




BMJ Open Impact of COVID-19 on health service utilisation in sub-Saharan Africa: protocol for a scoping review

Elliot Koranteng Tannor ^{1,2}, Wilm Quentin,^{3,4} Reinhard Busse ^{3,4}, Daniel Opoku ^{1,2,3}, John Amuasi^{1,2}

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¹School of Public Health, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

²Department of Global Health, German-West African Center for Global Health and Pandemic Preparedness, Kumasi, Ghana

³Department of Health Care Management, Technische Universität Berlin, Berlin, Germany

⁴Department of Health Care Management, German-West African Center for Global Health and Pandemic Preparedness, Berlin, Germany

Correspondence to

Dr Elliot Koranteng Tannor; elliottkannor@yahoo.co.uk

ABSTRACT

Introduction The COVID-19 pandemic has exposed weaknesses in health systems of many countries, including those in sub-Saharan Africa. Despite comparatively low rates of COVID-19 admissions and deaths in sub-Saharan Africa, the pandemic still had a significant impact by disrupting health service utilisation (HSU). The aim of this scoping review is to synthesise the available evidence on HSU in sub-Saharan Africa during the COVID-19 pandemic, especially focusing on (1) changes in HSU compared with the prepandemic period, (2) changes in HSU among particular patient groups studied and (3) identifying factors determining changes in HSU as a result of the COVID-19 pandemic.

Method and analysis The scoping review will be guided by the methodological framework for conducting scoping reviews developed by Arskey and O'Malley. We will identify relevant studies on HSU in sub-Saharan Africa during the COVID-19 pandemic using PubMed (MEDLINE), Embase, Scopus and Web of Science databases from 1 December, 2019 to 31 March 2023. We will search grey literature, government and organisational websites for reports and conference proceedings. Included studies will be restricted to those reported in English or French. Two reviewers will independently screen articles at the title and abstract stage for inclusion into full text screening. We will provide a general descriptive overview, tabular summaries and content analysis for the extracted data.

Ethics and dissemination Ethical approval is not required for the conduct of the scoping review. We will disseminate our findings via open access peer-reviewed journals and scientific presentations. Our scoping review findings will help to determine the feasibility of a subsequent systematic review (and meta-analysis) on HSU during the COVID-19 pandemic.

INTRODUCTION

The COVID-19 pandemic has had devastating consequences on health systems globally.¹⁻³ It has exposed weaknesses in health systems of many countries, especially in sub-Saharan Africa, where health infrastructure is relatively poor and density of skilled health workers is low.^{2,4} Despite reports showing comparatively low rates of COVID-19 hospitalisation and death in sub-Saharan Africa,⁵⁻⁷ the pandemic continues to significantly impact on health

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This scoping review will provide a comprehensive overview of studies on health service utilisation (HSU) during the COVID-19 pandemic conducted in sub-Saharan Africa.
- ⇒ The review will describe the settings, study designs and methods used by the included studies.
- ⇒ The review will identify reasons for changes in HSU in sub-Saharan Africa when reported.
- ⇒ The study will provide an overview of studies on communicable diseases, non-communicable diseases and injuries during the COVID-19 pandemic.
- ⇒ A potential limitation of our scoping review may be the inability to synthesise our findings to draw useful conclusions due to the broad research questions.

systems and on health service utilisation (HSU) in the region.^{8,9}

HSU is the process of seeking professional healthcare services, usually provided in the form of healthcare contacts, with the purpose of preventing or treating health problems.¹⁰⁻¹² HSU was affected by disruptions in health service provision during the COVID-19 pandemic, especially in low-income countries.^{8,13} A WHO survey found that almost all 135 included countries experienced some disruption of service provision, but the intensity of disruptions differed across countries (high income vs low income), service types (eg, emergency care vs elective surgery) and over the course of the pandemic (2020 vs 2021).¹⁴ Particularly in low-income countries, it led to a substantial decrease in the provision of essential healthcare services, including the management of non-communicable diseases (NCDs).¹³ These disruptions may ultimately be contributing to higher mortality of patients.¹⁵ Therefore, it is essential to better understand the impact of COVID-19 on HSU in sub-Saharan Africa.

