

Good urban governance for health and well-being

A systematic review of barriers, facilitators and indicators





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WHO acknowledges with thanks financial support from the Swiss Agency for Development and Cooperation for preparation of this systematic review.

Acronyms

CE	civic engagement
PM	particulate matter
PM _{2.5}	particles measuring $\leq 2.5 \mu\text{m}$
PM ₁₀	particles measuring $\leq 10 \mu\text{m}$
PRISMA	preferred reporting items for systematic reviews and meta-analyses
Urban HEART	Urban Health Equity Assessment and Response Tool
WHO	World Health Organization

Glossary

Civic engagement: involves establishing a balance of rights and responsibilities and re-drawing the boundaries of state action and regulation to promote the quality of life of a community through both political and non-political processes; also includes forms of political, environmental and community activism (1)

Engaged citizen: characterized as politically, socially and economically independent

Equity: absence of avoidable or remediable differences among populations or among socially, economically, demographically or geographically defined groups (2)

Good urban governance: interaction and decision-making to generate collective solutions by co-creating practices and institutional engagement as part of whole-of-government and whole-of-society approaches

Healthy city: one that is continually creating, expanding and improving those physical and social environments and community resources that enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential (3)

Indicator: summary measure that reveals or measures a situation that is not obvious when considered by itself; a way of measuring specified health characteristics in a given population that is relevant, feasible, valid, robust, sensitive to change over time, and used in highly diverse contexts or adapted to a specific context while maintaining feasibility and validity (4)

Multisectoral action: recognized relation among the parts of the health sector and of another sector to take action on an issue or to achieve health outcomes (or intermediate health outcomes); the action is more effective, efficient or sustainable than that which could be achieved by only the health sector (5,6)

Participatory governance: state-sanctioned institutional processes to allow citizens to exercise voice and vote on public policies for some kind of change in their lives; also, a conceptual framework for engaging civic society, stakeholders and members of the public in health governance through deliberative practices (7)

Tool: means for understanding the nature of policy problems, estimating how they might change over time and clarifying or even eliminating some of the many possible policy response options for policy formulation; may consist of processes that become tools or mechanisms for regulation (8)

Urban governance: means by which local, regional and national governments and stakeholders plan, finance and manage urban areas; involves continuous negotiation and contestation over allocation of social and material resources and political power; influenced by the creation and operation of political institutions, government capacity to make and implement decisions and the extent to which the decisions recognize and respond to the interests of the poor (9)

Well-being: a positive state experienced by individuals and societies, similar to health, a resource for daily life determined by social, economic and environmental conditions (3)



1 Introduction

Rapid, unplanned urbanization is one of the major ecological and human challenges of the 21st century. UN Habitat predicts that, by 2050, nearly 70% of the world's population will be living in cities, with disproportionate urban growth in low- and middle-income countries (10). While cities offer opportunities for employment and access to better public services, they also pose major health risks. Good local governance is critical for achieving the 2030 Agenda, and countries must strive to ensure that their cities are creating and improving their physical and social environments and their community resources to enable people to support each other and to develop to their maximum potential.

Building on good practices in the WHO Healthy Cities programme, the World Health Organization (WHO) has identified health promotion in urban and local settings as critical to achieving the Sustainable Development Goals (SDGs) and health equity. The WHO and UN Habitat 2016 Global report on urban health concluded that good urban governance – notably the role of city governments and strong leadership – is key to ensuring health equity and the health and well-being of their citizens (10).

WHO contracted the Institute of Social and Preventive Medicine, University of Bern, Switzerland, to review the evidence on two issues that are central to health promotion: achieving good governance for health and well-being, understood as participatory governance built on multisectoral action and civic engagement; and measuring the impact of governance on urban health outcomes. The aim of the systematic review was to identify barriers to and facilitators of multisectoral action and civic engagement and to suggest validated indicators and tools for assessing the processes and outcomes of participatory governance for health, equity and well-being in urban settings from published scientific evidence.

Findings from the systemic review informed the development of the *Urban governance for health and well-being: a step-by-step approach to conducting operational research in cities*.



2 Methods

A systematic review (International Prospective Register of Systematic Reviews registration: CRD42021266564) was designed according to the Cochrane Handbook of Systematic Reviews of Intervention and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

