



BMJ Open Assessing health governance across countries: a scoping review protocol on indices and assessment tools applied globally

Aidan Huang,^{1,2} Yuling Lin ,³ Liyuan Zhang,⁴ Jingwen Dong,⁵ Qiwei He,^{1,2} Kun Tang ^{1,2}

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¹Vanke School of Public Health, Tsinghua University, Beijing, China

²Institute for Healthy China, Tsinghua University, Beijing, China

³Global Studies Institute, University of Geneva, Geneva, Switzerland

⁴Department of History and Philosophy of Science, University of Cambridge, Cambridge, UK

⁵School of Public Health, Shanghai Jiao Tong University, Shanghai, China

Correspondence to

Dr Kun Tang;
tangk@mail.tsinghua.edu.cn

ABSTRACT

Introduction Most global health indices or assessment tools focus on health outcomes rather than governance, and they have been developed primarily from the perspective of high-income countries. To benchmark global health governance for equity and solidarity, it becomes necessary to reflect on the current state of indices or assessment tools evaluating health governance across countries. This scoping review aims to review the existing multicountry indices and assessment tools applied globally with measurable indicators assessing health governance; summarise their differences and commonalities; identify the lessons learnt through analysis of their advantages and gaps; and evaluate the feasibility and necessity to establish a new index or consensus framework for assessing global health governance.

Methods and analysis This scoping review protocol follows Arksey and O'Malley's methodological framework, the Joanna Briggs Institute guidelines and the Preferred Reporting Items for Systematic Reviews and Meta-analyses methodology for scoping reviews. Key information sources will be bibliographic databases (PubMed, Embase and Web of Science Core Collection), grey literature and citation tracking. The time frame will be from 1 January 2000 to 31 December 2021. Only indices or assessment tools that are globally applicable and provide measurable indicators of health governance will be eligible. A qualitative content analysis will follow the proposed data extraction form to explicate and compare each eligible index or assessment tool. An analysis based on a proposed preliminary evaluation framework will identify the advantages and gaps and summarise the lessons learnt. This scoping review will also discuss the feasibility and necessity of developing a new global health governance index or consensus framework to inform future research and practices.

Ethics and dissemination This scoping review does not require ethics approval. Dissemination will include a peer-review article, policy briefs and conference presentations. This protocol has been registered in the Open Science Framework (osf.io/y93mj).

INTRODUCTION

Rationale

The health governance of countries shapes global health governance. In a broad sense,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This scoping review will be a prior assessment in establishing a new index or consensus framework for assessing global health governance for the post-COVID-19 era.
- ⇒ This scoping review will differ from the existing reviews by incorporating governance for a wide range of health objectives and broadening geographic coverage with a global lens.
- ⇒ The literature to be reviewed will include research articles and indices or assessment tools used by organisations, with theoretical and practical implications for assessing health governance.
- ⇒ Pilot tests in searching and study selection and consultation with multiple librarians were conducted for the protocol development.
- ⇒ With the topic being broad and interdisciplinary, the precision of the search strategy might be constrained.

governance is described as a series of collective actions and decision-making procedures with diverse actors and organisations without formal control mechanisms.¹ Governance emphasises governing with and through networks between public, private and voluntary sectors.² It is one of the blocks in the widely-used health systems framework formulated by the WHO.³ Given the globalised health issues, health governance in each sovereignty has been closely linked. From the pandemic of SARS to COVID-19, repeating global health crises have alerted the need for global health solidarity efforts.⁴ However, there is still a lack of a solid governance framework under 'international anarchy',⁵⁻⁷ although United Nations' 2030 Sustainable Development Goals have set up goals to promote global health outcomes.

Indeed, existing indices or assessment tools in global health tend to focus on health outcomes instead of the governance elements

attributed to these outcomes (see Appendix A in the online supplemental material 1). Even within health governance, multiple parallel overlapping frameworks, assessment tools and indices for theoretical or practical purposes have created complexities. Besides, 85% of global health organisations have their headquarters in Europe or North America; more than 80% of the global health leaders come from high-income countries.⁸ Therefore, most global health indices or assessment tools and indicators have been produced from high-income countries' perspectives, failing to reflect the other populations. Due to economic constraints and low logistic capacity, health statistics in developing countries are with varying standards and difficult-to-assess accuracy.⁹ Thus, global health indicators' validity, utility and representativeness in developing countries are questionable.¹⁰

The underlying standpoint of this scoping review is that with the deeply rooted notions of sovereignty, global health governance has to be anchored around the health governance of countries. A starting point might be a consensus framework or a new, integrated index on health governance across countries globally. Thus, scoping the existing indices and assessment tools will lay a practical basis for developing an index or consensus framework to benchmark global health governance for equity and solidarity.

