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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

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3 the role, structure and effect of this phenomenon, this study will contribute
4 to health systems strengthening in Africa.
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10 **Strengths and limitations of this study**

- 13 • This study offers a 'big picture' analysis of medical tourism (MT) in
14 Africa by synthesizing vast amounts of literature on the subject.
- 15 • This scoping review offers an ideal platform for synthesizing literature
16 on MT in Africa whose methodological approaches, settings, study
17 populations and behaviours are wide-ranging.
- 18 • This approach of synthesising literature, however, presents a limitation
19 in that a detailed analysis of case specific interventions and quality
20 assessment of individual studies is not applicable.
- 21 • As the study will only include literature published in English, studies
22 published in other languages will be omitted. Searching literature
23 using only one language, in this case English, is a limitation. However,
24 research shows that almost 70% -90% of published works are in
25 English [1]. This fact minimizes adverse effects of searching
26 publications written only in English.
- 27 • To our knowledge there is paucity of scientific study on MT in Africa.
28 While this may be a possible limitation in terms of the amount of data
29 for this scoping review, it may be an important finding of this study
30 and a basis for calling for more research in this area.
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52 *for PhD candidates and other early-career researchers*. Higher Education Research &
53 *Development*, 2014. **33**(3): p. 534-548.
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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

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3 resources including qualified medical professionals [8, 10] and transplant
4 organs. The accrued benefits to the local host population, in turn, is
5 however, not well-known.
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10 Many arguments have been advanced for and against MT in Africa. Fig.2
11 [10] summarizes these advantages and disadvantages.
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14 The extent and dimension of these pros and cons in Africa, however, is
15 inexact [2, 3, 10, 11, 13, 20-22].
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18 The growing phenomenon of MT in Africa needs to be well understood and
19 documented in the face of Africa's pervasive poverty and pricy private health
20 care, in an effort to strengthen healthcare systems.
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24 It is likely that many MT facilities in Africa meet international health care
25 standards; but do they meet local population expectations? Does MT
26 consume and diminish local resources it is built on? What are the terms of
27 reference for most public agencies promoting MT across Africa? What is the
28 policy and regulatory framework for MT across Africa?
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31 Individual health care, population health and public policy decisions must be
32 premised on best available evidence to avoid poor and inappropriate
33 interventions [4, 13, 21, 23-25]. However, for MT in Africa, this is clearly
34 difficult because of paucity of scientific evidence on the subject. Secondly,
35 even with the available evidence, the information generated individually by
36 the studies may be biased, methodologically flawed, time and context
37 constrained, resulting in conflicting conclusions. This does not allow MT in
38 Africa to be understood in its entirety [26]. Hence the necessity and
39 justification of this scoping review.
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43 The purpose of this study, therefore, is to assess current level of knowledge
44 on MT in Africa by systematically reviewing available literature on the
45 subject.
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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

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3 Table 1: Electronic search record
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6 **Study Selection (Screening)**
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8 A two-stage screening process will be used to assess the relevance of
9 studies identified in the search. Two reviewers will independently evaluate
10 and apply the identified selection criteria to the candidate literature titles
11 and abstracts. Titles and abstracts will be screened as “include”, “exclude” or
12 “uncertain”. Full text of articles screened as “uncertain” will be reviewed by
13 the third reviewer for verification against the inclusion criteria. During the
14 first stage, only the title and abstract of citations will be reviewed to
15 preclude articles that do not meet the minimum inclusion criteria. A title and
16 abstract relevance screening form will be developed and pretested on a
17 convenience sample of 10 academic citations to evaluate reviewer
18 agreement. A kappa calculation will be done based on the results of this pre-
19 test. This will in turn be used to show the reviewers’ inter-rater agreement
20 level. Generally, a kappa score over 0.8 is considered a high level of
21 agreement [29]. In accordance with recommendations by Levac et al.[28],
22 after reviewing every batch of 20 to 30 publications, the reviewers will meet
23 to resolve any conflicts and ensure consistency with the research question
24 and purpose.
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40 Executive summaries in grey literature will be treated as abstracts. Relevant
41 titles whose abstracts are not available will be taken to screening stage two
42 for full review. During screening stage two, reviewers will independently
43 screen the rest of the search results using the pre-defined inclusion-
44 exclusion criteria. Any ensuing discrepancies will be resolved by discussion
45 or the involvement of the third reviewer.
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52 To capture and present the screening process, the Preferred Reporting Items
53 for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [30] will
54 be used.
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6 Inclusion criteria:
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- 9 • Evidence published in English.
- 10 • There will be no publication date restrictions up to 06 June 2016.
- 11 • Literature with substantial focus on MT in Africa including: peer-
12 reviewed journal articles, systematic reviews, scoping reviews, meta-
13 analysis and rapid reviews, government and NGO reports and
14 academic dissertations.
- 15 • Primary research focusing on MT in Low and Medium Income
16 Countries(LMICs) and whose conclusions and discussion demonstrate
17 transferable findings to African settings.
- 18 • All study designs will be considered including qualitative, quantitative
19 and mixed methods studies.
- 20 • Studies focusing on health care provision through specified bi- or
21 multilateral government agreements in Africa.
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34 Exclusion criteria:
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- 36 • Evidence focusing on MT outside Africa and whose results are non-
37 transferable to African settings, because the cultures and nature of MT
38 may be substantially different from our target group.
- 39 • Evidence focusing on people forced to seek emergency medical care in
40 conflict or post-conflict settings as opposed to organised medical travel
41 in non-conflict settings.
- 42 • Evidence with focus on emergency medical care for conventional
43 tourists.
- 44 • Evidence where medical care provision to medical tourists is not
45 explicitly differentiated from the day to day provision of health care
46 offered to the general public.
- 47 • Evidence with main focus on wellness tourism
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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

