International Journal of Technology Assessment in Health Care

www.cambridge.org/thc

Assessment

Cite this article: Daccache C, Karam R, Rizk R, Evers SMAA, Hiligsmann M (2022). The development process of economic evaluation guidelines in low- and middle-income countries: a systematic review. *International Journal of Technology Assessment in Health Care*, **38**(1), e35, 1–8
https://doi.org/10.1017/S0266462322000186

Received: 08 November 2021
Revised: 22 February 2022
Accepted: 05 March 2022

Key words:
Economic evaluation; Economics pharmaceutical; Guidelines; Technology assessment; Low- and middle-income countries

Author for correspondence:
*Caroline Daccache, E-mail:
caroline.d.kahwaji@gmail.com

CAMBRIDGE UNIVERSITY PRESS

The development process of economic evaluation guidelines in low- and middle-income countries: a systematic review

Caroline Daccache[1]*, Rita Karam[2], Rana Rizk[3], Silvia M. A. A. Evers[1,4] and Mickaël Hiligsmann[1]

[1]Department of Health Services Research, Care and Public Health Research Institute (CAPHRI), Faculty of Health, Medicine and Life Sciences, Maastricht University, Maastricht, The Netherlands; [2]Faculty of Sciences and Medical Sciences, Lebanese University, Hadath, Lebanon; [3]Institut National de Santé Publique, d'Épidémiologie Clinique et de Toxicologie (INSPECT-LB), Beirut, Lebanon and [4]Centre for Economic Evaluations and Machine Learning, Trimbos Institute, Utrecht, The Netherlands

Abstract

Objectives: To review the development of economic evaluation guidelines (EEGs) in low- and middle-income countries (LMICs), with the goal of assisting those developing EEGs in LMICs.
Methods: We conducted a systematic search in MEDLINE (Ovid), PubMed, EconLit, Embase (Ovid), the Cochrane Library, and the gray literature until March 2021. We extracted data on the methods used in the EEG development process, the responsible party engaged, and the development team's composition. We conducted a quality assessment, using the Appraisal of Guidelines for Research and Evaluation-Health Systems tool, and then carried out a relative comparison.
Results: Fourteen EEGs and nine studies were identified. In ten countries, the Ministry of Health was responsible for handling the development process. The majority of LMICs who developed EEGs did not explicitly report the discipline of those involved in the process. The developers of EEGs followed four main steps: conducting a review on national guidelines, organizing workshops, and getting support from international experts or from organizations. One-third of the identified EEGs failed to engage multisectoral or multidisciplinary developers, and approximately 14 percent did not follow or report any recommended step.
Conclusions: This study identified a scarcity of published information related to the development process and the suboptimal quality of included studies. It provides relevant material to support international organizations and developers of guidelines in LMICs in developing EEGs that fit their national context. In addition, this paper recommends a transparent approach to the design of guidelines and to reporting on the methods for developing them.

Whatever the economic setting, health systems are struggling with healthcare resources allocation and the implementation of universal health coverage (UHC) (1). The World Health Assembly held in 2014 marked health technology assessment (HTA) as a crucial tool for UHC (1). HTA supports policymakers in dealing with their budgetary constraints by facilitating an equitable, efficient, and high-quality health system (1;2). Economic evaluation (EE) is an essential component of HTA, requested in many countries to support reimbursement decisions by providing information on the cost-effectiveness of health technologies (3;4). For harmonization and comparability purposes, economic evaluation guidelines (EEG) have been developed and applied in many countries, particularly European and North American countries, where HTA is well established (5–7). Along with other health systems guidance (HSG), EEGs provide critical input and support for decision-making for effective health system programs; accordingly, a well-described process is essential to ensure the transparency and objectivity of these guidelines (8;9).

Recently, the interest in and use of HTA has increased in low- and middle-income countries (LMICs), leading to the development of EEGs in these countries, such as Brazil, Cuba, Egypt, and Indonesia (7). Although EEGs are emerging in LMICs, several countries do not yet have an established EEG (7). Developing national EEGs is crucial to providing researchers with practical steps for conducting their EEs (10). International organizations have demonstrated interest through their contribution to this quality domain (8;11;12). The World Health Organization (WHO), in collaboration with the Swiss Center for International Health, developed a handbook for supporting the development of HSG (8). Similarly, in 2015 the International Network of Agencies for HTA (INAHTA) created the LMICs working group, Guidelines International Network (GIN), to explore methods for promoting guideline development, adaptation, dissemination, implementation, and research within developing countries (12). Furthermore, the Appraisal of Guidelines for Research and Evaluation (AGREE) enterprise developed a new appraisal tool for assessing the quality of HSG, the Appraisal of Guidelines for Research and

Evaluation-Health Systems (AGREE-HS) (11). At the 2020 international HTA global policy forum, researchers proposed the adoption of transparency, inclusivity, and impartiality as starting principles in developing a deliberative process in HTA (13;14), bringing attention to the process of developing guidelines.

Despite the importance and the value of the development process of EEGs, there is a lack of published comprehensive literature on this subject. Understanding how previous EEGs have been developed could provide relevant insights for the next countries to develop EEGs in their context. Accordingly, this systematic review aimed to review the process and sources of evidence in developing guidelines for EEGs in LMICs, with the ultimate goal of assisting and supporting developers from LMICs, in addition to identifying gaps in research, and providing recommendations about each significant step in the development of guidelines for LMICs aiming to design their own EEGs.