Objectives

This scoping review aims to review the existing multi-country indices and assessment tools applied globally with measurable indicators assessing health governance; summarise their differences and commons; identify the lessons learnt through analysis of their advantages and gaps and assess the feasibility and necessity to establish a new index or consensus framework for assessing global health governance.

As global health governance is an emerging, multidisciplinary field, a scoping review is a more appropriate tool to 'assess and understand the extent of the knowledge and identify, map, report or discuss the characteristics or concepts'.¹¹ By contrast, systematic reviews aiming to 'answer a clinically meaningful question or provide evidence to inform practice'¹² or literature reviews with less systematic, transparent and reproducible methods will not meet the objectives above.

Eligible literature

Only indices or assessment tools that are globally applicable and provide measurable indicators of health governance will be eligible. Indices and assessment tools are both tools for evaluation with measurable indicators. In practice, 'index' is often an external evaluation tool resulting in scores or rankings, while 'assessment tool' often refers to guidance or checklist for benchmarked standards (it might be called 'self-assessment tool' in some cases). Regarding 'health', as the One Health approach has attracted increasing attention but faced challenges in operationalisation within global health governance,¹³ this

scoping review will include indices or assessment tools related to human, animal and environmental health.

International institutions, universities and think tanks might have established the majority of the potentially eligible literature, such as the Global Health Security Index, International Health Regulations Monitoring & Evaluation Framework and the Ocean Health Index. Other potentially eligible literature can also be found in bibliographic databases, such as the 'health development governance index'.¹⁰ In the health sector, the authors could only find indices or assessment tools to evaluate national or subnational governance, although the assessment results might be comparable across countries under international coordination. Therefore, the authors posit that the assessment of transnational, multinational, international or global health governance might be rare. However, the authors will include the latter pieces of literature if there are any.

This scoping review excludes assessment frameworks without measurable indicators for the following reasons. First, there have been scoping reviews, systematic reviews or review protocols covering health governance frameworks in the health system,^{14–16} health emergencies or health security¹⁷ or both,^{18 19} while few of them pragmatically concentrate on indices or assessment tools. Second, most health governance frameworks have not been applied in practice, and there is a lack of real-world evidence to validate the efficacy of these frameworks. Pyone *et al* found that within 16 frameworks for assessing governance in the health system, only five were applied in empirical research.¹⁶ Mikkelsen-Lopez and her colleagues also point out that the lack of empirical work might result from unrealistic indicators and overly complicated framework design.²⁰

This scoping review excludes indices or assessment tools designed to be applied in a particular country or region. Some reviews have included indices or assessment tools applied in regions like Europe as part of eligible literature.^{21–23} Moreover, considering the objectives of this scoping review, including indices or assessment tools applied in particular countries or regions will weaken the global generalisability. In addition, since the concept of 'governance' in this scoping review involves diverse actors and organisations, governance of only one type of organisation (eg, hospital or enterprise) does not fit this research's scope.

Related published/ongoing reviews

The authors did not identify any published or ongoing systematic reviews or scoping reviews on the topic through a preliminary search in Google Scholar, PROSPERO, Joanna Briggs Institute (JBI) Evidence Synthesis, Figshare, Open Science Framework and Research Gate (see Appendix B in the online supplemental material 1 for the methods of the preliminary search). Some eligible indices or assessment tools included in similar reviews²³ will be included and analysed in this scoping review, although their objectives and analytical methods differ from those of this scoping review.

Table 1 Search terms

Key concepts	Health	Governance	Assess	Measuring tools	Global
Search terms	health	1. governance 2. leadership 3. accountability 4. stewardship 5. transparency 6. policy development/formulation 7. strategic vision/direction 8. partnership 9. participation 10. involvement 11. consensus	1. evaluate 2. monitor 3. measure 4. assess	1. indicator 2. score 3. index	1. global 2. international 3. world 4. multi-country

Specifically, this scoping review will differ from the existing reviews by incorporating governance for a wide range of health objectives, such as health system strengthening (including universal health coverage) and health security (including public health emergency preparedness), broadening the geographic coverage with a global lens, and focusing on indices or assessment tools in practice to inform decision-making for future assessment of global health governance.

METHODS

This scoping review protocol follows Arksey and O'Malley's methodological framework,²⁴ the JBI guidelines²⁵ and the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) methodology for scoping reviews.^{11,26} The reviewers also refer to systematic review methods (eg, search strategy and reporting) that might assist the transparency and rigorousness of this scoping review.²⁷⁻³¹

This protocol has been registered in the Open Science Framework (osf.io/y93mj). The searches were conducted in each proposed information source on 3 April 2022. The following research and writing will start in June 2022 and last 2-3 months. The final scoping review will report important protocol amendments and their rationales.