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3 of the current evidence, summarizing the results as presented across
4 articles, and not synthesizing or distilling specific results [27, 28, 32]. The
5 data will be analysed accordingly to address the main aim and the four
6 specific study questions. Further to this, the study team will scrutinize the
7 meanings of the findings as they relate to overall purpose of the study,
8 discuss the implications for future research, practice and policy.
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10 Data analysis will employ both quantitative and qualitative methods.
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12 After the coding and validation of the spreadsheet file, the data will be
13 exported into STATA 13 for analysis. Descriptive statistics will be used to
14 summarize the data. Frequencies and percentages will be used to describe
15 nominal data. A basic statistical account of the amount, type, and
16 distribution of the studies included in the review will be presented.
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18 Also, a thematic analysis and concept map of the results will be presented.
19 Thematic analysis will be carried out collectively by researchers using
20 NVIVO.
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22 This analysis will generally answer questions like: how large is the literature
23 on MT in Africa (number of papers), when was it published (age), where was
24 the research conducted (geographic distribution), at what scale, and by
25 whom (geographic/institution); where, when, and by whom research was
26 published; the geographical spread of the research; types of methods used;
27 types of subjects examined; types of variables measured; different
28 disciplines assessing the topic; and patterns found in research results. We
29 will use statistical means to produce tables and charts that depict cross-
30 tabulations like: MT in Africa as it relates to study designs used, type of
31 treatments, medical facilities, and selected patient characteristics (such as
32 age, sex, geography, ethnicity).
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34 **Ethics and dissemination**

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

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14 Medical tourism is different from medical care administered to conventional
15 tourists in need of emergency medical care. Unlike the latter, the former
16 specifically refers to 'foreign patients' who travel abroad for the express
17 purpose of obtaining medical care [21]. Medical tourism is defined as a set
18 of socioeconomic activities carried out either by or for medical tourists [33].
19 The activities carried out by medical tourists correspond to the travel of
20 patients in search of health services outside the jurisdiction of their home
21 health systems [26], while those carried out for them correspond to
22 attempts on the part of destinations to attract international patients by
23 promoting their health care services and facilities [26]. Although there is no
24 standard meaning that is assigned to it, the term "tourism" could refer to
25 the measures taken by destination countries (supply side) to attract and
26 meet the needs of international patients. The term could also refer to the
27 tourism channels the medical tourist utilizes to get to the destination
28 countries. Medical tourism therefore, is not more about tourism as it is
29 about medical care provided to able-to-pay patients from abroad.
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45 In light of the above, therefore, evidence with focus on emergency medical
46 care for conventional tourists will be excluded, as well as evidence where
47 medical care provision to medical tourists is not explicitly differentiated from
48 provision to the general public.
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53 This study will include literature on formal bi- and multilateral medical care
54 agreements that enable patients to be attended to in other countries, but
55 exclude those papers that focus on 'forced' cross-border medical care,
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3 especially if public health facilities of destination countries are 'forced' to
4 provide the care on humanitarian grounds. This condition exists especially in
5 conflict and post-conflict zones.
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10 Evidence focusing on MT outside Africa will be excluded because the cultures
11 and nature of MT may be substantially different from this study's target
12 group, unless their findings and conclusions have significant link to African
13 settings.
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18 Africa presents exceptionally unique and fascinating context in which to
19 situate this MT study. This is because of the stark contrast in the African
20 health care landscape: whereas medical tourism demands highly specialized
21 medics, capable of executing most complicated surgeries, clad in advanced
22 medical technologies and luxury, specialized hospitals, Africa, on the other
23 hand, has a large local populations enduring rudimentary health, insufficient
24 clean water and inadequate sanitation.
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32 To our knowledge, this is the first systematic scoping review that attempts
33 to expound on the role, structure and effect of MT in Africa. Most MT
34 evidence in Africa is emergent and multi-disciplinary in nature, hence the
35 critical necessity of a scoping review in mapping the range of available
36 evidence and systematically identify research gaps to more clearly illumine
37 the role, structure and effect of MT in Africa.
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44 It is anticipated that while findings from this study will lead to clearer
45 understanding of MT in Africa, they will also contribute to the resolving of
46 paradoxical healthcare issues on MT in the African context. For instance,
47 reproductive tourism utilizes expensive and uncommon medical expertise to
48 bring new children into this world [34, 35], yet yearly, malaria, pneumonia
49 and other preventable infections kill millions of under-fives in Africa[14, 15].
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56 MT is promoted as a solution to healthcare queues in other parts of the
57 globe [1, 10, 11, 19, 20, 36]. Wealthy patients opt to fly into Africa to avoid
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3 these long queues in order to get faster service. But, in sharp contrast, local
4 patients are forced to experience similar long queues in overly over-
5 subscribed and underfunded local public health systems [15, 17, 19, 37-39].
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9 Globally, MT is growing at a high rate, including in Africa [10, 40, 41]. This
10 growth, however, seems to be based solely on MT advantages to medical
11 tourists, destination countries and healthcare providers. Medical tourists
12 benefit from preferential treatment, based on their ability to pay for medical
13 services [26]. Destination countries benefit in revenue generation [6, 9, 10].
14 A bigger patient pool translates to higher profits for healthcare providers.
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17 Motivated by these benefits, many African countries are competing for the
18 global medical tourism dollar [12]. Unfortunately, MT in most of these
19 countries is based on unsustainable, haphazard regulatory frameworks [42].
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22 Given its potential contextual significance, it is imperative that a scientific
23 reconnaissance study be carried out on MT in Africa. This scoping study is,
24 therefore, an attempt to do this by providing more information about MT in
25 Africa to policy makers, healthcare providers, potential patients and future
26 researchers, hoping to contribute to improved healthcare systems in Africa.
27

