The Cameroon Health Research and Evidence Database (CAMHRED): tools, methods and application of a local evidence mapping initiative

Clémence Ongolo-Zogo (clemence.ongolozogo@mail.utoronto.ca)
University of Toronto Faculty of Medicine: University of Toronto Temerty Faculty of Medicine https://orcid.org/0000-0001-8624-5006
Hussein El-Khechen
: McMaster University Department of Health Research Methods Evidence and Impact
Frederick Morfaw
: McMaster University Department of Health Research Methods Evidence and Impact
Pascal Djiadjeu
: McMaster University Department of Health Research Methods Evidence and Impact
Babalwa Zani
UCT: University of Cape Town
Andrea Darzi
McMaster University Department of Health Research Methods Evidence and Impact
Paul Wankah Nji
University of Sherbrooke: Universite de Sherbrooke
Agatha Nyambi
OHTN: Ontario HIV Treatment Network
Andrea Youta
GU: Georgetown University
Faiyaz Zaman
University of Toronto Temerty Faculty of Medicine
Cheikh Tchouambou Youmbi
University of Toronto Temerty Faculty of Medicine
Ines Ndzana Siani
McMaster University Department of Kinesiology
Lawrence Mbuagbaw
McMaster University Department of Health Research Methods Evidence and Impact

Research

Keywords: evidence mapping, knowledge translation, contextualisation, gap map analysis, Cameroon

Posted Date: August 25th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1956595/v1

Version of Record: A version of this preprint was published at Health Research Policy and Systems on June 19th, 2023. See the published version at https://doi.org/10.1186/s12961-023-01007-4.

Abstract

Background: Local evidence is important for contextualized knowledge translation. It can be used to adapt global recommendations, to identify future research priorities and inform local policy decisions. However, there are challenges in identifying local evidence in a systematic, comprehensive, and timely manner. There is limited guidance on how to map local evidence and provide it to users in an accessible and user-friendly way. In this study, we address these issues by describing the methods for the development of a centralized database of health research evidence for Cameroon and its applications for research prioritization and decision making.

Methods: We searched 10 electronic health databases and hand-searched the archives of non-indexed African and Cameroonian journals. We screened titles, abstracts, and full texts of peer reviewed journal articles published between 1999 and 2019 in English or French that assess health related outcomes in Cameroonian populations. We extracted relevant study characteristics based on a pre-established guide. We developed a coding scheme or taxonomy of content areas so that local evidence is mapped to corresponding domains and subdomains. Pairs of reviewers coded articles independently and resolved discrepancies by consensus. Moreover, we developed guidance on how to search the database, use search results to create evidence maps and conduct knowledge gap analyses.

Results: The Cameroon Health Research and Evidence Database (CAMHRED) is a bilingual centralized online portal of local evidence on health in Cameroon from 1999 onwards. It currently includes 4384 studies categorized into content domains and study characteristics (design, setting, year and language of publication). The database is searchable by keywords or through a guided search. Results including abstracts, relevant study characteristics and bibliographic information are available for users to download. Upon request, guidance on how to optimize search results for applications like evidence maps and knowledge gap analyses is also available.

Conclusions: CAMHRED (https://camhred.org/) is a systematic, comprehensive, and centralized resource for local evidence about health in Cameroon. It is freely available to stakeholders and provides an additional resource to support their work at various levels in the research process.

Background

Research is an integral aspect of health systems and when used appropriately, it may inform optimal decision-making in health care and policy. (1–3) In the World Health Organisation African region (AFRO), recognition of the importance of health research for health system strengthening led to the Algiers Declaration and the Bamako Call to Action on research for health. (4,5) Subsequently, initiatives were established to set common objectives within the region and evaluate national efforts to achieve them. These included the regional committee's research for health ten-year strategies and the national health research systems (NHRS) barometer.(3,5)

Since its inception in 2016, the NHRS barometer has provided a comparable measure of African countries' performance in general and within specific functional domains.(3)One of these functional domains, highlights the responsibility of the NHRS for producing research and ensuring its use.(3,6,7) However, research productivity varies across countries, both in terms of the type of research produced and the questions addressed.(8–10) For instance, crude measures of research productivity indicate that sub-Saharan African countries continue to lag behind compared to other regions.(8–11) This may be due to challenges related to insufficient financial and technical capacity for research which is reflected in the lower number of publications from researchers affiliated with countries such as Cape Verde or Mauritania among others.(8,9) Collaborations between international and local researchers have proven useful in tackling such challenges and helping to address research gaps in this context.(10,12,13) However, barriers to accessing and using the results of these research collaborations remain.(13–15)

Using evidence to inform decisions made by clinicians and policymakers is dependent primarily on the type of research produced. In fact, the study designs and types of evidence needed to clarify a question or problem, or to support a decision related to the adoption or implementation of an intervention or policy option differ. For example, while observational studies can help to appraise and characterize the burden of a specific condition in a given population, they may not be the best type of evidence to support decisions about the choice of interventions required in a specific setting.(16) In the latter situation, other types of studies like randomized trials or cost effectiveness studies are more appropriate. However, national capacity to fund and produce such studies is not optimal in all countries and regions.

In countries with developing NHRS like Cameroon, global evidence and recommendations often fill the gaps for the type of evidence needed to support decision-making.(17,18) However, contextualization or adaptation of evidence from these sources is necessary prior to implementation.(17–19) For instance, the World Health Organization produces health system guidance to support national policy development and clinical guidelines for clinical care in Cameroon. (20,21) Prior to the release of new recommendations, contextualisation and adaptation is often conducted through multi-stakeholder development workshops. Ideally, local evidence should be at the crux of these adaptation processes as it is needed to clarify problems and burden of disease; assess intervention options; examine implementation considerations and monitor the subsequent effects.(18,22) This local evidence can be in the form of program evaluations, costing studies, qualitative studies on views, values and preferences, community surveys, practitioners' surveys, administrative health databases and routine program surveillance data. (17,22,23)

A systematic approach to identifying and using local evidence is also important for contextualization.(22) However, there are challenges to finding and synthesising such evidence, as demonstrated by pilot attempts at country-specific research synthesis for Cameroon.(24,25) Research output from Cameroon is often published in journals which are not indexed on common databases like Web of Science, Scopus or MEDLINE.(25) Furthermore, the archives of such journals are not easily searchable or accessible in some cases. Finally, there is a paucity of research being conducted on some research topics or using certain research designs; such that local evidence is simply not available.(24,25) All these issues can be threats to systematic and comprehensive identification and use of local evidence for contextualization.