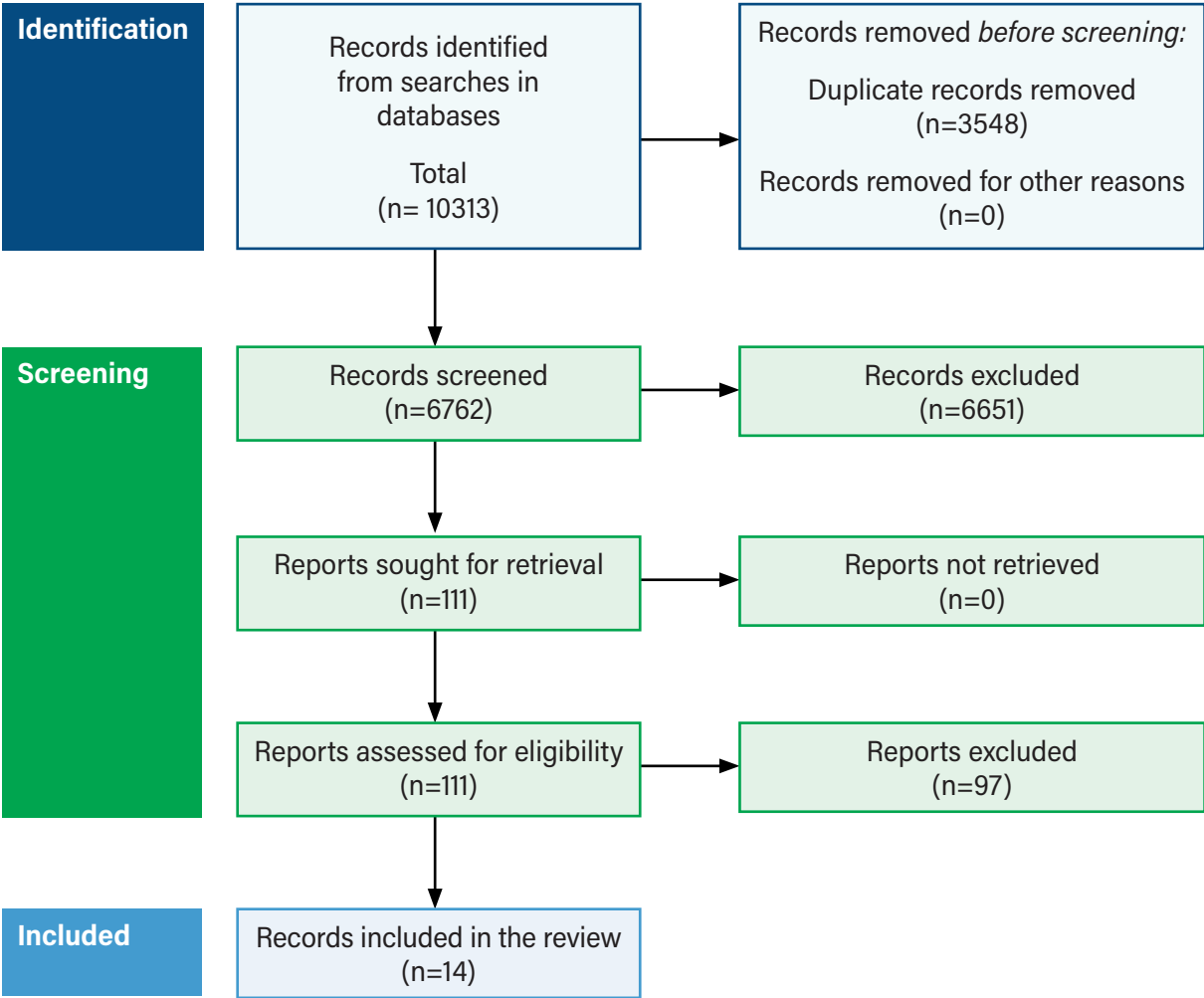
The methodology and the type of evidence to be retrieved were first discussed with librarians at the Institute of Social and Preventive Medicine who are information specialists and who developed the search strategy. After the methodology was tested in two preliminary searches, it was approved by the team on 10 June 2021 (Annex 1).

The study protocol and data analysis were submitted to the International Prospective Register of Systematic Reviews on 7 July 2021. The full study protocol is available at: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=266564.

The data search was completed on 21 June 2021. Information was retrieved from Medline (Ovid), Embase, Cochrane Library, Web of Science and Google Scholar, which yielded a total of 6762 studies after deduplication. No restrictions were made on language, location or date. For informal sources and grey literature, the first 200 results from the Google Scholar search were also screened.

Five independent reviewers were trained in screening studies by title and abstract on 24 June 2021. After screening was completed on 16 July 2021, 111 studies were selected for full-text review, as shown in the PRISMA flowchart in Fig. 1. To screen full texts and to extract data, a survey was designed and built on RedCap (see Annex 2) to check the study selection criteria and extract data. Use of the RedCap platform was demonstrated in a training session on 18 August 2021. To ensure agreement on the studies to be included and on their reliability, all studies were judged by a second reviewer; in cases of disagreement, a third reviewer was used. Data extraction was completed by 15 September 2021 and peer-adjudication by 5 October 2021. Of the 111 studies selected for full-text screening, 14 studies that met the inclusion criteria were included and analysed (Fig. 1).

Fig. 1. PRISMA flow chart: identification of studies from databases and registers



The search identified 6762 studies; after assessment of each study for eligibility, 14 independent studies (11–24) that met the inclusion criteria were selected. Only one study was conducted in the 1980s (13), two studies between 1990 and 1999 (9,18), three (22%) between 2000 and 2009 (15,16,19), and nine (57%) between 2010 and 2018 (12,14,17,18,21–24).

Eleven studies were conducted in high-income countries (12–19,22–24), two in upper- to middle-income countries (11,20), and only one in a low- to middle-income country (21). According to the classification of the Organisation for Economic Co-operation and Development, five cities were large metropolitan areas (12,15,19,20,23), three were metropolitan areas (16,22,24), two were medium-size urban areas (11,14), two were small urban areas (13,17), and two were classified differently (18,21).

Multisectoral action was used as the only process for advancing construction of a healthy city in five studies (14,15,18,23,24). Another five studies assessed both multisectoral action and health governance; three reported multisectoral action and civic engagement (CE), and one study (12) assessed only CE.