Research questions

Following the objectives of this scoping review, the primary research question will guide the study: what indices or assessment tools are designed to assess health governance across multiple countries? Besides, two additional research questions are based on the primary question. First, what are their differences and commonalities? Second, what are the lessons learnt to inform the future global health governance index or consensus framework development?

Identifying relevant studies

Electronic searches

The search strategy will locate both publications in bibliographic databases and grey literature and adapt for each included information source. Given that the term 'health governance' only became common in the published literature around 2000, the search will be filtered by the publication dates between 1 January 2000 and 31 December 2021. The Peer Review of Electronic Search Strategies checklist has been used for the proposed full search strategy.³¹

Our search terms come from the following sources: concepts related to research questions, MeSH (Medical Subject Headings) and Emtree databases and completed

Table 2 Eligibility criteria: SOCT framework

	Inclusion criteria	Exclusion criteria
Subjects	Indices or assessment tools on human, animal and/or environmental health governance with measurable indicators	Assessment frameworks, conceptual frameworks or narrative assessments without measurement; on topics irrelevant to health
Objectives	Describing the indices or assessment tools (including indicators or scoring system)	Only criticising, mentioning and analysing the indices or assessment tools while not aiming to yield assessment results for health governance
Coverage	Can be applied in multiple countries at the global level	Applied or can only be applied within one country, one region or one type of specific organisations or individuals (eg, hospital, enterprise); only appearing as a case study without further generalisation
Type of sources	Reports, documents, peer-reviewed publications, websites	Commentaries, editorials, reviews, blogs, letters, conference abstracts, protocols
SOCT, Subjects, Objectives, Coverage, Type of sources.		

**Table 3** Draft data extraction form

Extraction category	Description	Data type
Name	Full name of the index or assessment tool	Unstructured text
Developer	Author or agency that developed the index or assessment tool	Unstructured text
Reference	The reference information of the index or assessment tool	Unstructured text
Time coverage	First publication year	Numerical data
	Publication frequency	Number
		Annual, biennial, quarterly, monthly, etc.
	The coverage of years the index or assessment tool being used	Numerical data
Operation, if applicable	Roles and coordination among sponsor, funder, manager or other stakeholders	Unstructured text
Domain	Human health, animal health, environmental health, etc.	Categorical data
Issues to address	The health issues to address, for example, health system strengthening, health security or health data	Categorical data
Objectives	The purpose of index or assessment tool creation; the assessed subjects	Unstructured text
Geographic coverage	Number of countries assessed	Numerical data
	The geographic regions of countries assessed, for example, Asia, Africa, Europe, North America, South America or global	Categorical data
Implementation level	The implementation level that the index or assessment tool was designed to assess, for example, global, transnational, regional, national, subnational or local level	Categorical data
Dimensions	The indicator dimensions (not the specific indicators) of assessment content, for example, leadership, accountability, transparency and policy development	Categorical data
Indicators	The indicators measuring health governance	Unstructured text
Theory or logic, if applicable	The theory or logic based to develop the index or assessment tool	Unstructured text
Methods of index or assessment tool development	Methods of design and development of the index or assessment tool, for example, Delphi, review of literature or modelling	Categorical data
Methods of data collection	The approach used to obtain information necessary for the assessment, for example, questionnaire, checklist, interview or secondary data collection	Categorical data
Methods of yielding results	Methods of yielding assessment results, for example, qualitative, quantitative or mixed methods and the corresponding specific methods	Categorical data
Types of assessment results (if there are any open ones)	Types of results present the assessment results, for example, scores, rankings and ratings	Categorical data
Validity and reliability, if applicable	Description of the validation process or reliability check of the assessment	Unstructured text

and ongoing related systematic reviews and scoping reviews. Using [table 1](#), the authors join all terms within each concept with OR and join each concept together using AND.

The authors will search the following bibliographic databases: PubMed, Embase and Web of Science Core Collection. Appendix C in the online supplemental material 1 presents a full search strategy for each electronic database.

Given that some indices or assessment tools might not be commercially or academically published, grey literature will be an essential source of information in this

scoping review. Google will be searched using a decus-tomised mode. Other search tools will include WHO Institutional Repository for Information Sharing (IRIS). In addition, experts in global health will be consulted to explore additional literature sources.