To address the challenges listed above, we propose a local evidence mapping initiative. Evidence mapping has previously been used to scope broad topic areas using evidence from a variety of sources (i.e., impact evaluations, systematic reviews, and primary research).(26–29) More recently, this synthesis method has been used to provide clinicians and decision makers with centralized access to rapidly changing clinical guidelines and recommendations for COVID19.(30) This methodology provides visual or graphical representations of what research is available on a specific topic, theme, policy domain or broad research question. Extensions or applications of evidence mapping complete the picture by telling us what the research says or doesn't say. These include other synthesis methods like reviews and evidence gap maps respectively. The advantages of applying these methodologies to the Cameroonian health research system context are multifold. First, they can help ensure that research funding is not wasted by duplicating research or producing research which is not used (never read, never cited, or considered in decision making). Secondly, they can inform the development of future research priorities based on evidence gaps. Finally, they can promote timely access to local evidence needed to clarify problems or implement policies or interventions.(26)

Objectives:

The objective of this study is to advance the methods for identifying, mapping, and using local evidence through the development of a database for health research and evidence for Cameroon. Specific objectives include:

1. To develop a protocol for searching and categorizing country specific health literature.
2. To develop a protocol for adapting evidence mapping methods for local rather than global evidence mapping, synthesis and gap analysis based on stakeholder-driven questions.
3. To implement these protocols to create a searchable database of health research for Cameroon.

Methods

We used evidence mapping design which combined systematic, scoping and bibliometric analysis methods to identify and categorize health literature from Cameroon. In addition, we tailored the Global Evidence Mapping (GEM) initiative protocol (31) to conduct a case study of application of local evidence mapping in Cameroon.

1. Searching and selecting relevant studies

i. Eligibility

a. Types of studies

We included quantitative (experimental, observational), qualitative, and mixed methods studies. We also included primary and secondary research focusing on health states, health outcomes, health systems, health policy, medicine, nursing and allied health professions, social determinants of health, health economics, human genetics.

b. Types of participants

We included studies focused primarily on Cameroonian populations.

ii. Search strategy

From October 2018 to May 2019, we searched 10 electronic health databases (Excerpta Medica Database EMBASE, MEDLINE via OVID , Cumulated Index to Nursing and Allied Health Literature, CINAHL, Allied and Complementary Medicine Database AMED, Latin American and Caribbean Health Sciences Literature (LILACS), PSYCINFO, Base de Données de Santé Publique (BDSP), Archive ouverte en Sciences de l'Homme et de la Société (HAL-SHS), Base de données Persée and Erudit). We hand searched the archives of non-indexed African (African Journals Online) and Cameroonian journals (Health Sciences and Disease, Revue de Medecine et Pharmacie, Clinics in Mother and Child Health, African Journal of Integrated Health). Our search terms included Cameroon, Cameroun and Kamerun. We restricted searches to English and French articles published from 1999 to 2019.

iii. Selection of studies

We screened all search results and excluded ineligible studies based on title and abstracts using the Rayyan application.(32) We retrieved full-text articles of all remaining studies and screened these articles for inclusion using DistillerSR (Evidence Partners, Ottawa, Canada).(33)

2. Categorizing relevant studies according to characteristics and content

i. Data extraction and management

We used DistillerSR to extract data on study characteristics presented in Table 1.

Table 1

Data extraction details

Study Characteristic	Details
Language	English, French
Publication status	Full text publication, manuscript abstract, conference abstract or published abstract
Unique identifier	first author last name, year
Country of affiliation of the first author	based on the location of their host institution. For first authors with multiple affiliations, the first affiliation was selected
Contact information	email preferably
Level of access	reported as open access or restricted
International collaboration	defined as any co-author with a non-Cameroonian affiliation
Study location	one of the ten regions of Cameroon
Study period	reported as the month/year at the start and end of the study.
Study design	reported as experimental (randomized controlled trials, non-randomized study of interventions), observational (case study, case series, case control, cross sectional, cohort, retrospective review), qualitative, mixed methods, and secondary analysis.
Funding	reported as public, private, self-funded, none

ii. Coding scheme or taxonomy

We developed a coding scheme to label included articles and create a searchable database. The coding scheme comprised domains and subdomains guided by existing taxonomies such as the health topics used by the WHO (www.who.int/health-topics) and the Health Systems Evidence Database (healthsystemsevidence.org) at McMaster Health Forum (See Appendix 1).

Pairs of reviewers coded each article independently and resolved discrepancies by consensus. Each article could fit into multiple categories and the exercise of coding was designed to ensure that articles were allocated all relevant codes.

Results

1. Searching and selecting relevant studies

Our search resulted in 20091 records. After duplicate removal, title and abstract screening, 4412 were excluded and 5549 were assessed for eligibility based on the inclusion criteria described above. We extracted data on 4384 eligible studies and mapped their content onto our pre-established coding scheme.

(Insert Figure 1)

2. Categorizing relevant studies according to characteristics and content

i. Study characteristics

The following study characteristics were retained and made available on the database for every article: year of publication, language, study location and study design. There has been an increase in the mean annual number of peer-reviewed publications in Cameroon during our study period. Most studies in the database were published in English (n=3494, 79.7%), conducted in the Centre region (n=1972, 45.0%); with an observational study design (n=3144, 71.7%) (See Table 2 and Figure 2)

Table 2

Study Characteristics

Characteristics	N (%)	
Language, N (%)		
English	3494	(79.7)
French	890	(20.3)
Study Location		
Adamawa	195	(4.4)
Centre	1972	(45.0)
East	211	(4.8)
Far North	226	(5.2)
Littoral	747	(17.0)
North	216	(4.9)
North West	480	(10.9)
South	239	(5.5)
South West	561	(12.8)
West	331	(7.5)
Nationwide	90	(2.1)
Not reported	812	(18.6)
Study Designs		
Experimental	250	(5.7)
Observational	3144	(71.7)
Secondary Analysis	283	(6.5)
Qualitative	181	(4.1)
Mixed Methods Studies	88	(2.0)
Other	437	(10.0)

(Insert Figure 2)

ii. Content

The full CAMHRED coding scheme or taxonomy consists of 10 main domains divided into subdomains. Each domain represents a content category used to describe the focus of research output from Cameroon. These domains include Disability, Diseases and Health Conditions, Health Systems, Medical Specialties, Pharmaceutics, Public Health, Providers, Population, Social Determinants of Health, Sexual and Reproductive Health.