Methods

A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA-S) guidelines (15). The protocol of this review was registered with the Open Science framework platform (Registration DOI: https://doi.org/10.17605/OSF.IO/DHRYF).

Systematic review

Literature Search Strategies

We searched MEDLINE (Ovid), PubMed, EconLit, Embase (Ovid), and the Cochrane Library from the inception date to 9 February 2020, and performed a literature search update on March 2021.

In our search strategy, we combined three key concepts: "economic evaluation" AND "guidelines," AND "low and middle-income countries." For the last concept, we used the Cochrane filter 2012 (16), which we adapted to the 2020–21 World Bank classification. For the three concepts, we mapped controlled vocabulary, such as Medical Subject Headings (MeSH) terms and keywords. A medical information specialist validated the strategy. The full search strategies for MEDLINE, PubMed, and Embase are provided in Supplementary Material 1.

Moreover, the gray literature was searched, including the Web sites of the World Bank, WHO, the Professional Society for Health Economics and Outcomes Research (ISPOR), pharmacoeconomics guidelines around the world, the international Decision Support Initiative (iDSI), the Guide to Health Economic Analysis and Research (GEAR), as sources of eligible documents, and Epistemonikos as a source of systematic reviews. In addition, the Web sites of country-specific HTA agencies or Ministries of Health were reviewed (provided in Supplementary Material 2). A backward citation tracking for relevant systematic reviews and included guidelines was conducted. The search was neither limited to a specific language nor to a publication date.

We performed these literature searches in preparation for conducting two systematic reviews; the first was to identify and review the key features of EEGs in LMICs, and the second one to understand and to review the development process of these EEGs (7).

Eligibility Criteria

The official versions of EEGs, including pharmacoeconomics guidelines (PEGs) and drugs guidelines, developed by the national agencies of relevant LMICs, and publications related to their development process were included.

EEGs from high-income countries, EEs studies and reports regarding diseases, interventions, and other topics not relevant to guidelines and their development process were excluded. Nonoriginal research documents and studies or expert opinions regarding EEGs, systematic reviews, and unofficial published guidelines were also excluded. An article is considered original research if it is the report of a study written by the researchers who actually did the study, if the researchers describe their hypothesis or research question and the purpose of the study, if the researchers detail their research methods, if the results of the research are reported, and if the researchers interpret their results and discuss possible implications (17).

Study Identification and Screening

All records identified by the search were retrieved. To determine eligibility, titles and abstracts were screened by one reviewer (C.D.) and full texts of selected references were assessed by two pairs of reviewers (C.D./R.K. and C.D./R.R.). A calibration exercise was conducted prior to proceeding. Documents in languages other than English, French, and Arabic were translated via the online.doc. translator Web site. Discrepancies were resolved through discussions between reviewers.

Data Extraction

Data related to the methods and steps used in the EEG development process, the responsible party engaged in setting the guidelines, and the composition of the development team if reported, were extracted. A calibration exercise was conducted before data extraction. Two pairs of authors (C.D./R.K. and C.D./R.R.) extracted relevant data from the included studies independently and in duplicate. Disagreements between reviewers were solved through discussions to reach a consensus.

Data Analysis

A narrative synthesis of collected data was done. Then, a comparative summary table was presented.

Quality Assessment

We conducted a quality assessment of the development process of included EEGs using the AGREE-HS tool, which was adapted to the scope of our study.

While the AGREE-HS tool represents five domains (topic, participants, methods, recommendations, and implementability), we selected two quality domains that answer our research questions in identifying the steps in developing EEGs in LMICs and the composition of the development team. Accordingly, we adopted the term process to define participants and methods domains. "Participants" is the item that addresses the composition of the HSG development team. "Methods" addresses the use of systematic methods and transparency in reporting, along with use of the best available and up-to-date evidence (11). We developed a quality assessment document for each country, where appraisers reported their comments and scoring (Supplementary Material 3). Each item was assessed on whether its criteria have been met, whereby appraisers took into consideration whether the item-related content was well reported, easy to find, and easy to understand. For

consensus, we performed a practical appraiser's exercise (AGREE-HS appraisal of an eligible EEG).

Appraisers rated each item using a 7-point response scale. A score of 1 (lowest quality) was given if there was no information relevant to the AGREE-HS item, if the criteria were very poorly reported in the HSG document, or if the authors explicitly stated that it was not done; whereas a score of 7 (highest quality) was given if the information related to the AGREE-HS item was exceptionally well reported, all criteria related to the item were considered during the development of the guidance, and the information related to the item was applicable in its context. Scores between 2 and 6 were assigned when not all criteria of the AGREE-HS item were met, depending on the completeness and quality of reporting. Scores increased as more criteria were met (11). Two appraisers (C.D./R.K. and C.D./R.R.) independently assessed the process adopted by each country in developing its EEGs, using the accompanying eligible studies related to the development process. The mean AGREE-HS item scores were calculated and presented for each document.

In the absence of any empirical basis for deriving thresholds and defining high- and low-quality HSG, appraisers assessed the process based on a relative comparison between LMICs of each quality domain scores.