Citation tracking

As the meaning of “governance” in this scoping review might not be apparent in the existing indices or assessment tools, citation tracking will be used to identify relevant articles. One approach is backward snowballing (reference searching) through reviews or literature

Table 4 Preliminary evaluation framework

Criteria	Description
Indicator completeness	The extent to which the indicator system is complete and operationalised in the following ways (including but not limited to): 1. The indicators can be assigned a direct value without following implicit indicators or questions; 2. The indicators are predefined and organised, not being example indicators.
Clarity of measurement parameters	The extent to which the methods for measurement of the indicators, actions, or structures are stated
Being evidence-based	The extent to which the observational or experimental evidence is provided for assigning value to the indicators
Feasibility	The extent to which the index or assessment tool could be applied in multi-country settings in the following ways (including but not limited to): 1. It is inclusive of disparities of countries, with universal or flexible indicators and available data; 2. A management structure or accountable entity has been or is to be set for the long-term operation of the index or assessment tool.
Utility	The extent to which the index or assessment tool supports decisions related to improvement (aiming at internal audiences) or accountability (aiming at external stakeholders), and policy advocacy or other functions.
Sustainability	The extent to which the index or assessment tool could be applied continuously in the following ways (including but not limited to): 1. It has a long-term operating plan, or it has been applied for multiple years; 2. It accommodates changes in the health issues or other conditions; 3. It has predictable long-term technical, managerial and financing support for daily functioning.

citing a potentially eligible index or assessment tool. For example, the scoping review by Chiossi *et al* might have included some potentially eligible literature for this scoping review.²³ Another approach is forward snowballing (cited by searching) through eligible literature. Citation tracking in the related field of literature can support us in finding additional indices and assessment tools.

Selection of eligible studies

The literature that meets all the inclusion criteria will be included, while literature that meets any one of the exclusion criteria will be excluded. [Table 2](#) presents the eligibility criteria, following the Subjects, Objectives, Coverage, Type of sources framework developed by the authors. Appendix D in the online supplemental material 1 presents detailed eligibility criteria to assist the reviewers' decision in study selection.

All literature searched through bibliographic databases will be uploaded to Covidence, which will identify and remove duplications. Based on the eligibility criteria, two independent reviewers will screen the titles and abstracts (and full texts if no clues are helping to judge the eligibility) and then assess the full texts in detail to select the literature. However, for Google and WHO IRIS, another two reviewers will decustomise the searching, export the results for each search string to Excel, screen the titles and abstracts, summaries or introductions if applicable, and then assess the full texts in detail separately. Literature obtained from citation tracking will be selected after

the selection process of literature obtained from electronic searches.

A pilot test with randomly selected 50 samples will be conducted. The reviewers will meet to discuss discrepancies and modify the eligibility criteria and elaboration document. The screening will only start when 75% agreement is achieved.²⁵

The reasons for any exclusion following the full-text review will be recorded. The reviewers will resolve disagreements through discussions throughout the selection process. A third reviewer will make the final decision if the two paired reviewers cannot resolve the disagreement.

The search results and the study selection process will be reported in the final scoping review and presented in a PRISMA extension for scoping review flow diagram.²⁶ All data will be recorded and exported into Excel form after the whole process ends.

Data extraction

Two reviewers will extract data from the eligible literature independently using a tailored data extraction tool developed by the authors ([table 3](#)). If discrepancies occur during the data extraction process, the two reviewers will discuss to reach a common decision. If there is an unsolved disagreement, a third reviewer will make the final decision. There will be a pilot test to ensure consistency among the reviewers.

The authors might modify the draft data extraction form during data extraction. The scoping review will detail the modifications compared with this protocol.

Data presentation and analysis

A qualitative content analysis will follow the data extraction form to explicate further and compare each index or assessment tool.

Tables and figures will present the extracted data for each extraction category, followed by detailed descriptive analyses. An overview table will show the basic information of each eligible literature, including the name, developer and references. Then, numerical or categorical data will be calculated on counts and proportions. For instance, there might be N (p%) articles using Delphi approaches to develop the indices and assessment tools. Such statistics will help grasp an overview of the characteristics of the eligible literature. For unstructured texts, a qualitative data analysis software will be used for coding. The contents related to governance will be particularly coded. However, the data of some extraction categories with unstructured texts could probably transfer to numerical or categorical data. For example, theory or logic might be further categorised by disciplines.

To better identify the advantages and gaps and summarise the lessons learnt, there will be an analysis based on the proposed preliminary evaluation framework (table 4) after the data presentation. This framework is amended from Haeberer *et al's* framework²² according to the topic of this scoping review and the contents relying on the authors' subjective judgement were cut. The purpose of this framework is not to set criteria for the indices or assessment tools. Instead, it is simply to guide a further deep discussion based on the descriptive data.

Following the analysis above, this scoping review will discuss the feasibility and necessity of developing a new global health governance index or consensus framework. The feasibility evaluation in table 4 will facilitate the feasibility analysis at this stage, and the gaps identified above will assist the necessity analysis. Therefore, the study will inform future research and practices in assessing global health governance.

Patient and public involvement

Patients and the public will not be involved in this scoping review.