The top four most coded domains in the CAMHRED were Diseases and conditions (n = 3524, 80.4%); Medical Specialties (n=3903,89.0%); Population (n = 2267,51.7%) and Public Health (n =2253,51.4%). Within these domains, the most common subdomains were Infectious and parasitic diseases (n = 1194, 27.2%); Infectiology (n = 2005, 45.7%); Children (n = 654,14.9%); Disease surveillance (n = 1661,37.9%) respectively. Subdomains within the same domain were not mutually exclusive.

Case study: using the database for local evidence mapping and knowledge gap analysis

We adapted the global evidence mapping core tasks and steps (see figure 3) to conduct an evidence gap analysis on sexual and reproductive health in Cameroon. We used the database to identify relevant studies to produce gap maps and recommendations for future research. A summarised account of the methods we used is available below and can inform future protocols for local evidence mapping.

(Insert Figure 3)

i. Developing questions

We used a list of research priorities drawn up by researchers and stakeholders during a deliberative dialogue on sexual and reproductive health in Cameroon in April 2018.(34) Other sources for broad themes which can inform question development include:

- National health priorities available through Ministries of Health, National health policy and strategy documents,
- Consultations, online surveys, evidence mapping workshops with expert and stakeholders

- Preliminary literature searches

It might be necessary to convert broad themes from the sources above into specific research questions depending on the intended use. Research questions might differ depending on whether you are creating an evidence gap map or conducting a narrative synthesis.

For our case study, we selected the following research question from the stakeholder dialogue: “what is the contraceptive prevalence among adolescents in Cameroon?” To conduct an evidence, gap analysis, we transformed this question into “what are the gaps in research on contraceptive prevalence among adolescents in Cameroon?”

ii. Prioritisation

Prioritisation of research questions can be a formal or informal process. Specific questions might be prioritized based on salient issues from stakeholders’ perspective or the availability of funding to address a specific population or problem.

Specific populations identified based on stakeholder concerns (particularly decision makers) included adolescents, persons living in rural areas and regions with poor sexual and reproductive health indicators. (Reference stakeholder dialogue report)

iii. Searching and selecting studies

Our search strategy was based primarily on a keyword search of the main concepts from our research question. We conducted the search exclusively in CAMHRED 1.0 (https://camhred.org/) as the database provided a comprehensive one-stop-shop for health research and evidence from Cameroon. (35)

There are two main options for searching CAMHRED. The first is a free text search which involves searching combinations of keywords relevant to your research question and selecting filtering parameters (language, year, province, study design) based on your inclusion criteria. For example, searching “co*ntraception” OR “family planning”* will yield all articles in which the terms family planning or contraception are mentioned in the title or abstract, in French or English. (See Appendix 2 for screen captures from the database)

The second option is a guided search which takes advantage of the content taxonomy used to categorize articles in the database.

For example**:**

Select content domains: Sexual and Reproductive Health > Subdomain: Contraception, Family Planning

Check content domains : Population > subdomain : adolescents (optional)

This search will yield all the articles tagged as “Contraception” or “family planning” within the topic of “Sexual and Reproductive Health” and in which the population of interested was “Adolescent and Youth”.

For our case study, we used the guided search and retrieved 174 studies coded as contraception OR family planning. Applying the population (adolescents and youth) code resulted in 68 studies including 10 studies which had been coded both as contraception and family planning. The results were downloaded as CSV files from the database for full text screening and data extraction. After excluding studies not available as full text (n= 6) and those in which contraceptive prevalence was not measured (n = 8); we included 44 studies for our evidence maps and gap analysis. A detailed description of the methods and results for our case study is reported elsewhere. (36)

iv. Data extraction and creating evidence maps

After downloading search results as CSV format, we created a mapping protocol to determine further inclusion criteria, full text procurement, data extraction modalities and analysis relevant to the prioritized research question as detailed in Appendix 3.

The complete results of our evidence mapping, and gap analysis are reported elsewhere.(36) However, we have included illustrations of the findings here to provide a glimpse into the applications of local evidence mapping. For instance, we identified knowledge gaps on the contraceptive prevalence of adolescents within specific age categories, regions and places of residence (urban versus rural). We found that there is paucity of disaggregated data on contraceptive use among young adolescents (10-14 years old) and there are geographical and residential disparities (rural areas) in the availability of data.

(Insert Figure 4)

In addition to identifying gaps in the literature, we were able to make recommendations for future research including suggestions on the type of study design, content (research question) and reporting.

(Insert Figure 5)

Discussion

Our local evidence mapping initiative produced a database of 4384 peer reviewed research articles spanning twenty years of health research in Cameroon. The first iteration of CAMHRED (https://camhred.org/) went live in December 2020 and provides a centralized and searchable online portal with studies categorized into content domains and study characteristics (design, setting, year and language of publication). The database is searchable by keywords or through a guided search. Search results including abstracts, relevant study characteristics and bibliographic information are available for users to download.

Most studies included in the database are observational studies, conducted in the Center region where most research capacity is currently concentrated. Our case study demonstrates that CAMHRED can be used to create evidence gap maps and make recommendations for future research on stakeholder-driven priorities. Insights from the researchers involved in developing and using this tool as well as preliminary feedback from target users have informed this discussion about lessons learnt, strengths, limitations, future updates, and next steps for local evidence mapping in Cameroon.

Bibliometric analysis of the research included in the database, reveals an increase in health research output – measured as the annual number of publications. These findings are in keeping with a general improvement in the NHRS in Cameroon across all four domains(19).Harnessing the increasing research output from Cameroon to help inform decisions made locally by clinicians, policymakers and patients is even more relevant now given rapidly changing global recommendations in a pandemic context. A solid understanding of what local evidence is already available and what type of research (content and study design) is needed in the future will help inform practice and future research. CAMHRED provides a one-stop shop to achieve these objectives but is not intended as a substitute for other evidence sources and comprehensive search strategies for systematic reviews, evidence briefs, rapid reviews, and responses. Instead, we suggest using the database as a tool to ease and support discussions surrounding problem definitions and implementation considerations for evidence-informed interventions within a Cameroonian context.