28 29 30 31 32 33 34 35 36 37 38 39 40 **Acknowledgements**

41
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43 KwaZulu-Natal for providing support in carrying out this study. Furthermore,
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45 database search strategy.
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49 50 **Footnotes**

51
52 Contributors: JJOM and JMTG conceptualised, JJOM and TPMT designed the
53 study. LMM and JJOM prepared the draft of the research proposal. JMTG and
54 JJOM developed the background. JJOM and TPMT contributed to developing
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3 methods relating to review and synthesis of data. All authors planned the
4 output of the review. All authors reviewed draft versions of the manuscript
5 and approved the final version of the manuscript.
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10 **Competing interests:** Authors declare no competing interests.

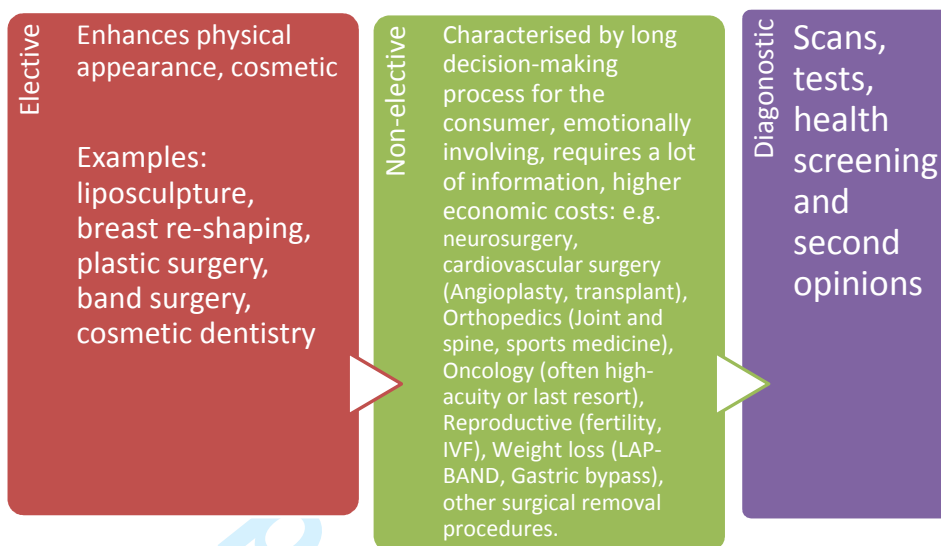
11
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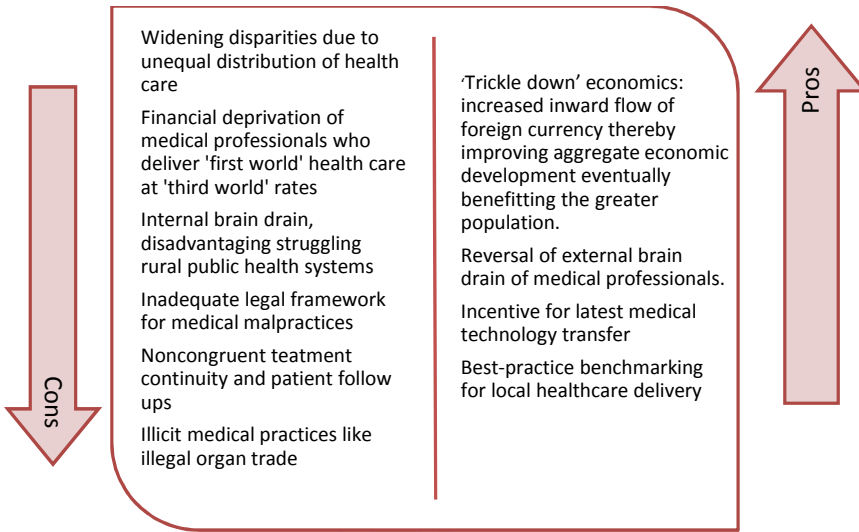
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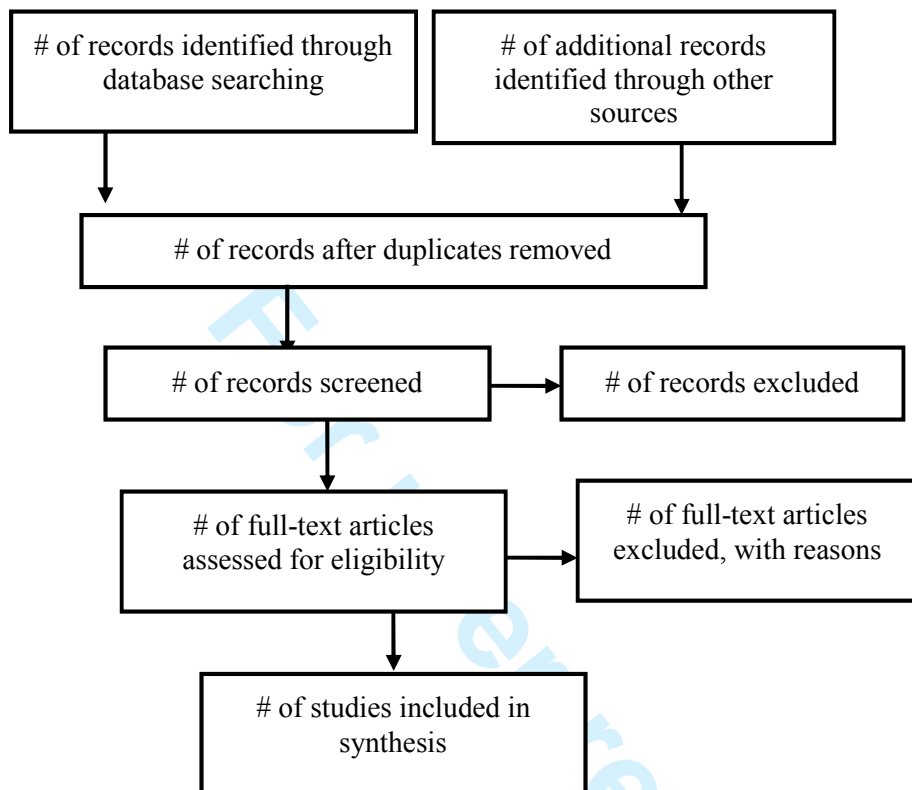
peer review only