The impact of participatory health governance on population health, equity and well-being was assessed in two studies (13,17), both population health and equity in two studies (14,21), population health and well-being in two studies (11,16), the impact on population health in three studies (12,18,19), and equity alone in five studies (15,20,22–24).

The general population was the target of participatory health governance in 11 studies (11,13–16,18,19,21–24). Children were included in three strategies (19,20,23), underserved populations in three (15,17,23), young people in two (19,23), ethnic groups in two (14,17), women in one (23), and the elderly in one (19). The general characteristics of the studies are listed in Annex 3.



3 Results

3.1 Barriers and facilitators

Barriers and facilitators for implementation of participatory health governance strategies were reported in eight studies and only barriers in six (Table 1). Common barriers were difficulty in creating a multisectoral working group because of low citizen motivation and participation (15,17,18,21) and lack of data to assess the impact of the intervention, usually at neighbourhood level (17,19–24). Facilitators of CE in the development of healthy cities strategies were integration of different government entities (14,12) and community training (15,17).

Table 1. Barriers to and facilitators of participatory urban health governance identified in the systematic review

Barriers	Facilitators	Reference no.
Structural racism and toxic stressors, including environmental pollution, neighbourhood violence, unemployment, unsafe physical infrastructure and lack of affordable access to good-quality goods and services, such as food, child care and health care	An integrative approach through a structural racism lens Use of mayoral and city council power to support families under threat of losing their homes to foreclosure and to redevelop abandoned neighbourhoods	14
Limited citizen participation in working groups Less active working group in health assessment due to lack of time or lack of experience in methodological aspects Difficulty in maintaining motivation over time Failure of the action plan due to lack of communication and time and conflicts of interests among members of the working group Small sample of participants per intervention	The Public Health Agency of Barcelona provided training to community agents. The Catalanian Department of Health developed a programme to facilitate methodological tools and coaching for primary health care teams and public health technicians to improve local community health	15

Barriers	Facilitators	Reference no.
The sample of participants was not representative of the neighbourhood as a whole because of limited citizen participation. No demographic information available for the city	The goals could be facilitated by engaging the community and continually seeking their input. The team plans to offer community research training to neighbourhood and other residents in the city.	17
Moderate participation rates because of lack of incentive, accelerated timelines and the profile of invited participants	Not reported	18
Limited collection of data on indicators to assess urban health equity	Not reported	24
Little quantitative information about neighbourhoods Little information about the health impact of some interventions	Not reported	19
Limited data available Limited analysis of quantitative and qualitative data	Not reported	20
Time necessary to build an inclusive team and implement the tool Limited data available	Not reported	21
Limited data available or available data potentially outdated, with a 1- or 2-year delay City data may be difficult to interpret or to identify patterns among different geographical areas	Integration of the tool into the city's health department could result in updated data from vital records and other sources. Use of mapping to visualizing distribution among geographical areas to identify data patterns	22
Estimation of indicators in areas with small populations Difficulty in finding periodic, adequate indicators of the physical context of neighbourhoods Few data available on health	Not reported	24

3.2 Tools and indicators used to assess participatory governance for health and well-being

In eight studies, a standardized tool, process or index was used to assess participatory health governance. Three studies (21–23) used the Urban Health Equity Assessment and Response Tool (Urban HEART). Other tools and indexes used were EuroQol, EnviroScreen, Urban Quality of Life Index and the Population Health Index. (See also Annex 3.) Other sources were reports, book chapters and documents such as expert recommendations, reference lists and documents and reports by WHO offices (25–33).

3.3 Tools and indicators for urban health and well-being

Twelve of the studies included in the systematic review (12,14,19–24) discussed indicators. Indicators of health governance, multisectoral action and CE were reported in two studies (14,19); of health governance and CE in one study (12); and of CE alone in another study (23). Indicators of health outcomes were reported in six studies (12,13,20–22,24); of effects on transport in four studies (12,16,22,24), on housing in five (12,16,17,22,24), on infrastructure in three (12,16,24), on the environment in five (12,16,17,22,24), on education in four (11,12,22,24), on economic conditions and social protection in four (12,16,22,24), and on sanitation in two (17,21). In three studies (11,20,21), infant mortality rates were used as indicators of health and health care. In two studies each, the following indicators were used: contraception use by people aged 15–49 years (13,21), rate of fatalities in road traffic accidents (11,24) and concentrations of particulate matter (PM₁₀) in two (22,24). (see Annex 4.)

Conclusion

The systematic review shows that most participatory health governance strategies have been implemented in high-income countries. Leadership by city officials and civic engagement is fundamental to foster processes to achieve the SDGs and promote population health and well-being. It also shows that the indicators and tools used by cities and how they prioritize needs differ greatly. Tools and indicators are crucial for assessing and evaluating participation, particularly by underserved and vulnerable groups and for measuring change and identifying barriers and facilitators to participation. More robust evidence and data are needed on participatory urban governance for health and well-being.

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Annex 1. Search strategy for the living systematic review

Title: Systematic review on determinants and indicators of urban health, multisectoral action and civic engagement

- What are the determinants of population health, well-being and equity in low- and middle-income country urban settings?
- What are the validated, reliable indicators for assessing intersectoral action and good governance for population health, well-being and equity in low- and middle-income country urban settings?
- What are the civic engagement processes that facilitate good governance for population health, well-being and equity in low- and middle-income country urban settings?