ETHICS AND DISSEMINATION

The analytical results will inform various stakeholders, including researchers, public health agencies, governments, global health organisations and other health governance actors. Dissemination of this scoping review will include publication in a peer-reviewed scientific journal, policy briefs and conference presentations. Ethics approval is not required as the data are available publicly.

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Contributors All authors contributed to the study's design, drafted the manuscript, provided feedback and approved the final manuscript. KT provided feedback in principle, oversaw revisions and refined the manuscript. KT will also be the guarantor of the review. AH developed the search strategy, eligibility criteria, and data extraction tool and drafted and edited the protocol. YL structured the protocol, drafted the methods, refined the search strategy and eligibility criteria in detail, and contributed to the pilot tests. LZ drafted the introduction session and the supplemental material, refined the search strategy and the manuscript, and contributed to the pilot tests. JD developed the initial search strategy and eligibility criteria and drafted the methods. QH led the initial search to check the availability of the potential indices or assessment tools.

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ORCID iDs

Yuling Lin <http://orcid.org/0000-0002-3834-4111>

Kun Tang <http://orcid.org/0000-0002-5444-186X>

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Appendix A to Appendix D

Appendix A. KEY CONCEPTS

Governance

Governance has been studied in various dimensions, such as socio-legal studies, political science, economics, and development studies. In a broader term, governance is described as a series of collective actions and decision-making procedures with diverse actors and organisations without formal control mechanisms. Governance does not depend on authority and coercion; it is achieved through negotiation, communication, and hegemonic influence.⁽¹⁾ It does not only concern the government, and it emphasises governing with and through networks between public, private and voluntary sectors.⁽²⁾ The United Nations Development Programme (UNDP) refers to good governance broadly as the principles of legitimacy and voice, direction, performance, accountability, and fairness.⁽³⁾ Definition of governance World Health Organization (WHO) focuses on effective oversight, coalition-building, the provision of regulations and incentives, attention to system-design and accountability.⁽⁴⁾ Concerning health, Baez-Camargo and Jacobs define governance as “processes through which health systems manage human resources, acquire and distribute medicines and technologies, generate and disseminate information, and provide means to finance the provision of health services to the population.”⁽⁵⁾

Given the inclusiveness of “governance”, this scoping review does not aim to define a concrete *priori* concept of governance. Rather, it tried extensively potential search terms according to the existing analysis of governance dimensions (**Table A**) through a rapid review of reviews (systematic review, scoping review or systematic-like reviews).¹ Three reviews were eligible as they synthesised the literature surrounding the concept of “governance”. The first column lists the elements, dimensions or functions (referred to as “dimensions”) of “governance” identified by these three reviews or their search terms for “governance”. To further identify the more recognised key dimensions of “governance”, this column only shows the dimensions or search terms overlapped by at least two reviews. Terms with similar meanings are classified in one group, such as participation and involvement. The second to fourth column shows the original expressions of the classified dimensions or search terms in the corresponding reviews.

Based on Table A, we develop the search terms for the concept “governance” in our search strategy. The search terms cover all the dimensions or search terms for “governance” overlapped in the included review listed in Table A.

Besides, we also referred to search strategies of existing systematic reviews or scoping reviews on health governance².^(6–12) Apart from “governance” itself and the dimensions listed above, we add

¹ We used the search strings “governance AND (concepts OR concept OR definition* OR define OR defining OR meaning*)” in Web of Science, Ovid (Embase <1974 to 2022 March 11> and Medline and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to March 11, 2022>), Cochrane, and Google Scholar. The search field was “Title” in bibliographic databases, the time frame was 2000-2021 and the document type was review article. Without removing duplicates, the searching results are 360, 178 and 5220 respectively in Web of Science, Ovid and Cochrane. In order to find additional literature to the bibliographic databases, there is no search field in Google Scholar and the top 100 items by relevance were screened. The search date was 14 March 2022. In addition, in Barbazza et al. (2014), broad dimensions include some fundamental values and outcomes that could be independent from the concept of governance, so we only list the functional dimensions according to this article in Table A.