CAMHRED is a comprehensive tool because of an extensive search strategy with sixteen databases, repositories and non-indexed journals included. Throughout the searching phase, it became evident that databases and repositories like Erudit, Persée, BDSP and HAL-SHS are useful portals to quickly identify research conducted in French or French abstracts for research published in other languages. This was important for our database as we intended on CAMHRED being a bilingual database. We noted an overlap across these French databases and other databases included in our search strategy (EMBASE, MEDLINE). This may have contributed to the large number of duplicates identified at the screening phase. We also included research published in peer reviewed journals which are currently not indexed in common electronic databases. Our experience confirmed findings from previous attempts at country-specific evidence synthesis for Cameroon which highlighted barriers to accessing local evidence housed in journals with non-searchable archives (25). We hand searched four such journals with relevant health research in Cameroon and included them into the database. This will help users identify literature they would have had to previously hand search. Therefore, CAMHRED can also play a role in conducting timely yet comprehensive literature searches and reviews targeting health in Cameroon. Since the launch of the database, one of such journals (Health Sciences and Disease) has enabled an electronic search of its archives which will facilitate our next update.

This study is a steppingstone for other local evidence mapping initiatives in Cameroon and countries with similar national health research systems. The applications of such initiatives are dependent on target user categories (funders, decisionmakers, students, researchers) and their objectives (research or funding prioritisation, knowledge translation, local planning or decision making, literature reviews for primary or secondary research). For instance, knowledge brokering organizations active at the interface between research and decision making in Cameroon, have described using evidence mapping to provide context-specific policy options and inform priority setting exercises.(34, 37–39) Partnerships between the CAMHRED team and such organisations could help them meet the time-sensitive demands of their work while retaining or even improving on a systematic approach to identifying and using local evidence. In addition, the experience from Cameroon can also help establish similar initiatives in other countries by leveraging existing networks and relationships such as the Cochrane African Network (especially its Francophone hub with headquarters in Cameroon) (40) Ultimately, tools like CAMHRED and capacity building in local evidence mapping can also contribute to improving the production and use of research for health in countries which have already shown commitment to improving their national health research systems.

Our work also contributes to the growing literature on the methodology to guide evidence mapping which is currently marred by lack of consensus and the absence of guidelines such as those present for systematic reviews.(28, 29) To the best of our knowledge, there are no mapping protocols for local evidence, specifically. While we followed and modified the GEM initiative protocol(31) to fit our objectives, we also had to blend systematic, scoping and bibliometric analyses techniques to identify and characterise broad research areas from a specific setting (Cameroon). Thus, the CAMHRED protocol provides preliminary guidance on adapting existing global evidence mapping methods to support local evidence mapping and gap analysis.

Developing CAMHRED was not without challenges. As the first iteration of a country-specific database spanning twenty years; the breadth of health-related topics and research output to review, categorize and describe was large. Our approach and methods were both resource-intensive and time-intensive posing challenges for the first iterations of country-specific databases elsewhere. It took us a year from our last searches to coding completion and another six months before the database was ready for our first online launch. Other resource implications included software license purchases, staff time and IT costs. For instance, our initial search strategy resulted in thousands of articles which needed to be deduplicated prior to screening. Software such as Rayan and DistillerSR were instrumental in such de-duplication while research staff and volunteers contributed several hours to screening, data abstraction and coding. While the resulting product is comprehensive in content; feasibility and sustainability should be considered seriously prior to engaging in similar initiatives in other countries. In terms of sustainability, frequent updates to the database's content are expected with a timeline model, based on our experiences with the first iteration. We anticipate that the process of updating the database should take anywhere between three and six months, provided there is commitment from at least two pairs of reviewers. Preparations for our next iteration of the database are currently underway with an updated search and new features. We will be revising our search strategy to reduce duplication from overlapping databases as seen in our first iteration. We are also exploring automation tools to reduce the burden of manual screening and classification. (41)

Most content categories in CAMHRED were based on existing taxonomies (WHO health topics, McMaster Health Forum Health Systems Evidence Database) and categories from one domain, SRH, were inspired by stakeholder priorities. In other words, input from target users outside the research team was not included during the development of this taxonomy. This decision was based on time constraints and the assumption that these existing classification schemes were widely known and accepted. However, understanding of the domains and subdomains were expected to influence user experience and usefulness of the database. This was confirmed by preliminary user feedback following our first launch. To address these concerns, a thorough and detailed

version of our user guide will be included in the next update as well as opportunities for training workshops with target users. We will also explore consensus and stakeholder engagement options for the addition of new topics to the database.

The next update of CAMHRED's content and user interface is scheduled for 2022. In this new version, we hope to address preliminary user feedback such as: keyword search sensitivity; user interface (colors, accessibility); access to full text sources; and the availability of RIS file downloads. New features to expect include an expanded taxonomy (new COVID-19 domain) and a resources page (tutorials, webinars, user guides templates for mapping products and completed maps). We are also working on establishing formal partnerships with research and policy platforms such as Cochrane Cameroon with the following objectives: increasing stakeholder buy-in; setting up a request and rapid response mechanism for evidence maps and gap maps; and formal evaluations.

Conclusion

CAMHRED is a systematic, comprehensive, and centralized resource for local evidence about health in Cameroon. It is freely available to stakeholders and provides an additional resource to support their work at various levels in the research process. The development of CAMHRED is an important milestone for the health research system in Cameroon. The database provides a window into national production of research for health over the last two decades – which is an important measure of the country's health research system's performance. The database and its applications also provide unique opportunities for contextualised evidence-informed decision-making. In the context of rapidly changing global guidelines and recommendations, the need for local evidence is even more salient to ensure that interventions, policy options and decisions are suited to the Cameroonian population and its health system.

Declarations

Ethics approval and consent to participate:

Not applicable

Consent for publication

Not applicable

Availability of data and materials

Not applicable

Competing interests

None

Funding

The first author received funding in the form of graduate student stipends from the Queen Elizabeth Scholarship in Strengthening Health and Social Systems and the Canadian Institute of Health Research

Authors' contributions

COZ and LM designed the study. All authors contributed to manuscript development.

Acknowledgements

We would like to acknowledge the following people for their contribution to this work: Dr Joseline Zafack; Jassimar Kochhar; Neema Francis; Rosain Stennett; Sehely Rahman, Tejan Baldeh, Oluwatoni Makanjuola.