The Andersen behavioural model¹⁶ provides a useful framework for the analysis of HSU mainly from patient perspective and may



sometimes be contextualised based on the study population.^{17 18} It includes both individual and contextual factors. Individual factors can be grouped into predisposing factors, enabling factors and need factors.^{16 19 20} The enabling factors such as socioeconomic status, income status and employment status changed during the pandemic and influenced HSU in sub-Saharan Africa.²¹ Fear of infection with COVID-19 may have also decreased the perceived need for HSU. Contextual factors may have included prioritisation of emergency services, introduction of COVID-19 services and increase in staff workload as well as lockdown measures prohibiting public transport or reducing available incomes.²²

The Andersen's conceptual model, however, has some context-specific challenges Law *et al*²³ argue the model may not give enough attention to cultural dimensions and social interactions but it is still a widely used conceptual framework for most studies on HSU.^{24–26} The Andersen's conceptual model over the years has undergone modifications to include those for vulnerable populations,²⁷ which may be relevant for sub-Saharan Africa. However, it has been used in describing HSU in patients with communicable diseases such as HIV/AIDS in Ghana,²⁴ antenatal care utilisation in sub-Saharan Africa²⁵ and to assess factors associated with COVID-19 testing in low-income countries in sub-Saharan Africa.²⁶

Previous research has shown changes in HSU globally^{28–32} with very few studies from sub-Saharan Africa. For example, a systematic review of 81 studies across 20 countries found that HSU decreased by about a third during the pandemic, but it included no study from Africa.³³ A mixed-methods study from Sierra Leone found that mean hospital admissions decreased by 14.7% in the first quarter of the pandemic, with the largest changes in surgical admissions (49.8%) and medical admission (28.7%). Another study involving six hospitals in four sub-Saharan Africa countries (Ethiopia, Sierra Leone, Tanzania and Uganda) reported a decrease in routine vaccinations, outpatient visits and hospital admissions but neither in antenatal visits nor institutional deliveries.⁸ A study in the Democratic Republic of Congo also reported a rapid reduction in HSU at the beginning of the pandemic with the size of the reduction being directly correlated with the intensity of the lockdown.⁹ However, other studies have also shown some increases in HSU^{34 35} or did not report any significant change in the reported HSU.^{36 37}

However, to the best of our knowledge, there is no systematic overview of the available literature on the impact of the COVID-19 pandemic on HSU in sub-Saharan Africa. In this scoping review, we aim to assess available evidence on HSU in sub-Saharan Africa during the COVID-19 pandemic especially focusing on (1) changes in HSU compared with the prepandemic period, (2) changes in HSU among particular patient groups studied and (3) factors determining changes in HSU as a result of the COVID-19 pandemic.

METHOD AND ANALYSIS

We will be guided by the methodological framework developed by Arksey and O'Malley in 2005 for conducting scoping reviews.³⁸ This framework has been approved by others including the Joanna Briggs Institute International Committee.^{39–42} It includes five main stages with an optional sixth stage. These stages are (1) identifying the research question, (2) identifying the relevant studies, (3) study selection,; (4) charting the data, (5) reporting the results and (6) consultation with stakeholders (optional). We will follow best practices for conducting and reporting systematic reviews, that is, we will apply the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols extension for Scoping Reviews (PRISMA-ScR) checklist for reporting our findings.^{43 44}

Stage 1: identifying the research question

Based on preliminary searches of the available literature, we have framed our research question in terms of the population to study, health service settings, measures and changes in HSU. The main research question is: 'What has been published about changes in HSU during the COVID-19 pandemic in sub-Saharan Africa?' We also aim at identifying the factors that determine the changes in HSU during COVID-19 in sub-Saharan Africa. We will use key themes expressed by Andersen^{16 20} to explore the determinants of HSU in sub-Saharan Africa including predisposing factors, enabling factors and need factors as discussed by the studies. Other questions to be addressed in this scoping review will be:

1. What populations have been studied in the published literature on HSU in sub-Saharan Africa during the COVID-19 pandemic? (eg, country of study, rural or urban, in-patient or outpatient, whole country or regions, categories of disease conditions, ie, NCDs such as diabetes, hypertension, heart disease, stroke and mental health programmes, etc, communicable diseases such as malaria, pulmonary TB and HIV/AIDS or injuries).
2. What methods have been used to study HSU in sub-Saharan Africa and measure the impact of COVID-19 on HSU? This includes definitions and measures of HSU (eg, preventive health (vaccination), outreach services, curative, surgical, rehabilitative health, telemedicine or telehealth; service utilisation reported increased, decreased or unchanged).
3. What factors have been explored as potential determinants of HSU during the COVID-19 pandemic in sub-Saharan Africa? These may include individual factors, community factors, health system factors or political factors, demand and supply related factors, predisposing, enabling and need related factors according to Anderson in the included studies.²⁰

Stage 2: identifying the relevant studies

To help answer our research questions, a comprehensive research strategy will be developed with the aim to extensively review all existing literature from 2019 to date.

Table 1 Key concepts, synonyms and related terms to be used in the search strategy

What is the impact of Covid-19 pandemic on health services utilisation in sub-Saharan Africa?				MESH terms	Search terms
Concept 1	Covid-19 pandemic	#1	MeSH "COVID-19"[Mesh]	OR	SARS-CoV-2 OR COVID-19 OR Coronavirus OR 2019-nCoV
AND					
Concept 2	Health Services utilisation	#2	MeSH "Facilities and service utilisation" [Mesh] "Health Services"[Mesh] "Patient Admission"[Mesh] "Ambulatory Care"[Mesh] "Immunisation Programmes" [Mesh] "Surgical Procedures, Operative"[Mesh] "Telemedicine"[Mesh]	OR	"Facilities and service utilisation" OR "Health Services" OR "Patient Admission" OR "Ambulatory Care" OR surgery OR Telemedicine OR "Health service" OR "Health service utilisation" or "Health service utilisation" OR "Hospital care" OR Admission OR Out-patient OR outpatient OR outreach service* OR Vaccination* OR immunisation OR Prescription OR medicine OR pharmac* OR antenatal OR postnatal OR "family planning" OR "Dental service" OR Nursing OR "nursing care" OR Telemedicine OR Telehealth OR Clinic OR Emergenc* OR Hospital OR Hospitalisation OR hospitalisation OR Endoscop* OR Scan OR Imaging OR Laboratory
AND					
Concept 3	Sub-Saharan Africa	#3	"Africa South of the Sahara"[Mesh]	OR	"sub-Saharan Africa" OR Angola OR Burundi OR "Central African Republic" OR Chad OR "Democratic Republic of Congo" OR Congo OR Rwanda OR Comoros OR Eritrea OR Ethiopia OR Kenya OR Madagascar OR Mauritius OR Seychelles OR Somalia OR Sudan OR Tanzania OR Uganda OR Botswana OR Eswatini OR Lesotho OR Malawi OR Mozambique OR Namibia OR "South Africa" OR Zambia OR Zimbabwe OR Benin OR "Burkina Faso" OR Cabo Verde OR Cameroon OR "Cote d Ivoire" OR "Ivory Coast" OR Equatorial Guinea OR Gabon OR Gambia OR Ghana OR Guinea OR Guinea- Bissau OR Liberia OR Mali OR Mauritania OR Niger OR Nigeria OR "Sao Tome and Principe" OR Senegal OR "Sierra Leone" OR Togo
	Final strategy	#4	#1 AND #2 AND #3		

MeSH, Medical Subject Headings .

We will identify relevant studies through a search of PubMed (MEDLINE), Embase, Scopus and Web of Science. We will also search grey literature, including government and organisational websites for reports on HSU during the pandemic, and conference proceedings using relevant resources. We will handsearch information from policy papers and position papers on HSU reports in all countries in sub-Saharan Africa. We will develop a comprehensive search strategy for PubMed and will refine this for the other databases.