² We used the search strings “health NEAR/5 governance” AND (‘systematic review’ OR ‘scoping review’) in Web of Science and Ovid (Embase <1974 to 2022 March 11> and Medline and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions <1946 to March 11, 2022>). The search field was “Title” and the time frame was 2000-2021. Without removing duplicates, the searching results are 15 and 10 respectively in Web of Science and Ovid. The search date was 14 March 2022. The inclusion criteria are: (1) using governance as a concept to search; (2) the search terms in the governance concept are more than “governance” itself; (3) the topic is health related governance, not data or other governance or other governance

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another term, “leadership”, for two reasons. First, it has been widely used as a search term for the concept of “governance”. We did another review of reviews focusing on search terms used in systematic or scoping reviews on health governance and found that three out of seven eligible reviews used “leadership” as a search term for the concept of “governance”.(6–8) Except for “governance” per se, only “accountability” appears in these reviews more than “leadership” does (four times). Second, leadership entails “the capacity of the system to initiate, implement and monitor a regulatory system” and “the ability to organise and manage the alignment of all relevant actors and actions engaged in processes pertaining to this”.(13) Thus, it is often linked to governance, as explicated in governance literature (13,14) and potentially eligible literature in this scoping review like Leadership and Governance for Health Indicators.(15)

Table A. Summary of reviews regarding governance dimensions

Information of eligible reviews	Carlson et al., “Defining the functions of public health governance.” <i>American Journal of Public Health</i> (2015).(14)	Barbazza and Tello, “A review of health governance: definitions, dimensions and tools to govern.” <i>Health Policy</i> (2014). (13)	Ruhanen et al. “Governance: a review and synthesis of the literature.” <i>Tourism Review</i> (2010).(16)
Classified dimensions or search terms for “governance”			
Accountability	-	Accountability	Accountability
Stewardship	Resource stewardship	Stewardship	-
Transparency	-	Transparency	Transparency
Policy development/formulation	Policy development	Formulating policy/strategic direction	-
Strategic vision/direction	-	Formulating policy/strategic direction	Strategic vision
Partner/partnership	Partner engagement	Partnerships	-
Participation/involvement	-	Participation and consensus	Involvement
Consensus	-	Participation and consensus	Consensus

Global Health Governance

While titled “health governance across countries”, this scoping review is embedded in the context of global health governance. Although existing literature has centred on governance in health systems and health development only in recent decades, there has been an increasing interest in discussing the relationship between governance and global health. Despite the extensive scholarly debates on the definition of global health, it is still elusive to reach a consensus around a precise definition. In 2009, Koplan and colleagues argued for “a common definition of global health”, which emphasises transnational health, and embraces different disciplines and interdisciplinary collaboration.(17) Scholars delineate global health by focusing on multiple dimensions, such as education, governance and security. Many also view global health as a mode of governance across borders.(18) The term global health governance (GHG) is widely used in scholarly work, but few researchers agree on how the term should be applied. Lee and Kamradt-Scott point out that the GHG peer-reviewed literature varies substantially on what kinds of and to what extent institutions should engage in GHG. In addition, the goal and function of GHG are also not clear.(19) For instance, Kickbusch and Szabo refer GHG mainly to institutions and governance processes that are directly linked to health, such as the WHO.(20) Another highly cited definition proposed by David P. Fidler takes a more inclusive approach. He defines GHG as “the use of formal and informal institutions, rules, and processes by states,

linking to health; (4) systematic review or scoping review. Seven literature is eligible as a result of this review of reviews.

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intergovernmental organisations, and non-state actors to deal with challenges to health that require cross-border collective action to address effectively." (21)

Appendix B. PRELIMINARY SEARCHES

The methods for searching related published/ongoing reviews were: (1) directly searching using strings "'health governance' AND ('index' OR 'indicator' OR 'assess') AND ('systematic review' OR 'scoping review')"; (2) forward snowballing for the reviews including our potential eligible literature such as GHSI and IHR core capacity, using strings "'(global health security index' OR 'GHSI') AND ('systematic review' OR 'scoping review')" and "'(international health regulations' OR 'IHR') AND ('systematic review' OR 'scoping review') AND ('core capacity' OR 'score')". There was no filter or limit, and the search dates were 20 November 2021 and 22 March 2022.

Appendix C. FULL SEARCH STRATEGY

Web of science Core Collection

Search date: 03 April 2022

No.	Query	Results
#1	TS=("health" OR "healths" OR "healthcare**")	2,899,246
#2	TS=("governance**" OR "leadership**" OR "accountabilit**" OR "stewardship**" OR ("policy" OR "policies") NEAR/10 ("develop" OR "developing" OR "develops" OR "developed" OR "development" OR "developments" OR "formulat**")) OR ("strateg**" NEAR/10 ("vision" OR "visions" OR "direction" OR "directions")) OR "partner**" OR "transparen**" OR "participation**" OR "involvement**" OR "consensus**")	2,178,485
#3	TS=("evaluate" OR "evaluated" OR "evaluates" OR "evaluating" OR "evaluation**" OR "monitor" OR "monitors" OR "monitored" OR "monitoring" OR "measure " OR "measures" OR "measured" OR "measuring" OR "measurement**" OR "assess" OR "assesses" OR "assessed" OR "assessing" OR "assessment**")	15,885,119
#4	TS=("indicator**" OR "score" OR "scores" OR "scored" OR "scoring" OR "index" OR "indexes" OR "indexes" OR "indexed" OR "indices" OR "indexing")	3,259,711
#5	TS=("globe" OR "global" OR "globally" OR "international" OR "internationally" OR "world" OR "worldwide" OR "worldwidely" OR "multi country " OR "multi countries")	3,745,205
#6	#1 AND #2 AND #3 AND #4 AND #5 AND DOP=(2000-01-01/2021-12-31)	8,046
#7	#7 NOT DT=(Review OR Editorial Material OR Meeting Abstract OR Letter)	6,844