Databases and results

Date last searched: 21 June 2021

	Before deduplication	After deduplication
Medline (Ovid)	3 636	
Embase.com	3 434	
Cochrane Library	281	
Web-of-Science Core Collection	2 759	
Google Scholar ^a	200	
Total	10 310	6 762

^a First 200 according to ranking for relevance

3548 duplicate records were removed (with RISKCLICK Deduplicate)

Medline (Ovid)

<https://ovidsp.ovid.com/ovidweb.cgi?T=JS&NEWS=N&PAGE=main&SHAREDSEARCHID=4Z4WM6COxXSCAwI6O35WIUP5xTsquvFmtTYgPQ3zF7z2o2bligfwTHH9xpP4KzLe>

Concepts 1–4 were combined with “AND”, limits 5) were combined with “NOT”

1) Cities, urban settings, metropolitan areas

(exp Cities/ or Urban Population/ or (urban setting* OR urban context* OR city OR cities OR metropolitan area* OR superblock* OR town OR towns OR municipal*).ab,ti,kf)

2) Urban governance, Health governance or civic engagement or multisector action

(Health Policy/ or (((urban or health) adj3 govern*) or ((state* or health* or public or built environment*) adj3 polic*) or “health in all polic*” or “healthy public polic*”).ab,ti,kf)

OR

(Social Participation/ or Community Participation/ or Community Networks/ or (((community or public or citizen or civic or resident* or private or social or political) adj3 (particip* OR empower* OR involv* OR collaborat* OR engagement* OR implement* or partnership*)) or (participatory adj2 (approach* or framework*)) or participatory spaces or ((multisector* or multi-sector* or intersector* or inter-sector*) adj3 (action* or collaborat*)) or social citizenship or stakeholder*).ab,ti,kf)

3) Health, well-being, equity

(Urban Health/ or Health Equity/ or Healthcare Disparities/ or Health Status Disparities/ or "Social Determinants of Health"/ or Health Status Indicators/ or (well-being OR well-being OR health equit* OR urban health* OR quality of life OR community health* OR healthy cit* OR urban HEART OR health impact assessment* OR SDG11 OR "SDG 11" OR SDG3 OR "SDG 3" OR sustainable development goal* OR population health* OR residents health* OR healthy life OR healthy lives OR liveabil* OR livabil* OR ((city or cities or settlement*) AND (inclusive or safe or resilient or sustainab*))).ab,ti,kf)

4) (Validated) theories, models, tools, instruments

(indicator* OR determinant* OR tool OR tools OR instrument* OR factor OR factors OR intervention* OR definition* OR domain* OR model* OR theor* OR framework* OR concept* OR dimension* OR scor* OR index* OR indices OR scal* OR valid* OR value* OR evaluat* OR evidence OR assess* OR measure* OR metric* OR monitor* OR "Urban HEART").ab,ti,kf)

5) Limits: exclusion of animal studies

NOT (exp animals/ not humans/)

Embase.com

1) Cities, urban settings, metropolitan areas

('city'/de or 'urban population'/de or ('urban setting*' OR 'urban context*' OR city OR cities OR 'metropolitan area*' OR superbloc* OR town OR towns OR municipal*):ab,ti,kw)

2) Urban governance, Health governance or civic engagement or multisector action

('health care policy'/de or (((urban or health) NEAR/3 govern*) or ((state* or health* or public or 'built environment*') NEAR/3 polic*) or 'health in all polic*' or 'healthy public polic*'):ab,ti,kw)

OR

('social participation'/de or 'community participation'/de or 'community care'/de or (((community or public or citizen or civic or resident* or private or social or political) NEAR/3 (particip* OR empower* OR involv* OR collaborat* OR engagement* OR implement* or partnership*)) or (participatory NEAR/2 (approach* or framework*)) or 'participatory spaces' or ((multisector* or multi-sector* or intersector* or inter-sector*) NEAR/3 (action* or collaborat*)) or 'social citizenship' or stakeholder*):ab,ti,kw)

3) Health, well-being, equity

('urban health'/de or 'health equity'/de or 'health care disparity'/de or 'health disparity'/de or 'social determinants of health'/de or 'health status indicator'/de or (well-being OR well-being OR 'health equit*' OR 'urban health*' OR 'quality of life' OR 'community health*' OR 'healthy cit*' OR 'urban HEART' OR 'health impact assessment*' OR SDG11 OR 'SDG 11' OR SDG3 OR 'SDG 3' OR 'sustainable development goal*' OR 'population health*' OR 'residents health*' OR 'healthy life' OR 'healthy lives' OR liveabil* OR livabil* OR ((city or cities or settlement*) AND (inclusive or safe or resilient or sustainab*)):ab,ti,kw)

4) (Validated) theories, models, tools, instruments

(indicator* OR determinant* OR tool OR tools OR instrument* OR factor OR factors OR intervention* OR definition* OR domain* OR model* OR theor* OR framework* OR concept* OR dimension* OR scor* OR index* OR indices OR scal* OR valid* OR value* OR evaluat* OR evidence OR assess* OR measur* OR metric* OR monitor* OR 'Urban HEART'):ab,ti,kw)

