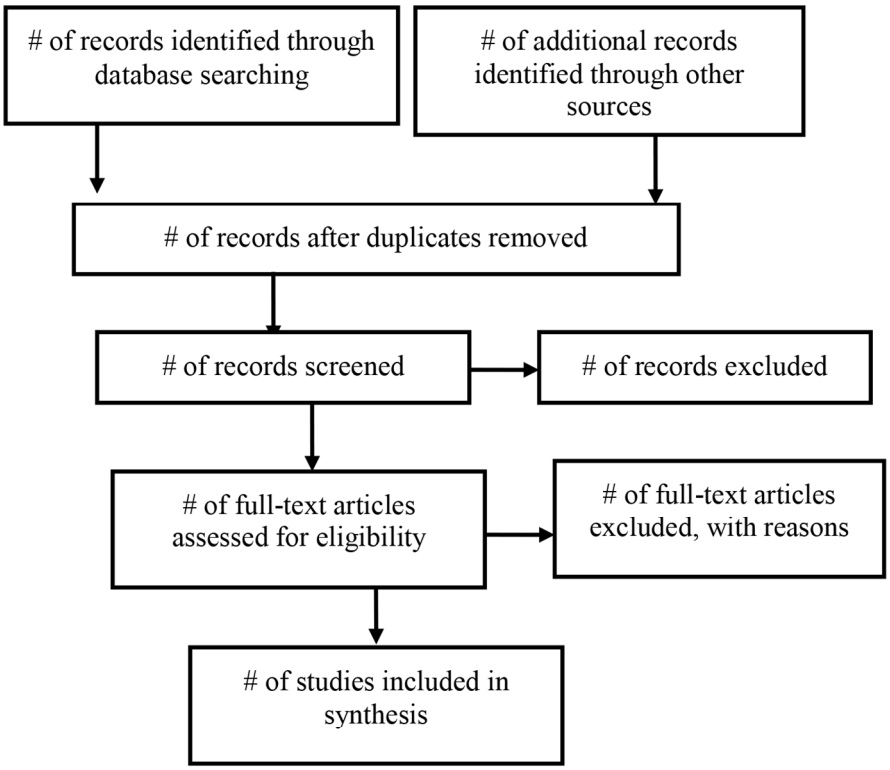

Fig.3 PRISMA flow diagram. (Adapted from Moher et al.)

136x114mm (300 x 300 DPI)

Appendix I

"The Role, Process and Effect of Medical tourism in Africa: A Systematic Scoping Review"

Data Extraction Instrument

		Document ID:
1	Reviewer/Person extracting data	
2	Date of Data Extraction	
3	Author, Year, Publication Type	
4	Journal/Publisher	
5	Title, full citation	
6	Funding Source (If Applicable)	
7	Target Participant(s)	

8	Methodology			
9	Method			
10	Aims of study			
11	Setting			
12	Geographical Context			
13				
14	Relevant Findings on	a	MT Advertising and Distribution Channels(Agencies, Hospital reps, Internet, other media)	
		b	MT Regulatory Conditions	
		c	Ethical Issues	
		d	Hospital/Physician Specialty	

		e	Hosp./Physician Accreditation	
		f	Medical Service and Procedure Prices	
		g	Main MT Actors	
		h	Infrastructure /Superstructure (Hospitals, Clinics, Private Participation, Public Participation)	
		i	MT Promotion	
			Any MT Benefits, Costs, Prospects or Challenges identified	
		j	MT Product Differentiation (Add-ons, Language used)	
15	Reviewer Comments			

Notes:

Methodology: Theoretical underpinnings of the research; also whether the nature of the research is sociological, medical, legal etc

Method: How the data was collected; data collection tools.

Setting: Seeks to identify cultural features such as employment, lifestyle, ethnicity, age, gender, socio-economic class, location and time.

Participants: Information related to the inclusion and exclusion (Sampling) criteria of the research, includes descriptions of age, gender, number of included subjects, ethnicity, level of functionality, and cultural background, if available.

Promotion: Includes Promotional Strategies by Local/National Governments, Hospital Boards, Tourism Boards; Special Task Force Committees; Overseas Promotion; National Campaigns and Quality (Accreditation, Certification).