PubMed

Search date: 03 April 2022

No	Query	Results
#1	"health"[MeSH Terms] OR "health"[Title/Abstract] OR "healths"[Title/Abstract] OR "healthcare**"[Title/Abstract]	2,617,637
#2	"leadership"[MeSH Terms] OR "public policy"[MeSH Terms] OR "consensus"[MeSH Terms] OR "social participation"[MeSH Terms] OR "community participation"[MeSH Terms] OR "stakeholder participation"[MeSH Terms] OR "governance**"[Title/Abstract] OR "leadership**"[Title/Abstract] OR "accountabilit**"[Title/Abstract] OR "stewardship**"[Title/Abstract] OR ("policy"[Title/Abstract] OR "policies"[Title/Abstract]) AND ("develop"[Title/Abstract] OR "developing"[Title/Abstract] OR "develops"[Title/Abstract] OR "developed"[Title/Abstract] OR "development"[Title/Abstract] OR "developments"[Title/Abstract]) OR "formulat**"[Title/Abstract]) OR ("strateg**"[Title/Abstract] AND ("vision"[Title/Abstract] OR "visions"[Title/Abstract] OR "direction"[Title/Abstract] OR "directions"[Title/Abstract])) OR "partner**"[Title/Abstract] OR "transparen**"[Title/Abstract] OR "participation**"[Title/Abstract] OR	1,434,193

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#3	"involvement"[Title/Abstract] OR "consensus"[Title/Abstract] "evaluate"[Title/Abstract] OR "evaluated"[Title/Abstract] OR 9,147,656 "evaluates"[Title/Abstract] OR "evaluating"[Title/Abstract] OR "evaluation"[Title/Abstract] OR "monitor"[Title/Abstract] OR "monitors"[Title/Abstract] OR "monitored"[Title/Abstract] OR "monitoring"[Title/Abstract] OR "measure"[Title/Abstract] OR "measures"[Title/Abstract] OR "measured"[Title/Abstract] OR "measuring"[Title/Abstract] OR "measurement"[Title/Abstract] OR "assess"[Title/Abstract] OR "assesses"[Title/Abstract] OR "assessed"[Title/Abstract] OR "assessing"[Title/Abstract] OR "assessment"[Title/Abstract]
#4	"indicator"[Title/Abstract] OR "score"[Title/Abstract] OR "scores"[Title/Abstract] 2,311,393 OR "scored"[Title/Abstract] OR "scoring"[Title/Abstract] OR "index"[Title/Abstract] OR "indexs"[Title/Abstract] OR "indexes"[Title/Abstract] OR "indexed"[Title/Abstract] OR "indices"[Title/Abstract] OR "indexing"[Title/Abstract]
#5	"globe"[Title/Abstract] OR "global"[Title/Abstract] OR "globally"[Title/Abstract] OR 1,490,795 "international"[Title/Abstract] OR "internationally"[Title/Abstract] OR "world"[Title/Abstract] OR "worldwide"[Title/Abstract] OR "worldwidely"[Title/Abstract] OR "multi country"[Title/Abstract] OR "multi countries"[Title/Abstract]
#6	#1 AND #2 AND #3 AND #4 AND #5 7,928
#7	#1 AND #2 AND #3 AND #4 AND #5 AND ("2000/01/01"[Date - Publication] : 7,407 "2021/12/31"[Date - Publication])
#8	(#7) NOT (Comment[Publication Type] OR Editorial[Publication Type] OR 6,270 Letter[Publication Type] OR Review[Publication Type])

