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Barriers to and facilitators of living guidelines use in low-income and middle-income countries: a scoping review

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ABSTRACT

Introduction Living guidelines provide reliable, ongoing evidence surveillance and regularly updated recommendations for healthcare decision-making. As a relatively new concept, most of the initial application of living approaches has been undertaken in high-income countries. However, in this scoping review, we looked at what is currently known about how living guidelines were developed, used and applied in low-income and middle-income countries.

Methods Searches for published literature were conducted in Medline, Global Health, Cochrane Library and Embase. Grey literature was identified using Google Scholar and the WHO website. In addition, the reference lists of included studies were checked for missing studies. Studies were included if they described or reflected on the development, application or utility of living guideline approaches for low-income and middle-income countries.

Results After a full-text review, 21 studies were included in the review, reporting on the development and application of living recommendations in low-income and middle-income countries. Most studies reported living guideline activities conducted by the WHO (15, 71.4%), followed by China (4, 19%), Chile (1, 4.8%) and Lebanon (1, 4.8%). All studies based on WHO reports relate to living COVID-19 management guidelines.

Conclusions Most of the studies in this review were WHO-reported studies focusing solely on COVID-19 disease treatment living guidelines. However, there was no clear explanation of how living guidelines were used nor information on the prospects for and obstacles to the implementation of living guidelines in low-income and middle-income countries.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ A priori registration of the full protocol in the Open Science Framework journal.
⇒ Comprehensive search of quantitative, qualitative and grey literature.
⇒ Followed rigorous methodological and reporting guidelines.
⇒ Identifying living guidelines in the grey literature is challenging, and it is possible that we missed some unindexed records.
⇒ The review does not assess the risk of bias of the included studies.

INTRODUCTION

The development and implementation of trustworthy guidelines can aid evidence-based clinical decision-making. However, to do so, guidelines must be of a high methodological standard and up to date.[1 2] Implementing evidence-based recommendations included in guidelines may result in improved patient outcomes, reduced hospital stays, increased resource efficiency, higher-quality care and an overall improvement in the healthcare delivery system.[3–6]

Guidelines should ideally be reviewed and updated as soon as new information becomes available in order to maintain their currency.[7 8] However, the most common approach to updating clinical practice guideline recommendations is to update the whole guideline after a certain period of time (often 3–5 years).[9] This strategy has two significant drawbacks. First, some recommendations become outdated within a brief amount of time as new evidence emerges. Second, resources may be wasted on recommendations that do not require updating, reducing the efficiency of the guideline development process.[9] Both of these drawbacks can be addressed through a living evidence synthesis approach, including living systematic reviews and living guidelines.[10]

Living guidelines are designed to hasten the development and updating processes so that each recommendation can be updated as soon as new evidence becomes available.[11] The following criteria should be assessed to identify evidence-based guidelines that are suitable for living guideline approaches: (1) They address a high-priority clinical question (or questions); (2) There is uncertainty regarding the available evidence and (3) The

Figure 1 The spinning wheel of living guidelines.[12] RCT, randomised controlled trial; SR, systematic review.

availability of new or anticipated evidence.[12] As illustrated in figure 1, the development of living guidelines is not a sequential process but rather an adaptive and iterative one.[11 12]

Living guidelines are developed using a defined methodology and consider individual recommendations separately rather than changing the entire guideline at once.[13 14] During COVID-19, living guideline methods have been advanced and applied in a number of high-income countries. For example, the American Society of Haematology published a living recommendation for anticoagulant medications,[15] and the European COVID-19 living guideline group has made conditional recommendations against the use of individual therapeutic drugs.[16] In Australia, the National COVID-19 Clinical Evidence Taskforce developed and maintained a comprehensive living guideline for the management of COVID-19. Living guidelines have also been developed to inform management of various medical conditions such as stroke, maternal health, prenatal health, arthritis and diabetes.[14 17–19] However, little is known about the usefulness and feasibility of living guidelines in low-income and middle-income countries (LMICs). Identifying opportunities for, and barriers to, the development and use of living guidelines in LMICs may be valuable for informing methods for developing living guidelines in these settings and exploring their potential. This scoping review set out to explore what is currently known about how living guidelines were developed, used and applied in LMICs, as well as what opportunities and challenges there are for doing so.

Objectives of the review

- To examine current literature from a variety of disciplines and locations in order to better understand how living guidelines are being used in low-income and middle-income settings.
- To synthesise available evidence about opportunities for and impediments to following a living guideline development approach in LMIC contexts.
- To inform and generate suggestions for future research and actions with a focus on living guidelines in LMICs.