Results

The flowchart of study selection is detailed in Figure 1. In February 2020, twenty-one records were included; of these, thirteen were EEGs and eight were discussing and describing the development process. In addition, with the literature update in March 2021, one guideline reporting on the first edition of the Philippine HTA methods guide published in September 2020, new Chinese guidelines developed in 2020 to replace the previous ones, one article published in 2021, entitled: "Current Development and Practice of Pharmacoeconomic Evaluation Guidelines for Universal Health Coverage in China," and one Indian guideline entitled: "Health Technology Assessment in India: A manual" were included.

EEGs in LMICs

Based on the 2020–21 World Bank classification, fourteen LMICs (10.4 percent) had EEGs, including none of the twenty-nine low-income countries (LICs), five out of fifty lower-middle-income countries (Bhutan, Egypt, India, Indonesia, and the Philippines) and nine out of fifty-six upper-middle-income countries (Brazil, China, Columbia, Cuba, Malaysia, Mexico, the Russian Federation,

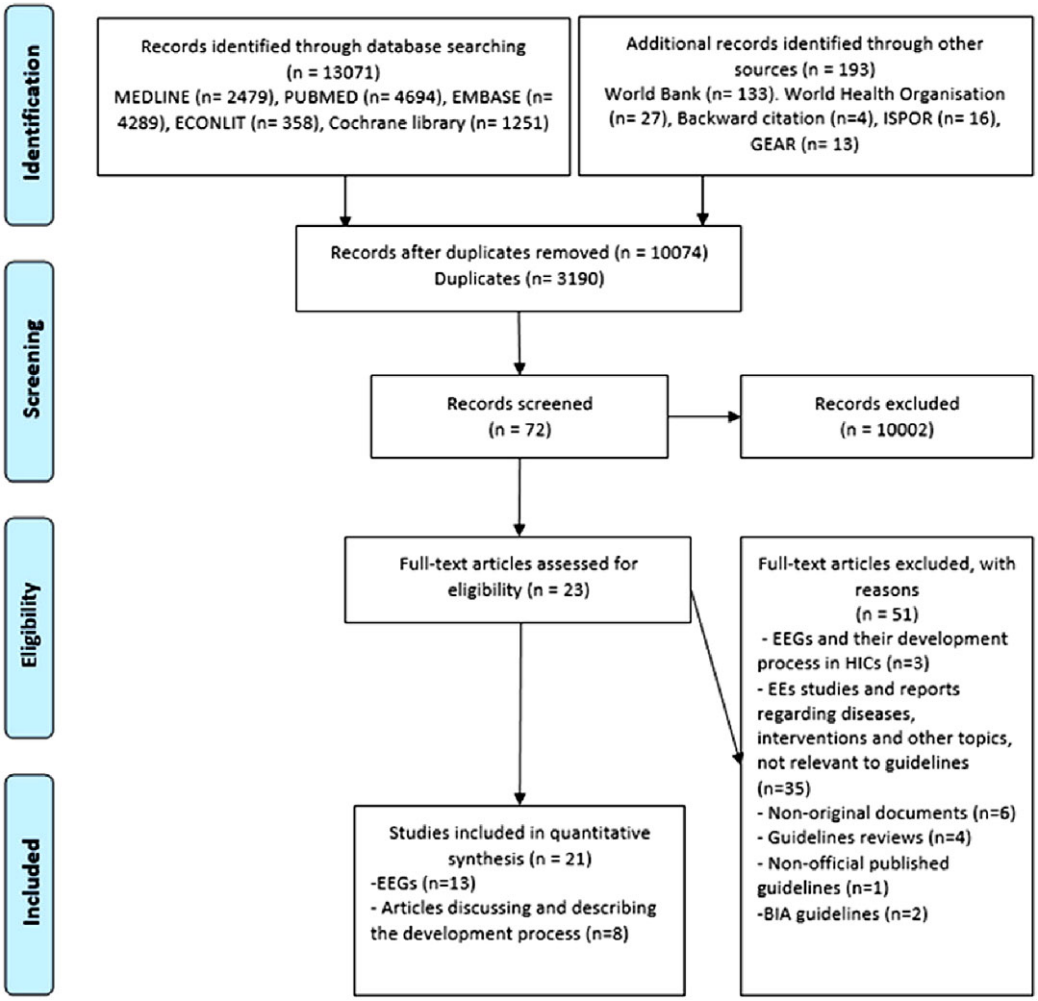

Figure 1. PRISMA diagram of study selection. BIA, budget impact analysis; EE, economic evaluation; EEG, economic evaluation guidelines; GEAR, guide to health economic analysis and research; HICs, high-income countries; ISPOR, Professional Society for Health Economics and Outcomes Research; LMICs, low- and middle-income countries.