Dr Kaelan Moat, Dr. Elizabeth Alvarez, and Dr. Robby Nieuwlaat for constructive supervision and feedback.

References

1. Barnes RO, Holmes BJ, Lindstrom R, Trytten C, Wale MCJ. Evidence-informed healthcare through integration of health research. Healthc Manage Forum [Internet]. 2015 Mar;28(2):75–8. Available from: http://journals.sagepub.com/doi/10.1177/0840470414562637
2. Pantoja T, Barreto J, Panisset U. Improving public health and health systems through evidence informed policy in the Americas. BMJ [Internet]. 2018 Jul;362:k2469–k2469. Available from: https://www.bmj.com/content/362/bmj.k2469
3. Kirigia JM, Ota MO, Senkubuge F, Wiysonge CS, Mayosi BM. Developing the African national health research systems barometer. Health Res Policy Syst [Internet]. 2016 Dec;14(1):53–53. Available from: https://doi.og/10.1186/s12961-016-0121-4
4. World Health Organisation, Regional Commitee for Africa. Framework for the implementation of the Algiers Declaration on research for health in the African Region. 2009 Mar; Available from: https://apps.who.int/iris/handle/10665/92233
5. World Health Organisation, Regional Commitee for Africa. Research for health: a strategy for the African Region, 2016-2025: report of the Secretariat [Internet]. 2016 Nov. Available from: https://apps.who.int/iris/handle/10665/204490

6. Pang T, Sadana R, Hanney S, Bhutta ZA, Hyder AA, Simon J. Knowledge for better health - A conceptual framework and foundation for health research systems. Bull World Health Organ. 2003;81(11):815–20.
7. Hanney SR, González Block MA. Building health research systems to achieve better health. Health Res Policy Syst [Internet]. 2006 Dec;4(1):10–10. Available from: https://health-policy-systems.biomedcentral.com/articles/10.1186/1478-4505-4-10
8. McKee M, Stuckler D, Basu S. Where There Is No Health Research: What Can Be Done to Fill the Global Gaps in Health Research? PLoS Med [Internet]. 2012 Apr;9(4):e1001209–e1001209. Available from: https://dx.plos.org/10.1371/journal.pmed.1001209
9. Diop S, Asongu SA. Research Productivity: Trend and Comparative Analyses by Regions and Continents. J Knowl Econ [Internet]. 2022 Feb 15 [cited 2022 Aug 12]; Available from: https://link.springer.com/10.1007/s13132-022-00934-x
10. Eniayejuni A. Scientific Research in West Africa and the Impact of International Collaboration: An Analysis in Scopus Database, 1997-2017. Afr J Libr Arch Inf Sci [Internet]. 2020 Jun;30(1):1–14. Available from: https://www.ajol.info/index.php/ajlais/article/view/196563
11. Kirigia JM, Ota MO, Motari M, Bataringaya JE, Mouhouelo P. National health research systems in the WHO african region: Current status and the way forward. Health Res Policy Syst [Internet]. 2015 Oct;13(1):1–14. Available from: https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-015-0054-3
12. Hedt-Gauthier BL, Jeufack HM, Neufeld NH, Alem A, Sauer S, Odhiambo J, et al. Stuck in the middle: a systematic review of authorship in collaborative health research in Africa, 2014–2016. BMJ Glob Health [Internet]. 2019 Oct;4(5):e001853–e001853. Available from: http://gh.bmj.com/lookup/doi/10.1136/bmjgh-2019-001853
13. Oliver J, Young T. What can The Cochrane Collaboration do to support people living in developing countries? A survey. In: Colloquium Abstracts [Internet]. Melbourne, Australia; 2005 [cited 2022 Aug 1]. Available from: https://abstracts.cochrane.org/2005-melbourne/what-can-cochrane-collaboration-do-support-people-living-developing-countries-survey
14. Oliver S, Bangpan M, Stansfield C, Stewart R. Capacity for conducting systematic reviews in low- and middle-income countries: a rapid appraisal. Health Res Policy Syst [Internet]. 2015 Apr 26 [cited 2022 Aug 1];13(1):23. Available from: https://doi.org/10.1186/s12961-015-0012-0
15. Young T, Garner P, Kredo T, Mbuagbaw L, Tharyan P, Volmink J. Cochrane and capacity building in low- and middle-income countries: where are we at? Cochrane Database Syst Rev. 2013 Nov 1;(11):ED000072.
16. Röhrig B, Prel JB du, Wachtlin D, Blettner M. Types of Study in Medical Research. Dtsch Aerzteblatt Online [Internet]. 2009 Apr;106(15):262–8. Available from: https://www.aerzteblatt.de/10.3238/arztebl.2009.0262
17. Alvarez E, Lavis JN, Brouwers M, Schwartz L. Developing a workbook to support the contextualisation of global health systems guidance: a case study identifying steps and critical factors for success in this process at WHO. Health Res Policy Syst [Internet]. 2018 Oct;16(1):19–19. Available from: https://doi.org/10.1186/s12961-018-0297-x
18. Lavis JN, Røttingen JA, Bosch-Capblanch X, Atun R, El-Jardali F, Gilson L, et al. Guidance for Evidence-Informed Policies about Health Systems: Linking Guidance Development to Policy Development. PLoS Med [Internet]. 2012 Mar;9(3):e1001186–e1001186. Available from: https://dx.plos.org/10.1371/journal.pmed.1001186
19. Rusakaniko S, Makanga M, Ota MO, Bockarie M, Banda G, Okeibunor J, et al. Strengthening national health research systems in the WHO African Region – progress towards universal health coverage. Glob Health [Internet]. 2019 Dec;15(1):50–50. Available from: https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-019-0492-8
20. Ministry of Public Health. Health Analytical Profile: Cameroon [Internet]. 2016 p. 1–143. Available from: https://afro.who.int/sites/default/files/2017-07/Health_Profile_Cameroon_2016_ENG.pdf
21. Ministry of Public Health. 2016-2027 Health Sector Strategy [Internet]. Yaounde, Cameroon; 2016 p. 1–227. Available from: http://www.minsante.cm/site/?q=en/content/health-sector-strategy-2016-2027-0
22. Lewin S, Oxman AD, Lavis JN, Fretheim A, Marti SG, Munabi-Babigumira S. SUPPORT Tools for evidence-informed Policymaking in health 11: Finding and using evidence about local conditions. Health Res Policy Syst [Internet]. 2009 Dec;7(S1):S11–S11. Available from: https://health-policy-systems.biomedcentral.com/articles/10.1186/1478-4505-7-S1-S11
23. Moat KA, Lavis JN, Abelson J. How Contexts and Issues Influence the Use of Policy-Relevant Research Syntheses: A Critical Interpretive Synthesis. Milbank Q [Internet]. 2013 Mar;91(3):604–48. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/1468-0009.12026
24. Ray M, Wallace L, Mbuagbaw L, Cockburn L. Functioning and disability in recent research from Cameroon: a narrative synthesis. Pan Afr Med J [Internet]. 2017 Jun 1 [cited 2022 Aug 8];27:73. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5554653/
25. Mbuagbaw L, Cockburn L. Challenges and opportunities in country-specific research synthesis: a case study from Cameroon. Syst Rev [Internet]. 2017 Dec;6(1):159–159. Available from: https://doi.org/10.1186/s13643-017-0552-1
26. Snilstveit B, Bhatia R, Rankin K, Leach B. 3ie evidence gap maps: aO starting point for strategic evidence production and use.Working Paper 28 [Internet]. New Delhi: International Initiative for Impact Evaluation; 2017 p. 1–24. Available from: https://www.3ieimpact.org/sites/default/files/2019-01/wp28-egm.pdf
27. O'Leary BC, Woodcock P, Kaiser MJ, Pullin AS. Evidence maps and evidence gaps: Evidence review mapping as a method for collating and appraising evidence reviews to inform research and policy. Environ Evid [Internet]. 2017 Jul;6(1). Available from: https://environmentalevidencejournal.biomedcentral.com/articles/10.1186/s13750-017-0096-9
28. Saran A, White H. Evidence and gap maps: a comparison of different approaches. Campbell Syst Rev [Internet]. 2018 Jan;14(1):1–38. Available from: https://onlinelibrary.wiley.com/doi/abs/10.4073/cmdp.2018.2