5) Limits: exclusion of animal studies and conference abstracts

NOT ([animals]/lim NOT [humans]/lim) NOT ([Conference Abstract]/lim OR [Note]/lim)

Cochrane Library

1) Cities, urban settings, metropolitan areas

((urban NEXT setting* OR urban NEXT context* OR city OR cities OR metropolitan NEXT area* OR superblock* OR town OR towns OR municipal*):ab,ti,kw)

2) Urban governance, Health governance or civic engagement or multisector action

(((((urban or health) NEAR/3 govern*) or ((state* or health* or public or environment*) NEAR/3 polic*) or "health in all policy" OR "health in all policies" or "healthy public policy" OR "healthy public policies")):ab,ti,kw)

OR

(((((community or public or citizen or civic or resident* or private or social or political) NEAR/3 (particip* OR empower* OR involv* OR collaborat* OR engagement* OR implement* or partnership*)) or (participatory NEAR/2 (approach* or framework*)) or "participatory spaces" or ((multisector* or multi-sector* or intersector* or inter-sector*) NEAR/3 (action* or collaborat*)) or "social citizenship" or stakeholder*):ab,ti,kw)

3) Health, well-being, equity

((well-being OR well-being OR health NEXT equit* OR urban NEXT health* OR "quality of life" OR community NEXT health* OR healthy NEXT cit* OR "Urban HEART" OR health NEXT impact NEXT assess* OR SDG11 OR "SDG 11" OR SDG3 OR "SDG 3" OR "sustainable development goal" OR "sustainable development goals" OR population NEXT health* OR residents NEXT health* OR "healthy life" OR "healthy lives" OR liveabil* OR livabil* OR ((city or cities or settlement*) AND (inclusive or safe or resilient or sustainab*))) :ab,ti,kw)

Web of Science Core Collection

1) Cities, urban settings, metropolitan areas

TS=((("urban setting*" OR "urban context*" OR city OR cities OR "metropolitan area*" OR superblock* OR town OR towns OR municipal*))

2) Urban governance, Health governance or civic engagement or multisector action

TS=(((urban or health) NEAR/3 govern*) or ((state* or health* or public or built-environment*) NEAR/3 polic*) or "health in all polic*" or "healthy public polic*"))

OR

TS=(((community or public or citizen or civic or resident* or private or social or political) NEAR/3 (particip* OR empower* OR involv* OR collaborat* OR engagement* OR implement* or partnership*)) or (participatory NEAR/2 (approach* or framework*)) or "participatory spaces" or ((multisector* or multi-sector* or intersector* or inter-sector*) NEAR/3 (action* or collaborat*)) or "social citizenship" or stakeholder*))

3) Health, well-being, equity

TS=((well-being OR well-being OR "health equit*" OR "urban health*" OR "quality of life" OR "community health*" OR "healthy cit*" OR "Urban HEART" OR "health impact assess*" OR SDG11 OR "SDG 11" OR SDG3 OR "SDG 3" OR "sustainable development goal*" OR "population health*" OR "residents health*" OR "healthy life" OR "healthy lives" OR liveabil* OR livabil* OR ((city or cities or settlement*) AND (inclusive or safe or resilient or sustainab*)))

4) (Validated) theories, models, tools, instruments

TS=(indicator* OR determinant* OR tool OR tools OR instrument* OR factor OR factors OR intervention* OR definition* OR domain* OR model* OR theor* OR framework* OR concept* OR dimension* OR scor* OR index* OR indices OR scal* OR valid* OR value* OR evaluat* OR evidence OR assess* OR measur* OR metric* OR monitor* OR "Urban HEART")

5) Limits: document types, Web of Science categories

Refined by: Document type: (article OR early access OR editorial material OR letter OR review OR book chapter) AND **Web of Science categories:** (political science OR public environmental occupational health OR urban studies OR health policy services OR medicine general internal OR health care sciences services OR social sciences interdisciplinary)

Google scholar (first 200 results according to relevance ranking, out of a total of 11 700 results)

1) Focus: Determinants and indicators of urban health

«urban setting|settings|context|governance»|city|cities|superblocks|metropolitan
«urban|population health»|»health equity»|»healthy city|cities»|»urban HEART»|SDG11|»SDG
11»|SDG3|»SDG 3»|sustainable|healthy|inclusive|safe|resilient indicators|determinants

Annex 2. RedCap data extraction sheet

The study assessed urban governance, multisectoral action or civic engagement	<input type="radio"/> Yes <input type="radio"/> No
The study used a standardized tool for the assessment of urban governance, multisectoral action or civic engagement	<input type="radio"/> Yes <input type="radio"/> No
The study followed a standardized process to identify/create indicators	<input type="radio"/> Yes <input type="radio"/> No
The outcome of the study is either health, wellbeing, or health equity	<input type="radio"/> Yes <input type="radio"/> No
The aim of the study was to create a set of indicators	<input type="radio"/> Yes <input type="radio"/> No
The study setting is at least a city (or a superblock)	<input type="radio"/> Yes <input type="radio"/> No
Include this study based on full-text review	<input type="radio"/> Yes <input type="radio"/> No
Study design	<input type="checkbox"/> Quantitative <input type="checkbox"/> Mixed methods <input type="checkbox"/> Participatory action research
Strategy assessed/used	<input type="checkbox"/> Urban governance <input type="checkbox"/> Multisectoral action <input type="checkbox"/> Civic engagement
The city has an established process to enable the communication among the stakeholders for multisectoral action	<input type="radio"/> Yes <input type="radio"/> No
Outcome(s) assessed	<input type="checkbox"/> Population health <input type="checkbox"/> Wellbeing <input type="checkbox"/> Equity
Date of implementation of the strategy	
City	
Country	