Table 1. Summary of Countries' Eligible Documents

Country	Document title/Publication year	Type of the document	Document responsible party
Bhutan (18)	Health technology assessment process guideline/2nd edition 2018	Guidelines	Ministry of Health/EMTD/HTAP—Health technology assessment panel
Brazil (19;30;31)	Diretrizes Metodológicas. Diretriz de Avaliação Econômica—2ª edição/2014	Guidelines	Ministry of Health/Department of Science and Technology
	Implementing pharmacoeconomic guidelines in Latin America: Lessons learned/Augustovski 2011	Article	NA
	Pharmacoeconomic component of a clinical trial conducted in Latin America/Reinharz 2001	Article	NA
China (32;33)	China pharmacoeconomic evaluation guidelines/2020	Guidelines	China guidelines for Pharmacoeconomic Evaluations Working Group
	Current development and practice of pharmacoeconomic evaluation guidelines for universal health coverage in China/2021	Article	NA
Colombia (34)	Manual for the elaboration of economic evaluations in health/2014	Guidelines	Institute for Health Technology Assessment (IETS)
Cuba (35)	Methodological guide for economic evaluation in health/2003	Guidelines	Ministry of Public Health
Egypt (36;37)	Guidelines for reporting pharmacoeconomic evaluations/2015	Guidelines	Minister of Health and Population, Central Administration for Pharmaceutical Affairs, General Directorate of Hospital Pharmacy Pharmacoeconomic Unit
	Recommendations for reporting pharmacoeconomic evaluations in Egypt/Elsisi 2013	Article	NA
Indonesia (20)	Health technology assessment (HTA) guideline/2017	Guidelines	Ministry of Health Indonesian Health Technology Assessment Committee (InaHTAC)
India (21)	Health technology assessment in India: A manual/2018	Guidelines	Department of Health Research Ministry of Health and Family Welfare
Malaysia (22)	Pharmacoeconomic guideline for Malaysia/2019	Guidelines	Ministry of Health, Pharmaceutical Services Division
Mexico (24;31)	Guide for conducting economic evaluation studies to update the basic table and catalog of supplies of the health sector in Mexico/2017	Guidelines	General Health Council
	Pharmacoeconomic component of a clinical trial conducted in Latin America/Reinharz 2001	Article	NA
Philippine (25)	Methodological standards in evaluation of health technologies in the Philippines, first edition/2020	Guidelines	Health technology assessment unit—Department of Health—Philippines
Russia Federation (26)	Methodological recommendations for clinical and economic evaluation drug/2016	Guidelines	Ministry of Health
South Africa (27)	Guidelines for pharmacoeconomic submissions/2012	Guidelines	Pricing Committee/National Department of Health
Thailand (28;29)	Guidelines for health technology assessment in Thailand (Second Edition)/May 2014: Journal of the Medical Association of Thailand	Guidelines	Health intervention and technology assessment program
	Guidelines for health technology assessment in Thailand (Second Edition)—The Development Process/2014	Article	NA

EMTD, Essential Medicines and Technology Division; HTA, health technology assessment; HTAP, health technology assessment panel; IETS, Instituto de Evaluación Tecnológica en Salud; InaHTAC, Indonesian Health Technology Assessment Committee; NA, not applicable.

South Africa, and Thailand). Moreover, Mercosur, a union of countries that includes Argentina, Brazil, Paraguay, Venezuela (upper-middle-income countries), Bolivia (a lower-middle-income country), and Uruguay (a high-income country, which is not covered by this review), has developed a common guideline (18–37).

Table 1 includes the country's name, its guidelines, and articles describing the development process, responsible party, publication year, and type of document.

Responsible Party and Team Composition

The Ministry of Health was the responsible party handling the development of three-fourths of the identified guidelines ($n = 10$) (Bhutan, Brazil, Cuba, Egypt, India, Indonesia, Malaysia, the Philippines, the Russian Federation, and South Africa), while nonprofit independent institutes were commissioned to develop 28.6 percent ($n = 4$) (China, Colombia, Mexico, and Thailand) of the identified guidelines.

The majority of LMICs who have developed EEGs did not explicitly report the discipline of those who were involved in the development process. Elsisi et al. and the Indonesian Health Technology Assessment Committee (InaHTAC) clearly reported the make-up of the teams involved in developing guidelines in Egypt and Indonesia (20;37), respectively, while others specified the working position (19–21;28;32) or the sector (22;25;34;35) or did not report it at all (18;23;24;26;27). Heterogeneity in extracted data was observed; the team composition results categorized members mostly as academicians, workers in the private or public sectors, and program managers. We assessed the team composition in the second part of this paper.

Development Methods

Table 2 summarizes the development steps of EEGs in LMICs. Each country carried out a specific process for developing its guidelines; many steps have been reported and identified. Some countries ($n = 6$) (Colombia, Cuba, Egypt, Malaysia, the Philippines, and Thailand) began by reviewing other national guidelines. In addition, nine countries (Bhutan, Brazil, China, Cuba, Egypt, Malaysia, Mexico, the Philippines, and Thailand) arranged workshops and consultation meetings for experts and stakeholders to propose recommendations and updates.

Five out of fourteen countries (Bhutan, Colombia, Cuba, India, and Indonesia) developed their EEGs with the support of international experts. Furthermore, in four of the fourteen countries (Brazil, Cuba, Indonesia, and the Philippines), International organizations such as WHO, the Pan American Health Organization (PAHO), the European Union, iDSI, the Health intervention and technology assessment program (HiTAP) of Thailand, and the National Institute for Health and Care Excellence (NICE), contributed in the development of EEGs.

Three countries (India, the Russian Federation, and South Africa) did not report the steps followed to develop their EEGs.

Quality Assessment Results

Table 3 summarizes the quality assessment results of the two domains: participants and methods. The Cuban guidelines had the highest final score for participants, while the Egyptian and Philippines guidelines had the highest final score for methods. In detail, Cuba clearly reported in its guidelines that their development team for HSG includes members who have an interest or stake in the recommendations. Moreover, the guidance development team was multidisciplinary and multisectoral. In the two documents describing their guidelines development process, Egypt reported that systematic and transparent methods were used to identify and review the evidence, and to reach a consensus regarding the final recommendations. In addition, Egypt is considered the best available and most contextually relevant evidence. Similarly, in their guidelines document, the Philippines addressed the use of systematic methods and transparency in reporting, as well as the use of the best available and up-to-date evidence.