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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)	
1	Reviewer			
5	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.

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4 **Participants:** Information related to the inclusion and exclusion (Sampling)
5 criteria of the research, includes descriptions of age, gender, number of
6 included subjects, ethnicity, level of functionality, and cultural background, if
7 available.
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11 **Promotion:** Includes Promotional Strategies by Local/National
12 Governments, Hospital Boards, Tourism Boards; Special Task Force
13 Committees; Overseas Promotion; National Campaigns and Quality
14 (Accreditation, Certification).
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BMJ Open

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

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-013021.R1
Article Type:	Protocol
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Primary Subject Heading:	Global health
Secondary Subject Heading:	Health services research, Health policy, Health economics, Public health, Research methods
Keywords:	Health economics < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, MEDICAL ETHICS, PUBLIC HEALTH, SOCIAL MEDICINE, International health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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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

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3 the role, structure and effect of this phenomenon, this study will contribute
4 to health systems strengthening in Africa.
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10 **Strengths and limitations of this study**

- 13 • This study offers a 'big picture' analysis of medical tourism (MT) in
14 Africa by synthesizing vast amounts of literature on the subject.
- 15 • This scoping review offers an ideal platform for synthesizing literature
16 on MT in Africa whose methodological approaches, settings, study
17 populations and behaviours are wide-ranging.
- 18 • This approach of synthesising literature, however, presents a limitation
19 in that a detailed analysis of case specific interventions and quality
20 assessment of individual studies is not applicable.
- 21 • As the study will only include literature published in English, studies
22 published in other languages will be omitted. However, research shows
23 that almost 70% -90% of published works are in English [1]. This fact
24 minimizes adverse effects of searching publications written only in
25 English.
- 26 • To our knowledge there is paucity of scientific study on MT in Africa.
27 While this may be a possible limitation in terms of the amount of data
28 for this scoping review, it may be an important finding of this study
29 and a basis for calling for more research in this area.
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47 **Keywords:** Global Health, Health services research, Healthcare systems,
48 Medical tourism, Public Health
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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 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

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4 specialist physicians in quality private hospitals whose medical facilities are
5 similar to the ones in developed countries[10]. Costs associated with these
6 MT infrastructure are substantial[12]. Similarly, MT is said to cause
7 competition for best local resources including qualified medical professionals
8 [12, 13] and transplant organs. The accrued benefits to the local host
9 population, in turn, is however, not well-known.

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15 Many arguments have been advanced for and against MT in Africa. Fig.2
16 [12] summarizes these advantages and disadvantages.

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

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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

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3 reference to Africa's healthcare systems, by systematically reviewing
4 available literature on the subject. The study will focus on MT out of, into
5 and intra-Africa flows.
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9 In this study, we take the geo-scheme for Africa approach used by the
10 African Union and United Nations in dividing the region directionally[22]:
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14 • North Africa lies north of the Sahara and runs along the
15 Mediterranean coast.
- 16
17 • West Africa excludes Northern Africa and the Maghreb and includes the
18 large portions of the Sahara Desert and the Adamawa Mountains.
- 19
20 • East Africa stretches from the Horn of Africa to Mozambique, including
21 Madagascar, Seychelles and Mauritius
- 22
23 • Central Africa is the large mass at the center of Africa which either does
24 not fall squarely into any other region or only partially does so.
- 25
26 • Southern Africa consists of the portion generally south of -10° latitude
27 and the great rainforests of Congo.
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31 The main aim of this study is to outline the role, structure and effect of
32 medical tourism in Africa as it relates to Africa's healthcare systems by
33 answering the following specific questions:
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- 36 i. What is published about Africa's MT infrastructure: the availability,
37 pricing and geo-distribution of specialized medical procedures and
38 services offered to medical tourists in Africa?
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 - 40 ii. Who are the main medical tourism actors in Africa, as identified in the
41 literature?
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 - 43 iii. What are the identified effects of medical tourism on healthcare
44 systems in Africa?
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 - 46 iv. What are the identified ethical issues associated with medical tourism
47 in Africa?
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53 **Methods**