Embase

Search date: 03 April 2022

No.	Query	Results
#1	'health'/exp OR 'public health'/exp OR 'health care'/exp OR health:ab,ti,kw OR 11,573,270 healths:ab,ti,kw OR 'healthcare*':ab,ti,kw	
#2	'leadership'/exp OR 'policy'/exp OR 'consensus'/exp OR 'governance'/exp OR 1,866,006 'accountability'/exp OR 'strategy'/exp OR 'partner'/exp OR 'partnership'/exp OR 'participation'/exp OR 'involvement'/exp OR 'transparency'/exp OR 'governance*':ab,ti,kw OR 'leadership*':ab,ti,kw OR 'accountabilit*':ab,ti,kw OR 'stewardship*':ab,ti,kw OR (('policy' OR 'policies') NEAR/10 ('develop' OR 'developing' OR 'develops' OR 'developed' OR 'development' OR 'developments' OR 'formulat*')):ab,ti,kw OR ('strateg*' NEAR/10 ('vision' OR 'visions' OR 'direction' OR 'directions')):ab,ti,kw OR 'partner*':ab,ti,kw OR 'transparen*':ab,ti,kw OR 'participation*':ab,ti,kw OR 'involvement*':ab,ti,kw OR 'consensus*':ab,ti,kw	
#3	'monitor'/de OR 'measurement'/de OR 'assessment'/exp OR evaluate:ab,ti,kw 12,334,482 OR evaluated:ab,ti,kw OR evaluates:ab,ti,kw OR evaluating:ab,ti,kw OR evaluation*:ab,ti,kw OR monitor:ab,ti,kw OR monitors:ab,ti,kw OR monitored:ab,ti,kw OR monitoring:ab,ti,kw OR measure:ab,ti,kw OR measures:ab,ti,kw OR measured:ab,ti,kw OR measuring:ab,ti,kw OR measurement*:ab,ti,kw OR assess:ab,ti,kw OR assesses:ab,ti,kw OR assessed:ab,ti,kw OR assessing:ab,ti,kw OR assessment*:ab,ti,kw	
#4	'indicator'/de OR 'score'/exp OR 'index'/exp OR indicator*:ab,ti,kw OR 3,358,824 score:ab,ti,kw OR scores:ab,ti,kw OR scored:ab,ti,kw OR scoring:ab,ti,kw OR index:ab,ti,kw OR indexs:ab,ti,kw OR indexes:ab,ti,kw OR indexed:ab,ti,kw OR indices:ab,ti,kw OR indexing:ab,ti,kw	
#5	'global'/exp OR 'world'/exp OR globe:ab,ti,kw OR global:ab,ti,kw OR 2,099,845 globally:ab,ti,kw OR international:ab,ti,kw OR internationally:ab,ti,kw OR world:ab,ti,kw OR worldwide:ab,ti,kw OR worldwidely:ab,ti,kw OR 'multi country':ab,ti,kw OR 'multi countries':ab,ti,kw	
#6	#1 AND #2 AND #3 AND #4 AND #5 19,014	
#7	#1 AND #2 AND #3 AND #4 AND #5 AND [2000-2021]/py 18,199	
#8	#7 NOT (editorial:it OR letter:it OR review:it OR 'conference abstract':it) 9,416	

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Google

Search date: 03 April 2022

Customised range: 2000-2021

No.	Query (Google limits queries to 32 words)	Results
1	health AND (governance OR leadership OR accountability OR stewardship) AND (evaluate OR monitor OR measure OR assess) AND (index OR indicator OR score) AND (global OR international OR world OR multi-country)	151
2	health AND (transparency OR policy OR strategy) AND (evaluate OR monitor OR measure OR assess) AND (index OR indicator OR score) AND (global OR international OR world OR multi-country)	178
3	health AND (partnership OR participation OR involvement OR consensus) AND (evaluate OR monitor OR measure OR assess) AND (index OR indicator OR score) AND (global OR international OR world OR multi-country)	157

Appendix D. ELIGIBILITY CRITERIA IN DETAIL

	Inclusion criteria	Exclusion criteria
Subjects	Indices or assessment tools on human, animal, and/or environmental health governance with measurable indicators: 1.1 General health governance; 1.2 Governance of health system; 1.3 Governance of public health risks such as public health emergencies, epidemics and pandemics; 1.4 Governance on specific health issues such as influenza, reproductive health.	Assessment/conceptual frameworks, or narrative assessment without measurement; on topics irrelevant to health 1.1 Not being an index or assessment tool; 1.2 Irrelevant to our topics 1.2.1 Not governance-related; 1.2.2 Not health-related; 1.2.3 Health outcome-based; 1.2.4 Both non-governance- and non-health-related
Objectives	2 Describing the indices or assessment tools (incl. indicators or scoring results)	2 Only criticising, mentioning, and analysing the indices or assessment tools while not aiming to yield assessment results for health governance
Coverage	3 Can be applied in multi-countries at the global level (although the assessed subject might be sub-national/national entities)	3.1 Geographical coverage: Only applied/can be applied within one country or one region; 3.2 Entity coverage: Assessing one type of specific organisations or individuals (e.g., hospital or enterprise) 3.3 Case study: Appearing as a case study without further generalisation
Type of sources	4 Reports, documents, peer-reviewed publications, websites	4 Wrong publication types: commentaries, reviews, blogs, protocols

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