29. Miake-Lye IM, Hempel S, Shanman R, Shekelle PG. What is an evidence map? A systematic review of published evidence maps and their definitions, methods, and products. Syst Rev [Internet]. 2016 Dec;5(1):28–28. Available from: http://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-016-0204-x
30. Stevens A, Lotfi T, Akl EA, Falavigna M, Kredo T, Mathew JL, et al. The eCOVID-19 living recommendations map and gateway to contextualisation The eCOVID-19 living recommendations map and gateway to contextualisation Introduction and background. 2020; Available from: https://doi.org/10.1002/14651858.CD202002
31. Bragge P, Clavisi O, Turner T, Tavender E, Collie A, Gruen RL. The Global Evidence Mapping Initiative: Scoping research in broad topic areas. BMC Med Res Methodol [Internet]. 2011 Dec;11(1):92–92. Available from: https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/1471-2288-11-92
32. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. Syst Rev [Internet]. 2016 [cited 2021 Nov 17];5(1). Available from: https://link.springer.com/epdf/10.1186/s13643-016-0384-4
33. Evidence Partners. DistillerSR [Internet]. Ottawa, Canada; Available from: https://www.evidencepartners.com/products/distillersr-systematic-review-software
34. Ongolo-Zogo P, Nsangou M. Connaissances sur la santé sexuelle et reproductive: Amélioration, évaluation et institutionnalisation de l'application des bases factuelles [Internet]. Yaounde, Cameroon: Centre for the Development of Best Practices in Health; p. 28. Available from: http://www.cdbph.org/attachments/article/1281/Rapport_priorite_sante%20sexuelle%20et%20reproductive%20des%20ado_Cameroun.pdf
35. Ongolo-Zogo C, Mbuagbaw L. Cameroon Health Research and Evidence Database (CAMHRED) [Internet]. CAMHRED. 2021 [cited 2021 Nov 16]. Available from: https://camhred.org/Search
36. Ongolo Zogo C. Improving National Health Research Systems Performance: The Case of Research Production and Use in Cameroon [Internet] [Thesis]. [Hamilton, Ontario]: McMaster University; 2020 [cited 2022 Aug 1]. Available from: https://macsphere.mcmaster.ca/handle/11375/25521
37. Nsangou M, Bonono RC, Ongolo-Zogo P. Quelles données probantes pour éclairer le choix des stratégies de santé sexuelle et Reproductive des adolescents au Cameroun ? Note d'Information Stratégique de SURe-KT. [Internet]. 2018. Available from: http://www.cdbph.org/attachments/article/1279/Note%20d'information%20strategique_sante%20sexuelle%20et%20%20reproductive%20des%20adolesc
38. Ongolo-Zogo P, Lavis JN, Tomson G, Sewankambo NK. Assessing the influence of knowledge translation platforms on health system policy processes to achieve the health millennium development goals in Cameroon and Uganda: a comparative case study. Health Policy Plan [Internet]. 2018 May;33(4):539–54. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5894086/
39. Ongolo-Zogo P, Lavis JN, Tomson G, Sewankambo NK. Climate for evidence informed health system policymaking in Cameroon and Uganda before and after the introduction of knowledge translation platforms: a structured review of governmental policy documents. Health Res Policy Syst [Internet]. 2015 Dec;13(1):2–2. Available from: https://doi.org/10.1186/1478-4505-13-2
40. Mbuagbaw L, Ongolo-Zogo P, Kredo T, Durao S, Young T, Effa E, et al. Cochrane Africa: a network of evidence-informed health-care decision making across sub-saharan Africa. Pan Afr Med J [Internet]. 2018 Apr 3 [cited 2022 Aug 1];29:196. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6061814/
41. Tsafnat G, Glasziou P, Karystianis G, Coiera E. Automated screening of research studies for systematic reviews using study characteristics. Syst Rev [Internet]. 2018 Apr 25 [cited 2022 Aug 1];7(1):64. Available from: https://doi.org/10.1186/s13643-018-0724-7