Our search strategy will be built on the basis of synonyms related to three key concepts (see [table 1](#)): (1) "COVID-19 pandemic", (2) "health service utilisation" and related synonyms and (3) "sub-Saharan Africa" as the population of interest. We will employ the Boolean operators 'AND' or 'OR' to combine and refine terms as appropriate. We will use truncations and field tags to improve the efficiency of the search. Given the complex nature of HSU, we will use synonyms which capture various health services such as prescription, surgeries, antenatal clinic

Table 2 Inclusion and exclusion criteria for the scoping review

Criteria	Inclusion criteria	Exclusion criteria
Types of publications	Original research studies on health service utilisation	Guidelines, letters to the editor, research protocols and abstracts, recommendation
Types of studies	Single and multicentre studies Quantitative, qualitative and mixed-methods studies, grey literature reports	Multicentre studies with one country outside sub-Saharan Africa
Population of studies	Patients, healthcare providers and healthcare managers	
Types of interventions	Any reported intervention	
Comparators	Pre-pandemic health service utilisation if reported	
Types of outcomes	Health service utilisation Change in health service utilisation Patient reported outcomes	No clear report of health service utilisation
Language	English or French	All other languages
Data collection	Primary and secondary data	Systematic review, scoping review and literature reviews
Location of study	Sub-Saharan African countries Hospital based, community based or online studies	
Timelines	1 December 2019–31 March 2023	Studies before 1 December 2019

or care, dental services, clinic, admissions, consultations, emergency visits, hospital visits, nursing services, endoscopy, scan and imaging (table 1). The Medical Subject Headings (MeSH) for sub-Saharan Africa and the list of all the 46 countries in sub-Saharan Africa will be included in the search. The COVID-19 pandemic will be the COVID-19 (MeSH) and synonyms including SARS-CoV-2 used in the search (table 1).

The Covidence systematic review software⁴⁵ will be used for the screening of titles and abstracts as well as full text review. All reviewers will be given access to the software for independent screening of the articles for inclusion.

Stage 3: study selection

Title and abstract screening

We will include studies, in English or French, that report on HSU in sub-Saharan Africa during the COVID-19 pandemic. The period of the COVID-19 pandemic will be operationally defined as from 11 March 2020 (when the WHO declared the pandemic)⁴⁶ to 31 March 2023. Articles to be included in the study should satisfy the criteria given in table 2.

Following the PRISMA-ScR, we will illustrate the process of study identification and selection as in figure 1.

Two reviewers will independently screen all identified citations from the databases after duplicates are removed for potential inclusion into the scoping review. Disagreements between the two reviewers will be resolved by the involvement of a third reviewer who will vote independently. The screening of titles and abstracts will be used to decide which studies will be eligible for full text review at this stage. The detailed full text review will be done after the screening for extraction of the relevant data with the Covidence Software.⁴⁵

Stage 4: data extraction

Results from the search extracted from the Covidence Software⁴⁵ will be exported to Microsoft Excel for analysis. We will follow the recommended data charting method proposed by Arksey and O'Malley³⁸ to extract the relevant details of included studies. Double extraction will be used for a randomly selected 10% of the included studies, and any conflicts will be resolved by a third reviewer.

We will follow three main themes:

1. The population of study: country of study, region in sub-Saharan Africa, World Bank country classification, rural or urban, hospital based or outside hospital setting or outreach services, inpatient admission or outpatient contacts; categories of disease; non-communicable (eg, cardiovascular diseases, diabetes and cancers), communicable diseases (eg, HIV/AIDS, tuberculosis, Malaria) or injuries.
2. Methods of studies: definition, measures of HSU used, quantitative and/or qualitative analyses performed and measures of impact: patient or provider perspective, qualitative or quantitative study; study on preventive health (vaccination and screening) or curative health or rehabilitative health. Reported change in HSU (increase, decrease or unchanged).
3. Factors associated with or determinants of changes in HSU: determinants and factors associated with HSU (individual factors, community factors, health system factors, political factors) or predisposing, enabling and need factors according to Anderson.²⁰

All the extracted data will be reviewed to ensure completeness and accuracy before analysis. Any themes that might emerge from the search will be included in the extraction and analysis.