MATERIALS AND METHODS

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews extension (PRISMA checklist) was followed in reporting the findings of this review and is supplied as online supplemental additional file 1. The protocol for this review was registered in the Open Science Framework journal and is accessible at https://osf.io/vk4rd/.

Study eligibility criteria

Inclusion criteria

- Study definition: The study reported on a 'living guideline,' defined as an enhancement to guideline production in which guideline recommendations are continually updated as new information emerges.
- Study design: Any form of study design describing or reflecting on living guideline activities and their implementation, whether qualitative, quantitative or mixed-method studies.
- Date of publication: Studies conducted in the last 10 years (2012–2022) were included, as this is the period in which living guidelines have been developed.
- Document type: All types of documents describing living guidelines, whether published or unpublished (clinical practice guidelines, articles and grey literature sources).
- Population/setting: LMICs according to the World Bank's 2022 list. WHO Living Guidelines were also included because they are typically the main source of evidence for clinical practice in LMICs.
- Content: Studies that described living guideline activities or contained pertinent information about opportunities for or barriers to living guideline development.
- Language: English or original articles translated into English.

Exclusion criteria

Abstracts, promotional brochures, blogs, news items and conference proceedings were excluded because they lacked complete information.

Information sources

To identify potentially eligible articles, four databases (Medline, Cochrane Library, Embase and Global Health) were searched using key terms to access indexed articles developed with advice from a librarian and an expert in living evidence synthesis. Global Health is a less popular database that catalogues public health and medical research literature, especially that which other databases have unindexed.[20] Google Scholar and WHO websites were searched for unindexed articles. Reference lists of included articles were examined for any additional relevant studies.

Search strategy

The search terms were developed based on those of a related study on Living Guidelines.[21] Separate key terms were prepared for Embase. Databases were searched on

8 August 2022. On 9 August 2022, we searched the grey literature, using the search terms 'living' and 'guidelines'.

Study selection

The first author (BTM) uploaded search results to Covidence software. Each step of the screening and selection process was managed using Covidence[22] and reported in the form of a PRISMA flow chart.[23] First, titles and abstracts were screened, and then the full texts of the retrieved articles were reviewed. The screening and review processes were conducted independently by two reviewers (BTM and MQ). Disagreements were resolved through discussion with a third reviewer (TT). Abstracts and full texts of studies authored in languages other than English were translated into English using Google Translate.

Data extraction and synthesis

A structured data extraction form was developed to capture necessary study information, such as the study's design, setting, clinical topic focus, date of publication, search date (ie, the time when new evidence was sought to update clinical recommendations in the context of the Living Guidelines), search frequency (ie, how frequently new evidence was looked for and considered for inclusion in the guideline), type of study, language, and barriers to and opportunities for developing and implementing living guidelines. Three researchers discussed and evaluated the data extraction format prior to data retrieval (BTM, SEG and TT). The lead researcher (BTM) gathered data from the included studies, which were later reviewed by two additional researchers (TT and SEG). Any ambiguities or contradictions were discussed by the full research team. A risk of bias assessment was not carried out in the review, consistent with approaches to scoping reviews.[23] Overall, the characteristics and key findings of the included studies were summarised in both narrative and tabular form.

Patient and public involvement

None.

RESULTS

We identified 2582 studies for screening and review. Among these, 2571 studies were found in publication databases, 8 studies on Google Scholar and 3 studies on the WHO website. After removing 763 duplicate studies, 1819 articles underwent title and abstract eligibility screening. A total of 1790 studies were excluded. Full-text eligibility assessment was performed on 29 studies, which resulted in the exclusion of 8 further studies. Finally, 21 studies met the inclusion criteria, as shown in figure 2.

The three key reasons for exclusion were as follows:

- Abstract with no complete information.
- Guidelines did not meet the definition of living guidelines.
- Study setting was not a LMIC.

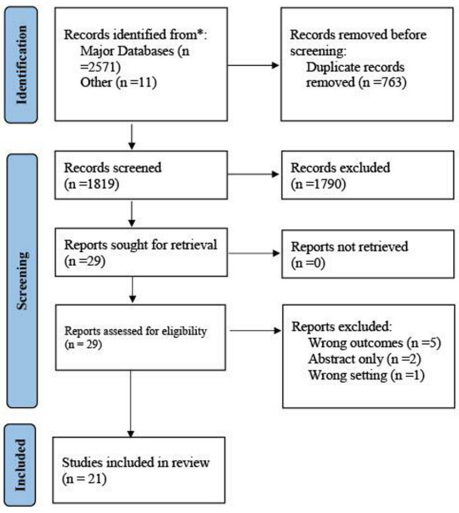

Figure 2 PRISMA flow chart displaying search results and study screening. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses. *Medline, Cochrane Library, Embase and Global Health.