World Bank Country Classification (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519)	<input type="checkbox"/> Low-income <input type="checkbox"/> Lower-middle-income <input type="checkbox"/> Upper-middle-income <input type="checkbox"/> High-income
Size of the city (according to OECD parameters)	<input type="checkbox"/> Small urban area (50 000–200 000 inhabitants) <input type="checkbox"/> Medium size urban area (200 000–500 000 inhabitants) <input type="checkbox"/> Metropolitan area (500 000–1 500 000 inhabitants) <input type="checkbox"/> Large metropolitan area (1 500 000 inhabitants or more) <input type="checkbox"/> other
Size of the city	
Tool(s) used to assess the implemented strategy	
Target population of the strategy	<input type="checkbox"/> General population <input type="checkbox"/> Children <input type="checkbox"/> Youth <input type="checkbox"/> Women <input type="checkbox"/> Elderly <input type="checkbox"/> Migrants <input type="checkbox"/> People living with disabilities <input type="checkbox"/> Ethnic groups <input type="checkbox"/> Underserved populations <input type="checkbox"/> Other
This study built a multidisciplinary/inclusive team	<input type="radio"/> Yes <input type="radio"/> No
Who were the stakeholders	<input type="checkbox"/> Local government entity <input type="checkbox"/> Academic partners <input type="checkbox"/> Civic leaders <input type="checkbox"/> Private sector <input type="checkbox"/> Non-governmental organizations <input type="checkbox"/> Healthcare services representatives <input type="checkbox"/> Local associations <input type="checkbox"/> Other
This study defined local indicators and benchmarks	<input type="radio"/> Yes <input type="radio"/> No
What were the local indicators developed for the assessment of the strategy	

The study included indicators in the following policy domains	<input type="checkbox"/> Health <input type="checkbox"/> Transportation <input type="checkbox"/> Infrastructure <input type="checkbox"/> Social and human development <input type="checkbox"/> Economics <input type="checkbox"/> Governance <input type="checkbox"/> Environment <input type="checkbox"/> Education <input type="checkbox"/> Nutrition <input type="checkbox"/> Other
The indicators were built based on publicly available data	<input type="radio"/> Yes <input type="radio"/> No
The indicators were linked to local policies with a potential change effect	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Not mentioned
The study described how health equity gaps and gradients were prioritized	<input type="radio"/> Yes <input type="radio"/> No
If yes, copy the part where the authors describe how gaps and gradients were prioritized	
The analysis of gaps and gradients was performed for different parts of the city	<input type="radio"/> Yes <input type="radio"/> No
The study developed a response plan	<input type="radio"/> Yes <input type="radio"/> No
This article addressed the following policy domain(s)	<input type="checkbox"/> Health <input type="checkbox"/> Transportation <input type="checkbox"/> Infrastructure <input type="checkbox"/> Social and human development <input type="checkbox"/> Economics <input type="checkbox"/> Governance <input type="checkbox"/> Environment <input type="checkbox"/> Education <input type="checkbox"/> Nutrition <input type="checkbox"/> Other
The city identified barriers in the implementation of the strategy	<input type="radio"/> Yes <input type="radio"/> No
If yes, copy the part where the authors describe the barriers	

Annex 3. Characteristics of the studies included in the systematic review

City	City size	World Bank classification	Year	Tool	Reference no.
Barcelona, Spain	Large metropolitan area (≥ 1 500 000 inhabitants)	High-income	2014	Index of community action for health	1
Barcelona' Spain	Large metropolitan area (≥ 1 500 000 inhabitants)	High-income	2007–2018		2
Barcelona, Spain	Large metropolitan area (≥ 1 500 000 inhabitants)	High-income	2007–2011	EuroQol	3
Belo Horizonte, Brazil	Large metropolitan area (≥ 1 500 000 inhabitants)	Upper-middle-income	1993–1997	Urban Quality of Life Index, Social Vulnerability Index	4
Barcelona, Spain	Large metropolitan area (≥ 1 500 000 inhabitants)	High-income	2015	Urban HEART	5
Sobral, Brazil	Medium-size urban area (200 000–500 000 inhabitants)	Upper-middle-income	1997–2002		6
Richmond (VA), USA	Medium-size urban area (200 000–500 000 inhabitants)	High-income	2012–2013	Cumulative toxic stressor model, Enviroscreen	7
San Francisco (CA), USA	Metropolitan area (500 000–1 500 000 inhabitants)	High-income	2004	Health impact assessment	8
Lisbon, Portugal	Metropolitan area (500 000–1 500 000 inhabitants)	High-income	2016–2017	Population Health Index	9
Detroit (MI), USA	Metropolitan area (500 000–1 500 000 inhabitants)	High-income	2016	Urban HEART	10
Vancouver, Victoria, Montreal, Saskatoon, Canada	Other	High-income	2016	Concept mapping	11
Matsapha, Eswatini	Other	Lower-middle-income	2014	Urban HEART	12
Noarlunga, Australia	Small urban area (50 000–200 000 inhabitants)	High-income	1987–1990		13
Gulfport (MS), USA	Small urban area (50 000–200 000 inhabitants)	High-income	2016–2018	Policy maps, rankings and road maps	14