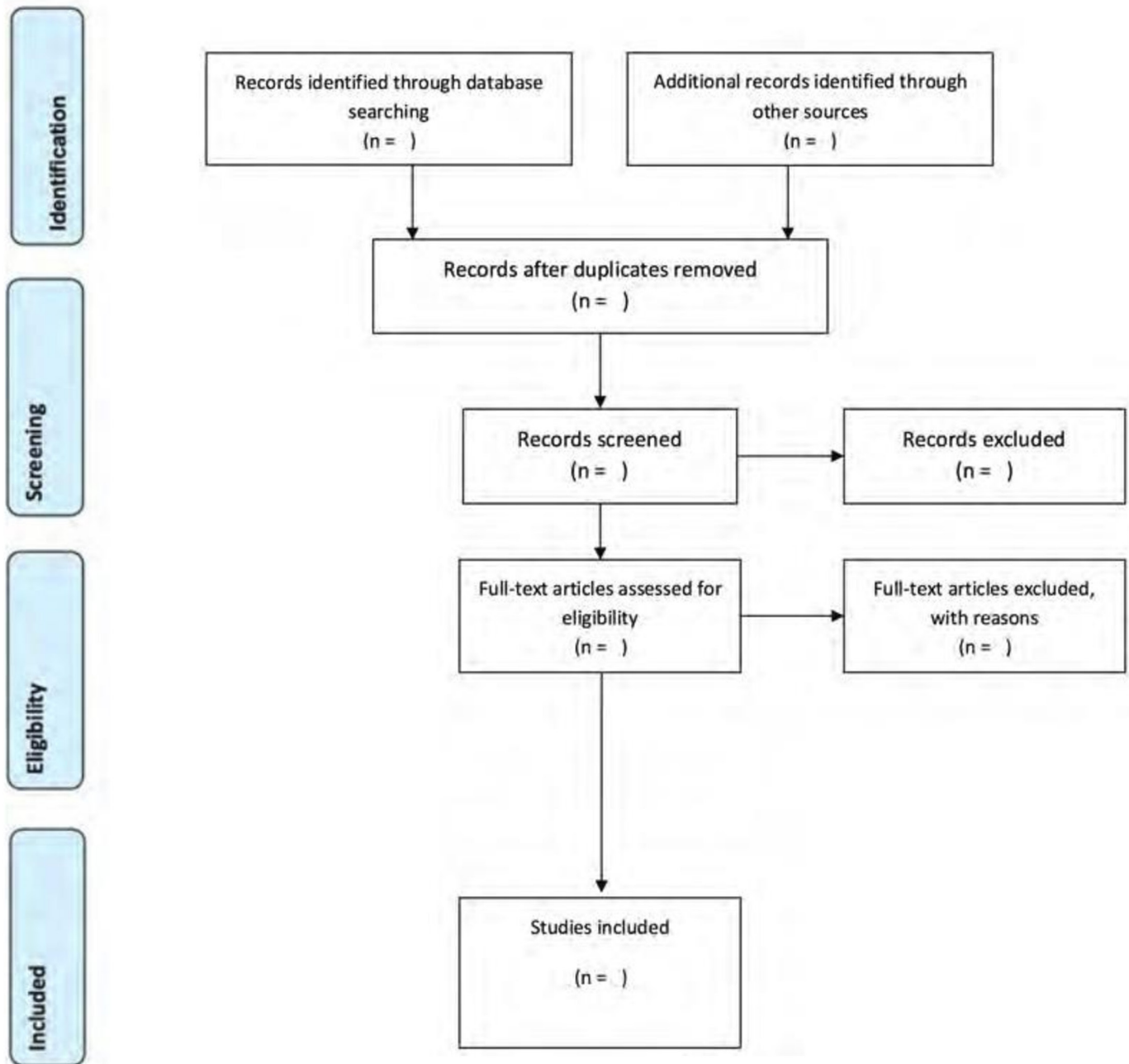


Figure 1 Template PRISMA diagram. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Stage 5: collating, summarising and reporting of the results