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3 The study will employ Arksey and O'Malley scoping review framework as well
4 as incorporate recent scoping review suggestions by Levac et al[23, 24].
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7 **Identification of relevant studies**

8 a) Key terms

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

24 Academic databases: Academic Search Complete, Business Source
25 Complete, PsycARTICLES (EBSCO), PsycINFO (EBSCO), Health Source -
26 Consumer Edition, Health Source- Nursing/Academic Edition and sabinet.
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28 Search engines: Google and google scholar.
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30 Relevant MT industry associations, OECD, WHO, Worldbank and other
31 multilateral organizations' websites will be used to search for government
32 reports, practice guidelines and industry reports.
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34 Relevant research dissertations will be searched through worldcat via oclc,
35 and reference list scanning of included studies.
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37 c) Search strategy:

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

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3 after reviewing every batch of 20 to 30 publications, the reviewers will meet
4 to resolve any conflicts and ensure consistency with the research question
5 and purpose.
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10 Executive summaries in grey literature will be treated as abstracts. Relevant
11 titles whose abstracts are not available will be taken to screening stage two
12 for full review. During screening stage two, reviewers will independently
13 screen the rest of the search results using the pre-defined inclusion-
14 exclusion criteria. Any ensuing discrepancies will be resolved by discussion
15 or the involvement of the third reviewer.
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19 To capture and present the screening process, the Preferred Reporting Items
20 for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [27] will
21 be used.
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24 Inclusion criteria:

- 25 • Evidence published in English.
- 26 • There will be no publication date restrictions up to 06 June 2016.
- 27 • Literature with substantial focus on MT in Africa including: peer-
28 reviewed journal articles, systematic reviews, scoping reviews, meta-
29 analysis and rapid reviews, government and NGO reports and
30 academic dissertations.

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32 Research focusing on MT in Low and Medium Income Countries(LMICs)
33 and whose conclusions and discussion demonstrate transferable
34 findings to African settings.
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- 36 • All study designs will be considered including qualitative, quantitative
37 and mixed methods studies.
- 38 • Studies focusing on health care provision through specified bi- or
39 multilateral government agreements in Africa.
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42 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

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

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

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30 Medical tourism is different from medical care administered to conventional
31 tourists in need of emergency medical care. Unlike the latter, the former
32 specifically refers to 'foreign patients' who travel abroad for the express
33 purpose of obtaining medical care [17]. Medical tourism is defined as a set
34 of socioeconomic activities carried out either by or for medical tourists [30].
35 The activities carried out by medical tourists correspond to the travel of
36 patients in search of health services outside the jurisdiction of their home
37 health systems [21], while those carried out for them correspond to
38 attempts on the part of destinations to attract international patients by
39 promoting their health care services and facilities [21]. Although there is no
40 standard meaning that is assigned to it, the term "tourism" could refer to
41 the measures taken by destination countries (supply side) to attract and
42 meet the needs of international patients. The term could also refer to the
43 tourism channels the medical tourist utilizes to get to the destination
44 countries.
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3 In light of the above, therefore, evidence with focus on emergency medical
4 care for conventional tourists will be excluded.
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8 This study will include literature on formal bi- and multilateral medical care
9 agreements that enable patients to be attended to in other countries, but
10 exclude those papers that focus on 'forced' cross-border medical care,
11 especially if public health facilities of destination countries are 'forced' to
12 provide the care on humanitarian grounds. This condition exists especially in
13 conflict and post-conflict zones.
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20 Evidence on MT that is global in outlook will be included in-as-far-as its
21 findings are relevant to Africa and its healthcare systems. Relevance will be
22 informed as progressive familiarity with literature is gained in this study.
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26 Africa presents exceptionally unique and fascinating context in which to
27 situate this MT study. This is because of the stark contrast in the African
28 health care landscape: whereas medical tourism demands highly specialized
29 medics, capable of executing most complicated surgeries, clad in advanced
30 medical technologies and luxury, specialized hospitals, Africa, on the other
31 hand, has a large local populations enduring rudimentary health, insufficient
32 clean water and inadequate sanitation.
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40 To our knowledge, this is the first systematic scoping review that attempts
41 to expound on the role, structure and effect of MT as it relates to healthcare
42 systems in Africa. Most MT evidence on Africa is emergent and multi-
43 disciplinary in nature, hence the critical necessity of a scoping review to map
44 the range of extant evidence and systematically identify research gaps to
45 more clearly illumine the role, structure and effects of MT in Africa.
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52 It is anticipated that while findings from this study will lead to clearer
53 understanding of MT in Africa, they will also contribute to the resolving of
54 paradoxical healthcare issues in the Africa. The needs of 'foreign' patients
55 may be prioritized over those of locals, especially if economic incentives
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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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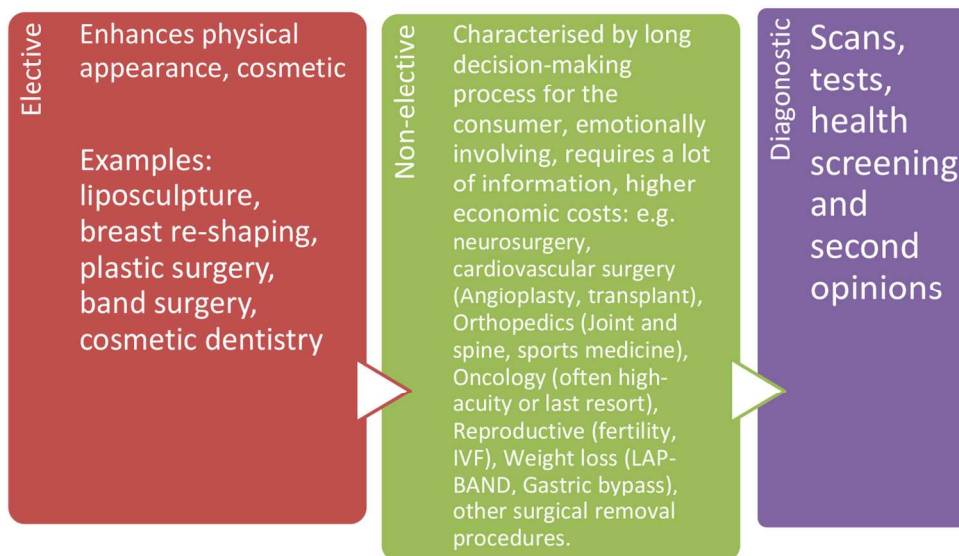