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Annex 4. Indicators of participatory governance and urban health, by domain

Indicator	Explanation
Governance	
Health projects and community-based interventions implemented in the territory (1)	Existence of community health programmes
Proportion of residents who rated the value of services provided by the city as excellent or good (2)	
Proportion of city employees who are women and/or minorities (2)	Percentage of city employees who are women and/or minorities
Proportion of residents who reported few or no experience of racism and/or discrimination in the past year (2)	
Availability of neighbourhood health report, including quantitative and qualitative analysis of current situation (yes/no) (%) (3)	Availability and coverage of neighbourhood health reports
Availability of an inventory of resources and current interventions in the neighbourhood (yes/no) (%) (3)	
Availability of a review of effective interventions to tackle prioritized problems (yes/no) (%) (3)	
Availability of a report with an action plan, objectives and interventions (yes/no) (%) (3)	
Percentage of interventions that cover the targeted population (3)	
Percentage of interventions that were evaluated and reported (3)	
Civic engagement	
Existence of a community team that jointly works with public resources specifically on health (1)	
Existence of a neighbourhood health programme (1)	Neighbourhood health programmes are part of a general rehabilitation policy with a strategy of community interventions for health. The programme inspires or strengthens other community health interventions. This indicator is associated with urban rehabilitation policies.
Proportion of residents who rate city involvement of citizens as excellent or good (2)	

Indicator	Explanation
Proportion of adults who volunteer for local boards, councils or organizations that address community problems (2)	
Proportion of members very satisfied or absolutely satisfied (measured in the Community Group Member Survey questionnaire) with group progress and results and community methods (3)	
Availability of a report on the satisfaction of the working group (yes/no) (%) (3)	
Availability of a list of health problems as a result of a participative prioritization workshop (yes/no) (%) (3)	
Existence of stable participatory structures for implementation of community-based interventions (1)	Existence of structures that establish links with the population and public services for community interventions. Such structures multiply the effect of health promotion and illness prevention interventions.
Percentage of interventions that included an evaluation of participant satisfaction (3)	
Voter abstention in the previous municipal elections (%) (4)	
Multisectoral action	
Participative prioritization of interventions by a working group (yes/no) (%) (3)	Percentage of interventions prioritized by a working group according to prioritization of problems, review of effective interventions and the available resources and assets
Proportion of city contracts awarded to locally owned businesses (2)	
Percentage of links made with planned stakeholders: politicians, community professionals involved in health and social aspects (% coverage) (3)	
Establishment of a working group with planned stakeholders (% coverage) (3)	
Percentage of participants planned for qualitative methods (professionals: sanitary, social, educational, community; representatives of neighbourhood entities, and citizens of both sexes, ages and cultural origins) (3)	
Percentage of planned stakeholders who participate in prioritization of health problems (3)	

Indicator	Explanation
Health and health care	
Improvement in parental skills (%) (5)	
Reduction in children's negative behaviour (%) (5)	
Stress reduction in parents (%) (5)	
Increase in social support (%) (5)	Percentage of parents who received social support
Medical doctors in primary health care (number per 1000 population) (6)	
Nurses in primary health care (number per 1000 population) (6)	
Maternal consultations (number per 1000 live births) (6)	
Infant mortality rate (number per 1000 births) (7,8,12)	Probability of dying between birth and age 1 year per 1000 live births
Neonatal mortality (8)	Number of deaths during the first 28 completed days of life per 1000 live births in a given year or other period
Postnatal mortality rate (per 1000 live births) (8)	Number of newborns who die between 28 and 364 days of age in a specified geographical area
Under-five mortality rate (number per 1000 births) (7)	Probability of dying by the age of 5 years per 1000 live births
Maternal mortality ratio (per 100 000 live births) (7)	Number of maternal deaths during a given period per 100 000 live births during the same period
Fully-immunized children (%) (7)	Percentage of children aged 1 year who have received one dose of bacille Calmette-Guérin vaccine, three doses of polio vaccine, three doses of the combined diphtheria, tetanus toxoid and pertussis vaccine and one dose of measles vaccine
Skilled birth attendance (%) (7)	Proportion of births attended by skilled health personnel
Contraception use 15–49 years (%) (5,7)	Percentage of women aged 15–49 years who use contraception
Contraception use 15–39 years (%) (5)	Percentage of men aged 15–39 years who use contraception
Good mental health (% of residents) (9)	Percentage of adults (aged ≥ 18) who report good mental health derived by subtracting crude prevalence rates for individuals with poor mental health from 100