We will follow the recommendation to extend the scoping review process by adding thematic analysis.³⁹ We will analyse the extracted data both quantitatively using both deductive (predefined themes above) and inductive approaches, incorporating any new themes that will emanate from the included studies in the scoping review. The primary analysis data will be based on the three main themes:

- ▶ Population and study characteristics.
- ▶ Definition, measures and impact of HSU.
- ▶ Determinants and factors associated with change in HSU.

This approach recommended by Levac *et al*³⁹ will enable us to answer broader questions based on the available data and get new findings which we previously did not anticipate. Although we will collect specific quantitative data when available, we will not pool the data for further analysis but will—if there is a sufficiently large number of studies using similar methods—explore the potential for a further systematic review with possible meta-analysis. We would report most of the finding as categorical data and describe the findings with text and/or figures as deemed appropriate.

Patient and public involvement

None.

ETHICS AND DISSEMINATION

Ethical approval is not required for this scoping review as the data used for the analysis will be extracted from published studies. We will disseminate our findings through scientific presentations at local and international conferences, open access peer-reviewed journals and a report.

DISCUSSION

Findings from our scoping review will enable us to examine the extent, range and nature of available studies on HSU in sub-Saharan Africa and enable us to determine the changes in HSU during the COVID-19 pandemic. We will also be able to identify the populations and characteristic of studies on HSU. The number of studies conducted in sub-Saharan Africa will determine the feasibility of a follow-up full systematic review after the scoping review.

The findings of our scoping review will also enable us to understand the methods used to assess HSU in sub-Saharan Africa, the settings studied, the disease categories reported (NCDs, communicable diseases or injuries), level of management (preventive, curative, rehabilitative and palliative) and the scope of HSU. We anticipate that this study will help identify the factors that can potentially influence HSU from both the patients' and health service providers' perspectives. The findings from this scoping review will enable us to ask more specific questions to inform further studies on HSU for better pandemic preparedness for governments, policy-makers and healthcare providers in sub-Saharan Africa. This may lead to changes in healthcare policies that will lead to improved HSU even in pandemic situations to improve health outcomes. Possibly, we will be able to contribute to harmonisation of definitions and measurements of HSU in sub-Saharan Africa.

Finally, findings from our study will contribute to understanding the effects that the pandemic had on specific populations, which may help to better prepare for future pandemics by putting in place safeguards for these population groups.

A potential limitation to our scoping review may be the inability to synthesise our findings to draw useful conclusions from included studies due to the broad nature of research questions and concepts. Another limitation could be that we may miss relevant studies due to publication bias in our literature search and the exclusion of studies not available in English or French. Additionally, there might very few rigorously conducted studies reporting changes in HSU in sub-Saharan Africa during the COVID-19 pandemic among the included studies. A further limitation of our study is that we will not engage any stakeholder or beneficiary as part of the scoping review, although the Andersen model chosen as the conceptual framework is primarily a patient perspective framework.

Twitter Elliot Koranteng Tannor @elliottkannor

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Contributors EKT, WQ, RB and DO conceived the study design. The first version of the protocol was drafted by EKT and was revised by EKT, WQ, RB, DO and JA. Search strategy was developed by EKT and revised by WQ and RB. EKT and DO will perform the screening, study selection and extraction of data of the included studies. All authors revised and critically reviewed the manuscript and approved before submission.

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Competing interests None declared.

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

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ORCID iDs

Elliot Koranteng Tannor <http://orcid.org/0000-0002-5978-0510>

Reinhard Busse <http://orcid.org/0000-0003-4961-9130>

Daniel Opoku <http://orcid.org/0000-0002-6562-1583>

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