Discussion

A transparent approach to reporting the development process of EEGs is fundamental to assessing this process and generating information that can be beneficial for guidelines developers (13;38). This is especially true for LMICs, where experience in developing EEGs is limited and this process is uniquely challenging

Table 2. Summary of the Development Steps of EEGs in LMICs

Steps	Results *n/N*	Bhutan	Brazil	China	Colombia	Cuba	Egypt	India	Indonesia	Malaysia	Mexico	Philippine	Russian Federation	South Africa	Thailand
Reviews	6/14				x	x	x			x		x			x
Workshops	9/14	x	x	x		x	x			x	x	x			x
International experts support	5/14	x			x	x		x	x						
International Organizations support	4/14		x			x			x			x			
Number of reported steps taken		2	2	1	2	4	2	1	2	2	2	3	0	0	2

EEGs, economic evaluation guidelines; LMICs, low- and middle-income countries.

Table 3. Quality Assessment Results

Items scores*	Bhutan	Brazil	China	Colombia	Cuba	Egypt	India	Indonesia	Malaysia	Mexico	Philippine	Russian Federation	South Africa	Thailand
Participants final score	1	5.5	6	3.5	6.5	6	3	7	4.75	1	4	1	1	3.25
Methods final score	3	4.5	4.25	5.5	6	7	1	1	5.5	4.25	7	1	1.5	6.5

*Each item was assessed on whether its criteria have been met. A score of 1 was assigned for lowest quality, a score of 7 was assigned for the highest quality, and scores ranging between 2 and 6 were assigned when some of the criteria of the AGREE-HS item have been met, with higher scores indicating higher quality.

(7). In this paper, we systematically reviewed the development process of fourteen EEGs in LMICs, that is, the participants and the steps or the methods followed, and we assessed the quality of this process.

We identified fourteen EEGs in LMICs, compared with the thirteen reported by Daccache et al. in the systematic review conducted in June 2020 (7). This highlights that guidelines development is an ongoing process in LMICs, which are slowly but steadily adopting EEGs as a support tool for advice about the allocation of their scarce resources.

Our findings indicate that the responsible party or the development agency in the majority of included EEGs was the Ministry of Public Health, while in high-income countries (HICs) such as Canada, the United Kingdom, and Australia, independent bodies manage the development process (39–41). The responsibilities of Ministries of Health in system guidance in LMICs, where regulations and standards are *de jure* governance roles, are emphasized in the literature (42–44). Outside the government, this process can be improved by consultation with other major stakeholders, including the health professions, the private sector, civil society, philanthropic organizations, and academia, and by encouraging feedback by publishing discussion papers that set out draft proposals (44). Developers should bear in mind that during consultation, industry groups might seek to weaken regulation and to shift the goals that the government is seeking to achieve (44). The ministries' involvement may ensure the implementability of these guidelines in developing countries.

Interestingly, we found reporting to be poor about participants involved in the development process: sector, interest, and discipline were not explicitly disclosed in the vast majority of included guidelines. Due to the heterogeneity of the extracted data, we failed to coherently present the team composition results. Inconsistencies regarding this issue are found even in HICs. For instance, Australia's Pharmaceutical Benefits Advisory Committee (PBAC) did not report the disciplines of the guidelines developers, while Canada's Canadian Agency for Drugs and Technologies in Health (CADTH) named the members of the guidelines working group, and the UK's NICE briefly described the major roles of their guideline development team (39;41;45). A review of guideline organizations in Australia, Canada, Europe, New Zealand, and the U.S. found that guideline development groups (GDG) are composed of 10–20 members, and the number of disciplines is often three to five per group (46). In addition, guideline development was endorsed by the support of methodological experts (epidemiologists, information specialists, and others) and patient representatives (46). Adopting a multisectoral approach and engaging a multidisciplinary team is crucial for ensuring well-structured and high-quality guidelines (8;42). The GDG should include stakeholders such as consumers, health professionals who work within the relevant area, managers or policymakers, and individuals with the necessary technical skills, including information retrieval, systematic reviewing, group facilitation, project management, writing, editing, and expertise in health economics (46). The poor reporting on the development team prevented us from drawing conclusions about participants, and from identifying potential competing interests of development team members. This highlights the importance of good reporting and identification of the roles of members of the working group involved in the process, as well as clear conflict of interest statements.