Fig.1 Medical procedures sought by medical tourists (source: author)

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Review only

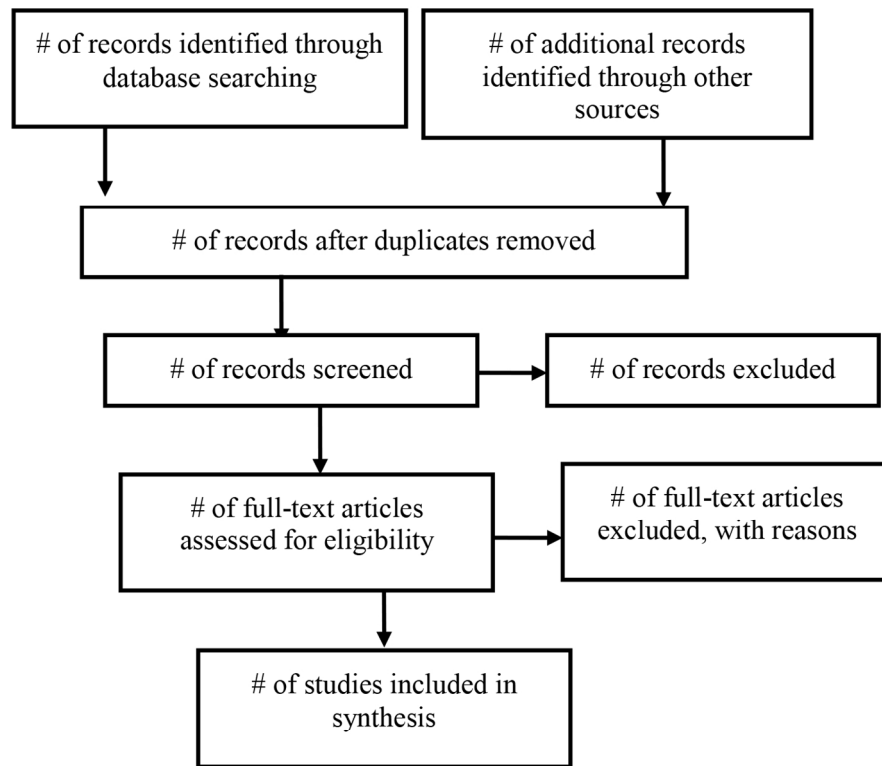
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Fig.2 Advantages and disadvantages of MT in Africa
(Source Adapted from Bookman & Bookman.)

127x75mm (300 x 300 DPI)

Review only



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

36 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)	
1	Reviewer			
5	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.

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4 **Participants:** Information related to the inclusion and exclusion (Sampling)
5 criteria of the research, includes descriptions of age, gender, number of
6 included subjects, ethnicity, level of functionality, and cultural background, if
7 available.
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11 **Promotion:** Includes Promotional Strategies by Local/National
12 Governments, Hospital Boards, Tourism Boards; Special Task Force
13 Committees; Overseas Promotion; National Campaigns and Quality
14 (Accreditation, Certification).
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BMJ Open

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

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Manuscript ID	bmjopen-2016-013021.R2
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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

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3 the role, structure and effect of this phenomenon in Africa, this study hopes
4 to contribute to health systems strengthening in the region.
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9 10 **Strengths and limitations of this study**

- 11 • This study offers a 'big picture' analysis of medical tourism (MT) in
12 Africa by synthesizing vast amounts of literature on the subject.
13
- 14 • This scoping review offers an ideal platform for synthesizing literature
15 on MT in Africa whose methodological approaches, settings, study
16 populations and behaviours are wide-ranging.
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- 18 • This approach of synthesising literature, however, presents a limitation
19 in that a detailed analysis of case specific interventions and quality
20 assessment of individual studies is not applicable.
21
- 22 • As the study will only include literature published in English, studies
23 published in other languages will be omitted. However, research shows
24 that almost 70% -90% of published works are in English [1]. This fact
25 minimizes adverse effects of searching publications written only in
26 English.
27
- 28 • To our knowledge there is paucity of scientific study on MT in Africa.
29 While this may be a possible limitation in terms of the amount of data
30 for this scoping review, it may be an important finding of this study
31 and a basis for calling for more research in this area.
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46 **Keywords:** Global Health, Health services research, Healthcare systems,
47 Medical tourism, Public Health
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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