Table

Table 3 is available in the Supplementary Files section

Figures

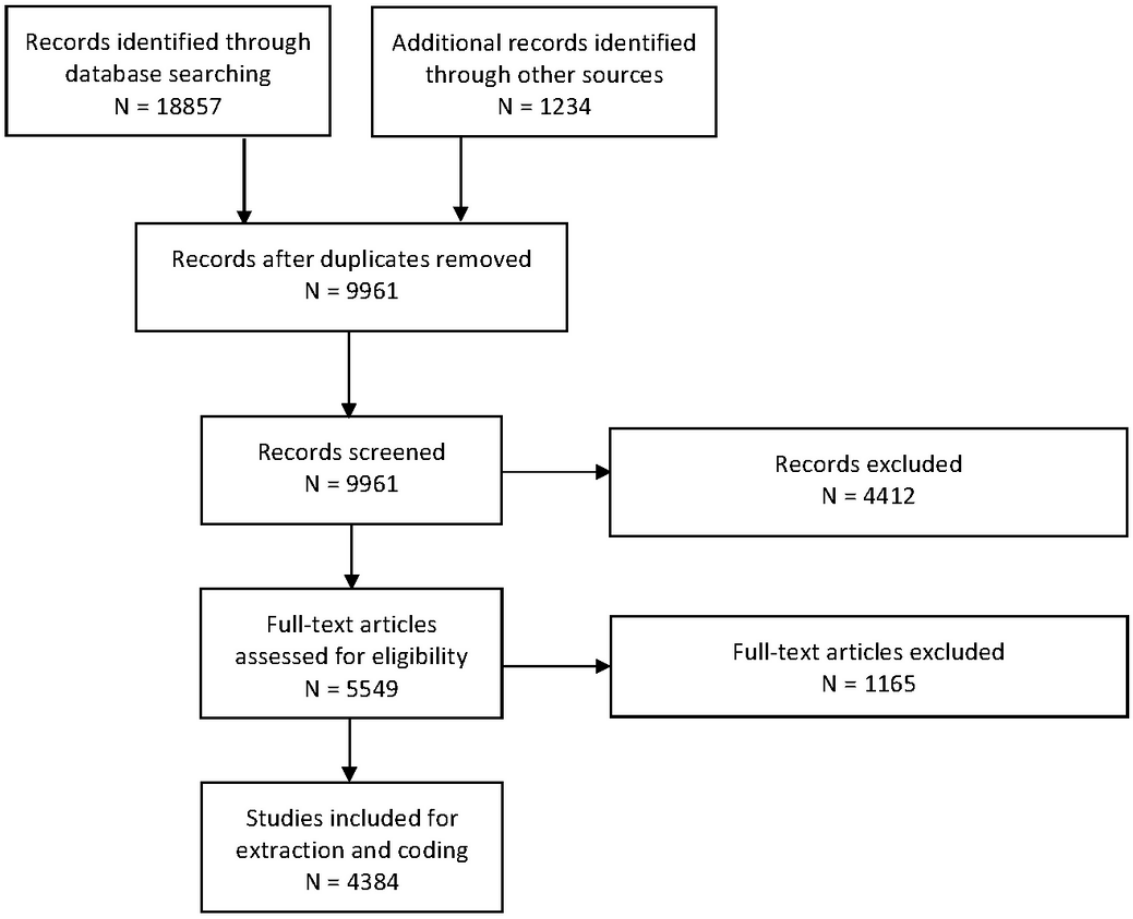


Figure 1

PRISMA diagram for systematic search and selection of CAMHRED studies

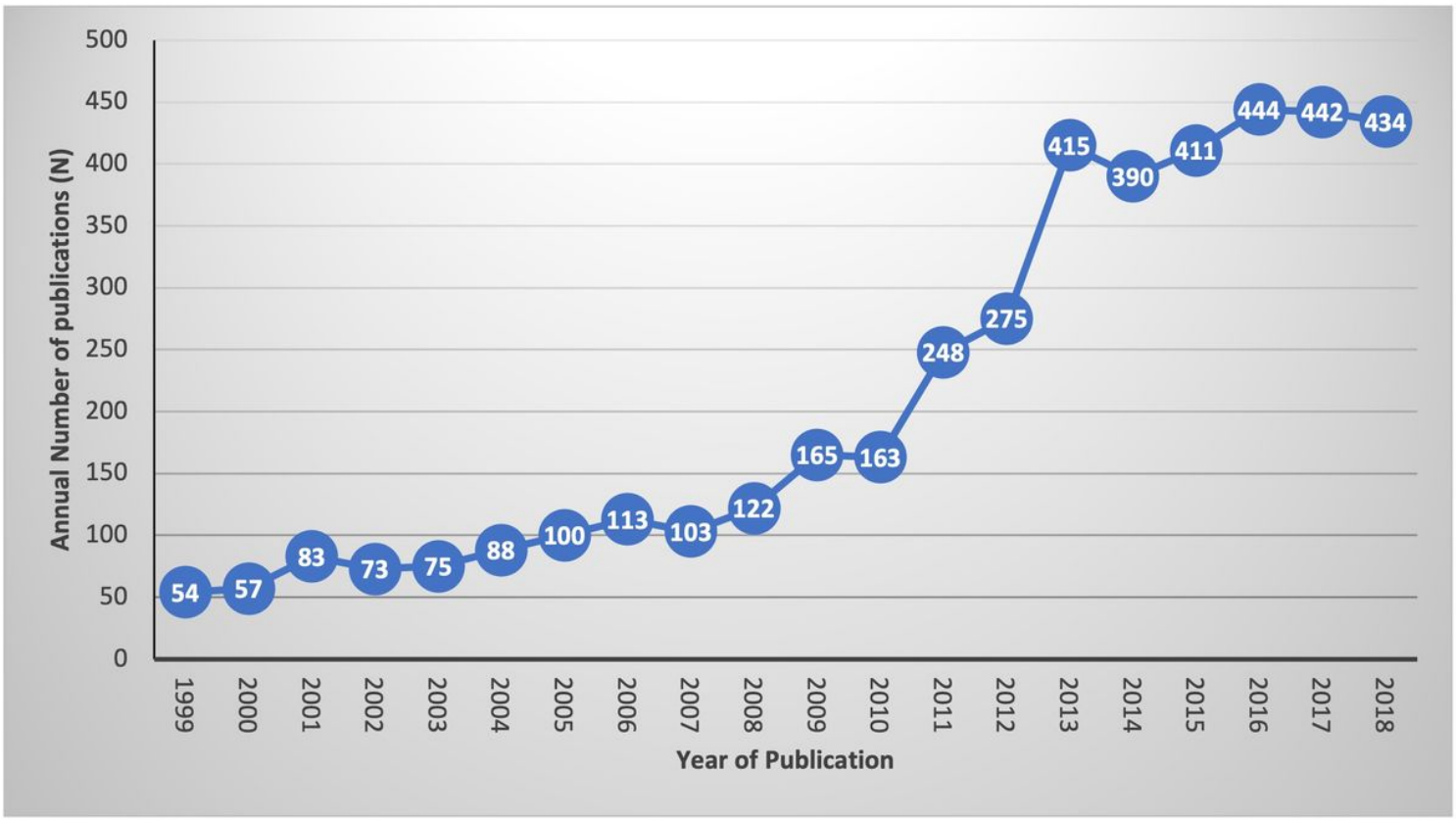


Figure 2

Trends in annual peer reviewed publications from 1999 to 2018

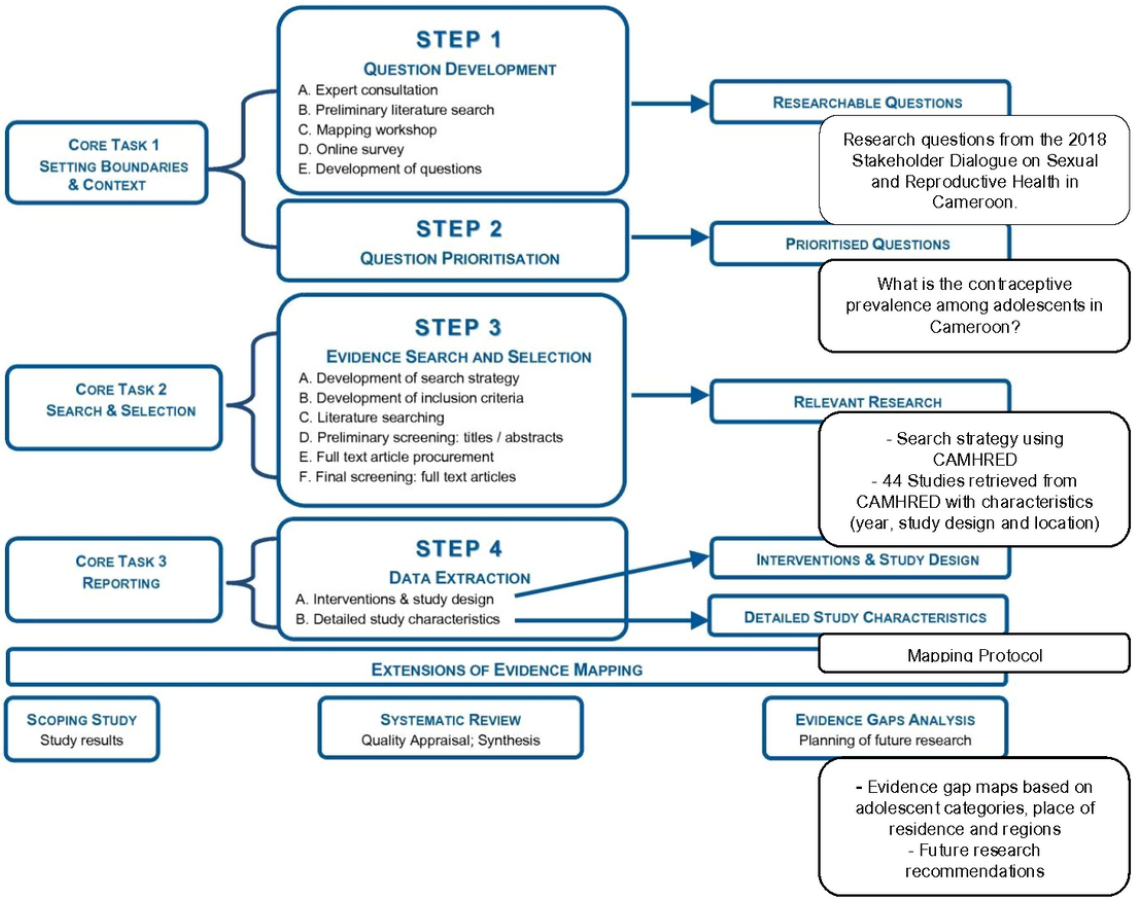
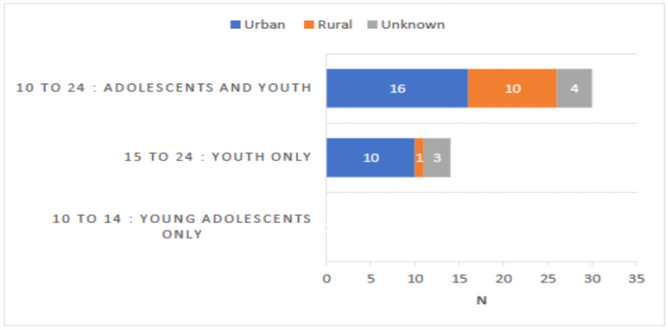


Figure 3

Adapted Global evidence mapping (GEM) initiative core tasks and steps (31)



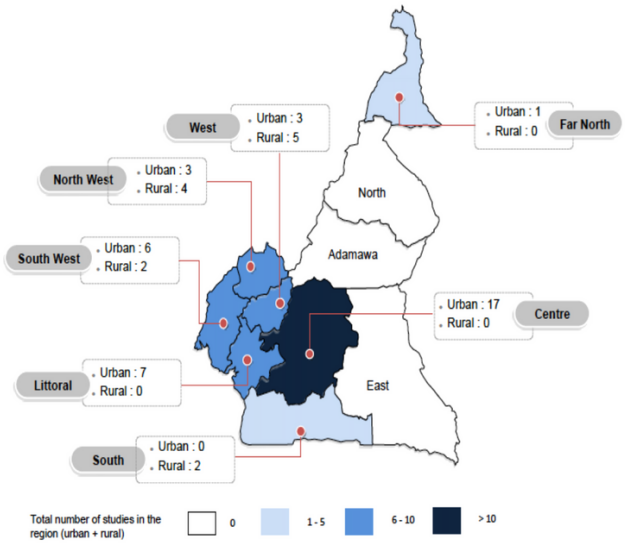


Figure 4

(a) and (b) Gaps in evidence about contraceptive prevalence based on place of residence, adolescent categories and geographic location.(36)

In addition to identifying gaps in the literature, we were able to make recommendations for future research including suggestions on the type of study design, content (research question) and reporting.

Figure 5

Excerpt of recommendations for future research based on gap analysis. (36)

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Appendix.docx
- Figure6.jpg
- Figure7abc.pdf