Characteristics of the included studies

The majority of the studies reported living guideline activities conducted by the WHO (15, 71.4%),[14 19 24–35] followed by China (4, 19%),[36–39] Chile (1, 4.8%)[40] and Lebanon (1, 4.8%).[41] All studies included in this review were published between 2019 and 2022.

Descriptive details of the included studies are presented in table 1.

Outcomes of the review

Outcome objective 1: how living guidelines are being used in low-income and middle-income settings

Studies in China focused on COVID-19 therapeutic medicines as well as methods for developing living guidelines. The remaining two studies, from Chile and Lebanon, described the establishment of living guidelines. Among the four China-based studies, one reported the medications used to treat mild to moderate COVID-19 illness,[42] one described the development of living Chinese medicine guidelines for treating COVID-19 patients,[43] one covered a broad appraisal of the development of the living guidelines,[37] and one looked at the development of a proposal for living, evidence-based guidelines on the integration of conventional Chinese medicine and Western medicine.[39] The study from Lebanon showed how a framework for developing living recommendations for healthcare was produced, and the study from Chile emphasised the significance of thresholds for developing the living recommendations that are defined for the treatment of COVID-19.[40]

Outcome objective 2: opportunities for and impediments to following a living guideline development approach in LMIC contexts

We were unable to describe the second stated objective since none of the included studies addressed the

Table 1 Retrieved data from included studies on living guideline activities in low-income and middle-income countries

Study name (author, year)	Publication date (dd/mm/yyyy)	Document type (article, grey literature)	Search date/ frequency	Language used	Study design	Type of study (quantitative, qualitative, mixed)	Study setting	Clinical topics investigated
WHO, 2022[24]	14 July 2022	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Recommendations against the use of fluvoxamine and colchicine) for non-severe COVID-19 patients.
WHO, 2022[25]	23 June 2022	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Drug treatment for mild, moderate or severe COVID-19 patients.
Lamontagne F et al,[26] 2021	1 March 2021	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Recommendations against use of hydroxychloroquine in patients without COVID-19.
WHO, 2022[27]	25 April 2022	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Recommendations for infection prevention and control of COVID-19 in healthcare and community settings.
Arnav Agarwal. Et al,[29] 2022	31 March 2021	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	A recommendation against the use of ivermectin for the treatment of COVID-19.
Arnav Agarwal. Et al,[29] 2022	25 April 2022	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Dosing of Ritonavir and Remdesivir for comorbid renal failure and COVID-19 patients.
Arnav Agarwal. Et al,[29] 2022	2 April 2022	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Molnupiravir use in patients with non-severe COVID-19.
WHO, 2021[31]	7 November 2021	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Convalescent plasma for COVID-19 treatment.
Arnav Agarwal. Et al,[29] 2022	24 September 2021	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Use of casirivimab and imdevimab combinations in non-severe COVID-19.
WHO, 2021[31]	7 November 2021	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Casirivimab–imdevimab combination therapy for COVID-19 patients.
Ibrahim K. et al,[41] 2022	5 July 2022	Article	No information	English	Cross-sectional	Quantitative	Lebanon	The conception of a framework defining the processes involved in developing healthcare living practice guidelines.
Ge L, Zhu H et al,[36] 2021	3 August 2021	Article	No information/ twice monthy	English	Cross-sectional	Quantitative	China	Drug treatment recommendations for mild to moderate COVID-19 patients in China.
Lamontagne F et al,[26] 2021	5 January 2021	Commentary	10/08/2020/no information	English	Cross-sectional (report)	Quantitative	WHO	Corticosteroid treatments vs standard supportive treatments for COVID-19 patients.
François Lamontagne et al,[26] 2020	4 September 2020	Article	No information	English	Cross-sectional (report)	Quantitative	WHO	Recommendations on corticosteroid therapy versus standard supportive care for COVID-19.
Liang N et al,[37] 2022	1 February 2022	Article	No information	Chinese	Cross-sectional	Quantitative	China	The development of rapid and living Chinese medicine guidelines for decision-making during public health emergencies.
Ignacio Neumann et al,[40] 2022	30 March 2022	Article	No information	English	Cross-sectional	Quantitative	Chile	The application of explicit thresholds for determining evidence certainty in the COVID-19 treatment guideline.
Rochwerg B et al,[34] 2021	1 October 2021	Review article	No information	English	Cross-sectional (report)	Quantitative	WHO	A review of living guidelines developed to address the use of COVID-19 treatment drugs.