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3 similar to the ones in developed countries[10]. Costs associated with these
4 MT infrastructure are substantial[12]. Similarly, MT is said to cause
5 competition for best local resources including qualified medical professionals
6 [12, 13] and transplant organs. The accrued benefits to the local host
7 population, in turn, is however, not well-known.
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12 Many arguments have been advanced for and against MT in Africa. Fig.2
13 [12] summarizes these advantages and disadvantages.
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18 The extent and dimension of these pros and cons in as far as healthcare
19 systems in Africa are concerned, however, is inexact [3, 6, 9, 12, 14-17].
20 The role and effects of MT in Africa needs to be investigated and
21 documented in the face of Africa's two-tier healthcare systems, featuring a
22 relatively efficient private and relatively overburdened public medical care
23 sectors.
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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

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3 available literature on the subject. The study will focus on MT out of, into
4 and intra-Africa flows.
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7 In this study, we take the geo-scheme for Africa approach used by the
8 African Union and United Nations in dividing the region directionally[22]:
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- 11 • North Africa lies north of the Sahara and runs along the
12 Mediterranean coast.
- 13 • West Africa excludes Northern Africa and the Maghreb and includes the
14 large portions of the Sahara Desert and the Adamawa Mountains.
- 15 • East Africa stretches from the Horn of Africa to Mozambique, including
16 Madagascar, Seychelles and Mauritius
- 17 • Central Africa is the large mass at the center of Africa which either does
18 not fall squarely into any other region or only partially does so.
- 19 • Southern Africa consists of the portion generally south of -10° latitude
20 and the great rainforests of Congo.
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29 The main aim of this study is to outline the role, structure and effect of
30 medical tourism in Africa as it relates to Africa's healthcare systems by
31 answering the following specific questions:
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- 34 i. What is published about Africa's MT infrastructure: the availability,
35 pricing and geo-distribution of specialized medical procedures and
36 services offered to medical tourists in Africa?
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- 39 ii. Who are the main medical tourism actors in Africa, as identified in the
40 literature?
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- 43 iii. What are the identified effects of medical tourism on healthcare
44 systems in Africa?
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- 47 iv. What are the identified ethical issues associated with medical tourism
48 in Africa?
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51 **Methods**

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

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3 to resolve any conflicts and ensure consistency with the research question
4 and purpose.
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8 Executive summaries in grey literature will be treated as abstracts. Relevant
9 titles whose abstracts are not available will be taken to screening stage two
10 for full review. During screening stage two, reviewers will independently
11 screen the rest of the search results using the pre-defined inclusion-
12 exclusion criteria. Any ensuing discrepancies will be resolved by discussion
13 or the involvement of the third reviewer.
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19 To capture and present the screening process, the Preferred Reporting Items
20 for Systematic and Meta- Analyses (PRISMA) flow diagram in Fig.3 [27] will
21 be used.
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26 Inclusion criteria:
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- 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.

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40 Research focusing on MT in Low and Medium Income Countries(LMICs)
41 and whose conclusions and discussion demonstrate transferable
42 findings to African settings.
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- 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.

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54 Exclusion criteria:
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- 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