A transparent and systematic process is fundamental for EEGs developers to accomplish their objective. We identified four main steps followed by EEGs developers in LMICs: conducting a review on national guidelines, organizing workshops, and getting support from either international experts or from organizations. Nevertheless, the steps followed were heterogeneous across guidelines. Only one country, Cuba, followed the four steps. According to the WHO, the optimal process for supporting the development of HSG is through finding evidence and translating evidence into guidance (8). That is, finding evidence using systematic reviews and translating evidence using a deliberative process, which may include informal or formal consensus involving several stakeholders with varied backgrounds, on development methods (8). Only six of the fourteen LMICs (Colombia, Cuba, Egypt, Malaysia, the Philippines, and Thailand) conducted reviews to generate evidence in developing their guidelines, and only five followed up this step by the deliberative process (Cuba, Egypt, Malaysia, the Philippines, and Thailand) (22;25;29;34;35;37). Other countries followed incomplete steps, that is, either a workshop, or international support, or a review (Bhutan, Brazil, China, Colombia, India, Indonesia, and Mexico) (18–21;31;33;34). Furthermore, while the AGREE enterprise provides a structured, systematic, and standardized methodological framework for developing and reporting HSG (11), we could not identify any country, except Cuba, following it. This is also the case in developed countries. For instance, Australia did not describe their guidelines development process, nor did the UK, which developed a manual for NICE guidelines, with the exception of some guidance including the appraisal of technology (47). In contrast, Canada, in their guidelines for the EE of pharmaceuticals, described the process for setting their guidelines (a workshop with Canadian stakeholders and international experts); this process was explicitly detailed by Towse in 1997 and Torrance in 1996 (48–50). Moreover, in 2018, Canada briefly described this process in the fourth edition of the guidelines (39). Standardizing the guideline development process would facilitate the production and adaptation of guidelines to different contexts and reduce spending resources on guideline development; this is of utmost importance for LMICs (51).

Finally, quality assessment scores were highest (nine out of fourteen) for the "methods" domain (means above 4), while lower scores were observed for the "participants" domain (seven out of fourteen with means below 4). Specifically, we noted that one-third of the identified EEGs failed to report or to engage multisectoral or multidisciplinary developers, and approximately 14 percent did not follow or did not report any recommended step as part of the development process. These results are in line with those reported by the systematic review of EEGs in LMICs, whereby countries with the lowest quality scores for the two domains had the most methodological weaknesses and gaps observed (7). Unfortunately, to our knowledge, the quality of the development process of EEGs in developed countries has not been previously assessed. Hence, a comparison with our results cannot be performed.

To our knowledge, this systematic review was the first to explore the development process of EEGs. Providing such information is crucial for guidelines developers, especially in the context of LMICs, where EEGs are increasingly being developed, and international organizations are supporting these countries in the development of guidelines. One major strength is that we followed both a predefined protocol and the recommended methods for reporting search strategies and systematic reviews (the PRISMA 2020 Statement). The search was broad and sensitive, without restrictions for language or publication date. Full-text screening and data extraction were done following best practices (in duplicate and using predefined forms). Two reviewers assessed the quality independently,

following an in-depth overview of the AGREE-HS user manual and related documents.

One potential limitation to this work is that it could not include the EEGs published by Iran. A citation of these guidelines was identified on the ISPOR Web site; however, the full guidelines were inaccessible, even after contacting the ISPOR Iranian Chapter. Moreover, as for all systematic reviews, it is always possible that our search could have missed some guidelines. In addition, our quality assessment concerned what was presented in the guidelines and their related documents, and the development may be slightly different from what was reported. Finally, one limitation pertains to the absence of a threshold for differentiating between the high, moderate, and low quality of included studies. This limitation is inherent in the AGREE-HS tool, given the lack of an empirical basis for defining thresholds (11).

Conclusion

The current work fills a gap in the research pertaining to the development of guidelines in LMICs (7;46;51). We highlight the scarcity of published information related to this process and the suboptimal quality of included studies. This paper pinpoints the importance of including a multisectoral capacity and the relevance of a transparent, explicit, and systematic approach in developing and reporting on the development process of EEGs in LMICs. This work provides relevant material that assists international organizations—for example, WHO, GIN, AGREE enterprise—and supports guidelines developers in LMICs to identify the best practice for developing EEGs that fit their national context, and recommends a transparent approach in designing and reporting methods for the development of guidelines. Future studies should also investigate the barriers as well as facilitators that developers of guidelines faced while developing and setting their guidelines.

Supplementary Material. The supplementary material for this article can be found at https://doi.org/10.1017/S0266462322000186.

Conflicts of Interest. The authors have no conflict of interest.

Author Contributions. All authors were involved in the concept and design, reviewed and edited the manuscript, and approved the final version of the manuscript. C.D. performed the searches and drafted the manuscript. C.D. and R.R. conducted the title and abstract screening. C.D., R.K., and R.R. conducted the full text screening, performed the data extraction, and conducted the quality assessment. The content of this manuscript has not been published nor is it being considered for publication elsewhere.

Data Availability Statement. The authors declare that all the data supporting the findings of this study (i.e., search strategy and the information extracted from the studies included in this review) are available within the article and the Electronic Supplementary Material.