Continued

Table 1 Continued

Study name (author, year)	Publication date (dd/mm/yyyy)	Document type (article, grey literature)	Search date/ frequency	Language used	Study design	Type of study (quantitative, qualitative, mixed)	Study setting	Clinical topics investigated
Schwartz et al,[35] 2020	24 November 2020	Review article	No information	English	Cross-sectional (report)	Quantitative	WHO	A recommendation against the use of remdesivir therapy for COVID-19.
Vogel et al,[14] 2019	29 June 2019	Article	March to October 2016/no information	English	Cross-sectional (report)	Quantitative	WHO	A dynamic living guidelines approach to maternal and prenatal health management.
Zhang Qian et al,[38] 2021	April 2021	Article	No information	Chinese	Cross-sectional	Quantitative	China	A general overview of the development of China's living guidelines.
Wang Q et al,[39] 2021	October 2021	Article	No information	Chinese	Cross-sectional	Quantitative	China	Proposal of a living evidence-based guideline for the combination of traditional Chinese and Western medicine in treatment of COVID-19.

opportunities and barriers of adapting, developing and using living guidelines in LMICs (table 1).

Outcome objective 3: inform and generate suggestions for future research and actions with a focus on living guidelines in LMICs

Similarly, the third objective, to inform and provide recommendations for future research and action with a focus on living guidelines in LMICs, could not be met due to the scarcity of information provided in the included studies (table 1).

DISCUSSION

To the best of the authors' knowledge, this scoping review is the first attempt to comprehensively document the available information on the development and use of living guidelines in LMICs. Most of the studies included in this review were WHO-reported studies that focused on the management of COVID-19. This could be due to the WHO's role as the primary United Nations organisation responsible for preserving global health, developing guidelines, disseminating them internationally and serving as the key health information source for the world.[44] Little information was available to determine whether or how living guidelines are being developed, adapted and used in LMICS or the barriers and enablers of this.

The implementation of living guidelines and associated living recommendations has aided in the generation of timely evidence to guide clinical practice in the care of patients with COVID-19.[42 45] In theory, the value of living guidelines in LMICs could be consistent with that demonstrated in a high-income country. One study has shown that it is possible and acceptable to implement living COVID-19 guidelines in Australian healthcare settings.[46] Likewise, a study on living clinical guidelines for the treatment of stroke found them to be feasible, though more research is needed to fully understand impact.[47]

At this early stage in the development of living guidelines, this review found that, when compared with high-income countries,[14 17 18] the scope of living guidelines currently available in LMICs covered a narrower range of health issues, focusing mostly on COVID-19. In addition, unlike studies conducted in Australia,[11] none of the studies we identified reported facilitators and barriers associated with developing living guidelines in low-income and middle-income nations. The scarcity of literature may be due to the concept of living guidelines being relatively new, particularly in LMIC, and more effort is needed to understand the challenges and opportunities involved in developing, adapting and implementing living guidelines outside of high-income contexts.

Limitations

This review could not present detailed evidence for each stated objective (objectives 2 and 3) because the included studies did not report key information on overall activities related to living guidelines, highlighting an important

research gap. We were unable to compare these findings to those of similar studies because, to our knowledge, no similar review articles on the topic have been published.

The search was largely restricted to published studies. As a result, we may have missed some unpublished reports.

CONCLUSION

In this scoping review, 21 studies were identified to assess the activities, opportunities and barriers to living guidelines in LMICs. Most of the studies included in this review were WHO-reported studies that focused solely on COVID-19 disease treatment living guidelines. There was no clear explanation of how living guidelines were used or information on the prospects for and obstacles to development and use of living guidelines in LMICs. Given the growing demand for living guidelines, it is clear that more research is needed to answer these questions.

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Contributors Three authors (BTM, TT and SEG) designed the review. Three other authors (BTM, MQ and TT) reviewed the full text of the studies after screening the title and abstract. BTM was in charge of data extraction as well as writing the first draft of the manuscript. All authors (BTM, MQ, TT and SEG) reviewed and approved the last version. SEG is guarantor for the review.

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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.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

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Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	
INTRODUCTION			3
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	4
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	4
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	4-5
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	5
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	5
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	5
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	6
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	4 Not applicable
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	6

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	8
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	Not applicable
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	8
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	8
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	9
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	9
Limitations	20	Discuss the limitations of the scoping review process.	10
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	11
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.
* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.
† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).
‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.
§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

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