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

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

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30 Medical tourism is different from medical care administered to conventional
31 tourists in need of emergency medical care. Unlike the latter, the former
32 specifically refers to 'foreign patients' who travel abroad for the express
33 purpose of obtaining medical care [17]. Medical tourism is defined as a set
34 of socioeconomic activities carried out either by or for medical tourists [30].
35 The activities carried out by medical tourists correspond to the travel of
36 patients in search of health services outside the jurisdiction of their home
37 health systems [21], while those carried out for them correspond to
38 attempts on the part of destinations to attract international patients by
39 promoting their health care services and facilities [21]. Although there is no
40 standard meaning that is assigned to it, the term "tourism" could refer to
41 the measures taken by destination countries (supply side) to attract and
42 meet the needs of international patients. The term could also refer to the
43 tourism channels the medical tourist utilizes to get to the destination
44 countries.
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3 In light of the above, therefore, evidence with focus on emergency medical
4 care for conventional tourists will be excluded.
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8 This study will include literature on formal bi- and multilateral medical care
9 agreements that enable patients to be attended to in other countries, but
10 exclude those papers that focus on 'forced' cross-border medical care,
11 especially if public health facilities of destination countries are 'forced' to
12 provide the care on humanitarian grounds. This condition exists especially in
13 conflict and post-conflict zones.
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20 Evidence on MT that is global in outlook will be included in-as-far-as its
21 findings are relevant to Africa and its healthcare systems. Relevance will be
22 informed as progressive familiarity with literature is gained in this study.
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26 Africa presents exceptionally unique and fascinating context in which to
27 situate this MT study. This is because of the stark contrast in the African
28 health care landscape: whereas medical tourism demands highly specialized
29 medics, capable of executing most complicated surgeries, clad in advanced
30 medical technologies and luxury, specialized hospitals, Africa, on the other
31 hand, has a large local populations enduring rudimentary health, insufficient
32 clean water and inadequate sanitation.
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40 To our knowledge, this is the first systematic scoping review that attempts
41 to expound on the role, structure and effect of MT as it relates to healthcare
42 systems in Africa. Most MT evidence on Africa is emergent and multi-
43 disciplinary in nature, hence the critical necessity of a scoping review to map
44 the range of extant evidence and systematically identify research gaps to
45 more clearly illumine the role, structure and effects of MT in Africa.
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52 It is anticipated that while findings from this study will lead to clearer
53 understanding of MT in Africa, they will also contribute to the resolving of
54 paradoxical healthcare issues in the Africa. The needs of 'foreign' patients
55 may be prioritized over those of locals, especially if economic incentives
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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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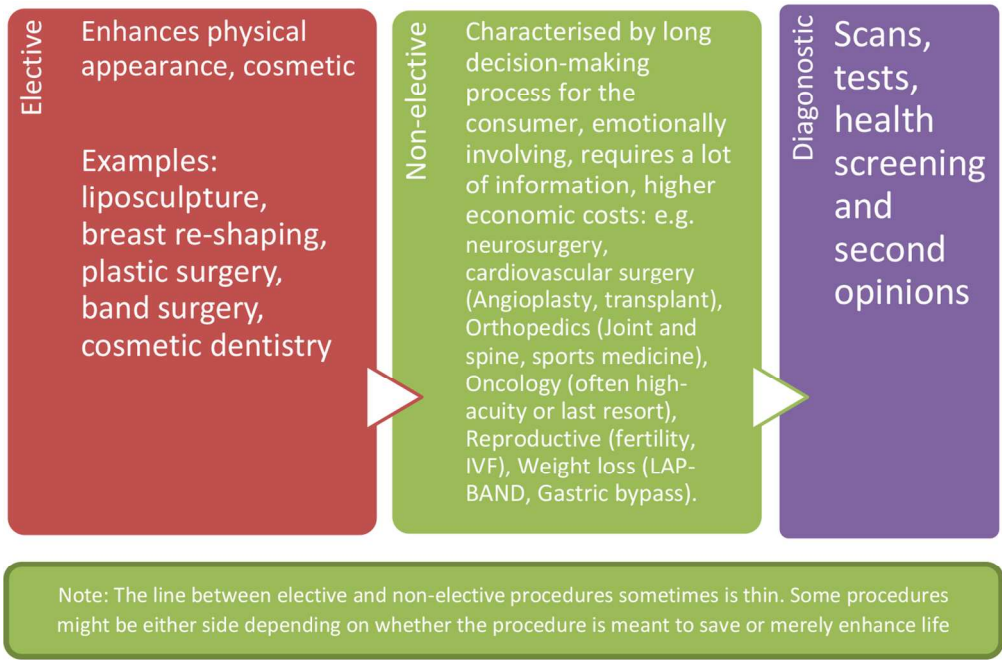
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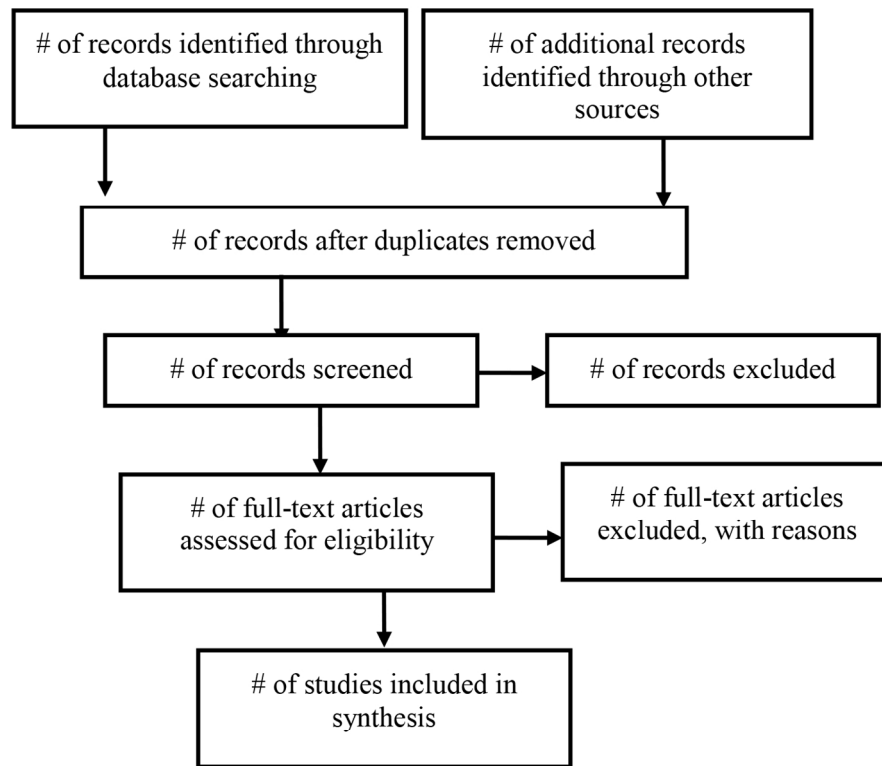
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Fig.2 Advantages and disadvantages of MT in Africa
(Source Adapted from Bookman & Bookman.)

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

36 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)	
1	Reviewer			
5	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.

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4 **Participants:** Information related to the inclusion and exclusion (Sampling)
5 criteria of the research, includes descriptions of age, gender, number of
6 included subjects, ethnicity, level of functionality, and cultural background, if
7 available.
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11 **Promotion:** Includes Promotional Strategies by Local/National
12 Governments, Hospital Boards, Tourism Boards; Special Task Force
13 Committees; Overseas Promotion; National Campaigns and Quality
14 (Accreditation, Certification).
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