References

1. **Wilkinson T**, **Sculpher MJ**, **Claxton K**, et al (2016) The international decision support initiative reference case for economic evaluation: An aid to thought. *Value Heal.* **19**, 921–928.
2. **O'Rourke B**, **Oortwijn W**, **Schuller T** (2020) Announcing the new definition of health technology assessment. *Value Heal.* **23**, 1–4.
3. **Dilokthornsakul P**, **Thomas D**, **Brown L**, **Chaiyakunapruk N** (2019) Interpreting pharmacoeconomic findings. In: *Clinical pharmacy education, practice and research*. Amsterdam: Elsevier, 277–287.
4. **Weatherly HLA**, **Cookson RA**, **Drummond MF** (2014) Economic evaluation of public health interventions: Methodological challenges. In: *Encyclopedia of health economics*, vol. 1. Amsterdam: Elsevier, 217–223.
5. **Zhao Y**, **Ming FH**, **Qu J**, et al (2018) A systematic review of pharmacoeconomic guidelines. *J Med Econ.* **21**, 85–96.
6. **Carapinha JL** (2017) A comparative review of the pharmacoeconomic guidelines in South Africa. *J Med Econ.* **20**, 37–44.
7. **Dacccahe C**, **Rizk R**, **Dahham J**, et al (2021) Economic evaluation guidelines in low- and middle-income countries: A systematic review. *Int J Technol Assess Heal Care.* **38**, e1.
8. **Bosch-Capblanch X** (2011) *Handbook for supporting the development of health system guidance. Supporting informed judgements for health system policies, July,* 2-176. Available at: http://www.popline.org/node/564120 (Accessed 2020).
9. **Lewin S**, **Bosch-Capblanch X**, **Oliver S**, et al (2012) Guidance for evidence-informed policies about health systems: Assessing how much confidence to place in the research evidence. *PLoS Med.* **9**, 1–8.
10. **Treweek S**, **Oxman AD**, **Alderson P**, et al (2013) Developing and evaluating communication strategies to support informed decisions and practice based on evidence (DECIDE): Protocol and preliminary results. *Implement Sci.* **8**, 1–12.
11. **AGREE-HS Research Team** (2018) *Appraisal of guidelines research & evaluation — health systems (AGREE-HS).* Available at: http://www.agreetrust.org (Accessed 2020).
12. *Introduction — Guidelines international network [Internet].* Available at: http://www.g-i-n.net/about-g-i-n (Accessed 2020).
13. **Bosch-Capblanch X**, **Lavis JN**, **Lewin S**, et al (2012) Guidance for evidence-informed policies about health systems: Rationale for and challenges of guidance development. *PLoS Med.* **9**, e1001186.
14. **Bond K**, **Stiffell R**, **Ollendorf DA** (2020) Principles for deliberative processes in health technology assessment. *Int J Technol Assess Health Care.* **36**, 445–452.
15. **Moher D**, **Liberati A**, **Tetzlaff J**, **Altman DG** (2010) Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Int J Surg.* **8**, 336–341.
16. **Cochrane** (2012) *LMIC filters | Cochrane effective practice and organisation of care* [Internet]. Available at: https://epoc.cochrane.org/lmic-filters (Accessed 2020).
17. **UNF** (2021) *Home - Original research - LibGuides at University of North Florida* [Internet]. Available at: https://libguides.unf.edu/originalresearch (Accessed 2021).
18. **Essential Medicines and Technology Division (EMTD)** (2018) *Health technology assessment process guideline.* 2nd ed. Available at: http://www.moh.gov.bt/wp-content/uploads/afd-files/2014/11/HTA-Process-Guideline.pdf (Accessed 2021).
19. **Ministério da Saúde** (2014) *Diretrizes metodológicas Diretriz de Avaliação Econômica.* 2a edição. Available at: http://bvsms.saude.gov.br/bvs/ct/PDF/dirtrizes_de_avaliacao_economica.pdf (Accessed 2021).
20. **Indonesian Health Technology Assessment Committee (InaHTAC), Ministry of Health Republic of Indonesia** (2017) *Health technology assessment (HTA) guideline.* Available at: http://www.gear4health.com/uploads/files/file-15-5a441f38c8992.pdf.
21. **Department of Health Research, Ministry of Health & Family Welfare** (2018) *Health technology assessment in India: A manual* [Internet]. Available at: https://htain.icmr.org.in/documents/publications/htain-manual.
22. **Ministry of Health Malaysia** (2019) *Pharmacoeconomic guideline for Malaysia.* 2nd ed. [Internet]. Available at: https://www.pharmacy.gov.my/v2/sites/default/files/document-upload/pharmacoeconomic-guidelines-malaysia-malaysia-second-edition-2019-final-page-adjustment_0.pdf.ment.pdf (Accessed 2021).
23. **Mercosur** (2013) *Guía metodológica para estudios de evaluación* [Internet]. Available at: http://sedici.unlp.edu.ar/bitstream/handle/10915/44143/MERCOSUR-_Guía_metodológica_para_estudios_de_evaluación_económica_de_tecnologías_sanitarias__30_p._.pdf?sequence=63&isAllowed=y.
24. **Consejo de Salubridad General** (2017) *Guía para la conducción de estudios de evaluación económica para la actualización del cuadro básico y catálogo*

de insumos del sector salud en México. Available at: http://www.csg.gob.mx/descargas/pdf/priorizacion/cuadro-basico/guias/conduccion_estudios/GCEEE_2017_Diciembre_x1x.pdf (Accessed 2021).
25. **Health Technology Assessment Unit** (2020) *Philippine HTA methods guide*. Department of Health – Philippines (Accessed 2021).
26. **Ministry of Health of the Russian Federation** (2016) *МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ ПО ПРОВЕДЕНИЮ СРАВНИТЕЛЬНОЙ КЛИНИКО-ЭКОНОМИЧЕСКОЙ ОЦЕНКИ ЛЕКАРСТВЕННОГО ПРЕПАРАТА*, 145. Available at: https://rosmedex.ru/wp-content/uploads/2016/12/MR-KE%60I-23.12.2016.pdf (Accessed 2021).
27. **Department of Health** (2013) *Guidelines for pharmacoeconomic submission*, 3–69. Available at: https://tools.ispor.org/PEguidelines/source/PEGazette_February2013_SouthAfrica.pdf.
28. **The Medical Association of Thailand** (2014) *Guidelines for health technology assessment in Thailand*. 2nd ed., 97. Available at: http://www.hitap.net/wp-content/uploads/2017/06/Thai-HTA-guideline-UPDATESJmed-with-Cover.pdf (Accessed 2021).
29. **Chaikledkaew U**, **Kittrongsiri K** (2014) Guidelines for health technology assessment in Thailand (second edition) - the development process. *J Med Assoc Thail.* **97**, S4–S9 (Accessed 2021).
30. **Augustovski F**, **Melendez G**, **Lemgruber A**, **Drummond M** (2011) Implementing pharmacoeconomic guidelines in Latin America: Lessons learned. *Value Heal.* **14**, S3 (Accessed 2021).
31. **Reinharz D**, **Ra V**, **Asche C** (2001) Pharmacoeconomic component of a clinical trial conducted in Latin America conceptual and empirical considerations. *Int J Technol Assess Health Care.* **4**, 571–578 (Accessed 2021).
32. **China Guidelines for Pharmacoeconomic Evaluations Working Group** (2020) *China guidelines for pharmacoeconomic evaluations*, vol. **2**. Beijing: Chinese Pharmaceutical Association, 65–70. Available at: https://tools.ispor.org/PEguidelines/source/China-Guidelines-for-Pharmacoeconomic-Evaluations-2020.pdf (Accessed 2021).
33. **Yue X**, **Li Y**, **Wu J**, **Guo JJ** (2021) Current development and practice of pharmacoeconomic evaluation guidelines for universal health coverage in China. *Value Heal Reg Issues*. **24**, 1–5.
34. **Ministerio de Salud y Protección Social** (2014) *Guía metodológica para la elaboración de guías de práctica clínica con evaluación económica en el sistema general de seguridad social en salud Colombiano* [Internet]. Colombia. Available at: http://gpc.minsalud.gov.co/recursos/Documentos_compartidos/Guia_Metodologica_Web.pdf (Accessed 2021).
35. **Ministerio de Salud Pública** (2003) *Methodological-guidelines-for-health-economic-evaluations-in-Cuba*. Available at: https://tools.ispor.org/PEguidelines/source/Methodological-Guidelines-for-Health-Economic-Evaluations-in-Cuba.pdf (Accessed 2021).
36. **Egyptian Drug Authority** (2015) *Guidelines for reporting pharmacoeconomic evaluations*. Available at: http://www.eda.mohp.gov.eg/Files/402_Egyptian_Pharmacoeconomic_guidelines.pdf (Accessed 2021).
37. **Elsisi GH**, **Kaló Z**, **Eldessouki R**, et al (2013) Recommendations for reporting pharmacoeconomic evaluations in Egypt. *Value Heal Reg Issues*. **2**, 319.
38. **Gagnon MA** (2013) Corruption of pharmaceutical markets: Addressing the misalignment of financial incentives and public health. *J Law Med Ethics.* **41**, 571–580.
39. **CADTH** (2017) *Guidelines for the economic evaluation of health technologies*. 4th ed. Ottawa: CADTH.
40. **NICE** (2013) *Guide to the methods of technology appraisal 2013*. London: NICE.
41. **PBAC** (2016) *Guidelines for preparing a submission to the Pharmaceutical Benefits Advisory Committee* [Internet]. Version 5. Australia. Available at: https://pbac.pbs.gov.au/content/information/files/pbac-guidelines-version-5.pdf (Accessed 2021).
42. **Sheikh K**, **Sriram V**, **Rouffy B**, et al (2021) Governance roles and capacities of ministries of health: A multidimensional framework. *Int J Heal Policy Manag.* **10**, 237–243.
43. **OECD** (2007) *The role of ministries in the policy system: Policy development, monitoring and evaluation*. SIGMA paper no. 39. Paris: OECD.
44. **World Health Organization** (2017) *Advancing the right to health: The vital role of law*.
45. **5 Health and Social Care Emergency Guideline Development Team**. *Tools and resources. Developing NICE guidelines: The manual guidance*. NICE.
46. **Fretheim A**, **Schünemann HJ**, **Oxman AD** (2006) Improving the use of research evidence in guideline development: 3. Group composition and consultation process. *Heal Res Policy Syst.* **4**, 1–6.
47. **NICE**. *1 Introduction | Developing NICE guidelines: The manual | Guidance | NICE* [Internet]. Available at: https://www.nice.org.uk/process/pmg20/chapter/introduction (Accessed 2021).
48. **Glennie JL**, **Torrance GW**, **Baladi JF**, et al (1999) The revised Canadian guidelines for the economic evaluation of pharmaceuticals. *Pharmacoeconomics.* **15**, 459–468.
49. **Torrance GW**, **Blaker D**, **Detsky A**, et al (1996) Canadian guidelines for economic evaluation of pharmaceuticals. *Pharmacoeconomics.* **9**, 535–559.
50. **Office of Health Economics**. *Guidelines for the economic evaluation of pharmaceuticals: Can the UK learn from Australia and Canada?*
51. **Schünemann HJ**, **Fretheim A**, **Oxman AD** (2006) Improving the use of research evidence in guideline development: 1. Guidelines for guidelines. *Heal Res Policy Syst.* **4**, 1–6.