Indicator	Explanation
No asthma (% of residents) (9)	Percentage of adults (aged ≥ 18) without asthma derived by subtracting crude prevalence rates for individuals with asthma from 100
Not disabled (% of residents) (9)	Percentage of adults (aged ≥ 18) without disability derived by subtracting the total number of individuals aged 18–64 who did not report any difficulty in vision, hearing, awalking, cognition, self-care or independent living from the total population in the same age group
Older adults reporting limitations/disabilities (%) (6)	
Health-care status (9)	Percentage of individuals with health insurance = derived by dividing the total number of adults with public or private insurance by the total adult population
Premature mortality rate per 10 000 inhabitants (4)	
Tuberculosis rate per 100 000 inhabitants (4)	
Gonococcal infection rate per 100 000 inhabitants (4)	
Adolescent fecundity rate per 1000 girls aged 15–19 years (4)	
Problematic drug consumption index (4)	Compound index of four indicators: rate of new treatment for drug consumption, mortality rate due to drug overdose, rate of emergency visits among drug consumers, number of syringes found on the street
Self-rated health in young people (14–25 years) in disadvantaged neighbourhoods after occupational training (%) (5)	
Self esteem in young people (14–25 years) in disadvantaged neighbourhoods after occupational training (%) (5)	
Improvement in mental health, emotional well-being and perceived social support in participants aged 25–65 years after free workshops (%) (5)	
Improvement in mental health, social inclusion and empowerment among immigrant adolescent girls (12–16 years) due to sport participation and group dynamics (%) (5)	

Indicator	Explanation
Improvement in perceived health of older people (≥ 59 years) living in isolation (%) (5)	
Improvement in mental health of older people (≥ 59 years) living in isolation (%) (5)	
Reduction in psychological distress of older people (≥ 59 years) living in isolation (%) (5)	
Number of older adults living alone and in social isolation (6)	
Transport	
Pedestrian accidents (number) (6)	
Fatality rate due to road traffic accidents (number per 100 000 inhabitants; number per 1000 victims) (6,12)	
Non-automobile commuters (9)	Percentage of non-automobile commuters derived by dividing the total number of commuters who walked, biked or used public transport by the total population who commute to work
Vehicle travel (km) (4)	
Sustainable, safe transport (10)	Transport that can be sustained given certain limitations in time and space set by the environment and/or by certain demands of society
Walkability index (6)	Intended to address a growing demand for data and tools to compare places for their suitability for walking as a means of travel; may be used as source data for transport or land use planning
Population using public transport and soft modes of mobility (%) (6)	
Average commuting time to work or study (min) (6)	
Housing	
Adequate, healthy housing (10)	Preserve and construct housing in proportion to demand with regard to size, affordability and tenure.
Severe housing problems (%) (11)	Percentage of households with at least one of four housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities

Indicator	Explanation
Overcrowded housing (%) (6)	An alternative measure of dwelling space that accounts for household composition according to the European Union definition of overcrowding, which accounts for different requirements for living space according to the age and gender composition of the household. A household is considered as living in overcrowded conditions if fewer than one room is available in each household: for each couple in the household; for each single person aged ≥ 18 years; for each pair of people of the same gender aged between 12 and 17 years; for each single person aged between 12 and 17 years not included in the previous category; and for each pair of children under the age of 12 years. "Rooms" refer to bedrooms, living and dining rooms and, in non-European countries, kitchens. This indicator is calculated from household surveys and measured as a percentage of all survey responses.
Ratio percentage of housing with more than four residents per housing mean area (4)	
Households without central heating (%) (6)	
Buildings without wheelchair access (%) (6)	
Older adults living in buildings with three floors or more without a lift (%) (6)	
Buildings that require major repairs or are very run-down (%) (6)	
Housing value (9)	Median housing value derived by owners' estimates of their value, including house and lot, mobile home and lot or condominium unit. Although this excludes values of rented properties, it provides an approximation that reflects neighbourhood wealth, quality and affordability.
Home ownership (%) (9)	Percentage of houses occupied by owners, derived from the total number of owner-occupied houses divided by the total number of houses occupied (renters and owners)
Occupied housing (%) (9)	Percentage of occupied houses derived from the total number of occupied houses divided by all housing units (occupied and vacant)

Indicator	Explanation
Sanitation	
Drinking-water violations (yes/no) (11)	Indicator of health-related drinking-water violations. Violations have only two values: Yes and No. "Yes" indicates that at least one community water system in the country had at least one health-based violation during the specified time. "No" indicates no health-based drinking-water violations in any community drinking-water system in the country.
Proportion of households with drinking-water supply (%) (7)	Access to safe drinking-water measured by the percentage of the population that has access to and uses improved drinking-water sources
Increment in the wastewater collection network (%) (7)	Access to sanitation measured as the percentage of the population with access to and uses improved sanitation facilities, which usually ensure separation of human excreta from human contact
Infrastructure	
Public infrastructure and access to goods and services (10)	Ensure affordable, high-quality child care for all neighbourhoods; ensure accessible, high-quality educational facilities; increase the numbers of parks, open spaces and recreation facilities; ensure spaces for libraries, performing arts, theatre, museums, concerts and festivals for personal and educational fulfilment.
Average walking distance to the nearest adult day-care centre (min) (6)	
Average walking distance to the nearest sports facility (min) (6)	
Capacity of child-care centres (number per 1000 children aged < 4 years) (6)	
Neighbourhood area allocated to urban parks and gardens (%) (4)	
Capacity of adult day-care centres (number per 1000 population aged ≥ 65 years) (6)	
Environment	
Environmental stewardship (10)	Decrease consumption of energy and natural resources. Restore, preserve and protect healthy natural habitats. Promote food access and sustainable urban and rural agriculture. Promote productive reuse of previously contaminated sites. Preserve clean air quality. Maintain safe levels of community noise.

Indicator	Explanation
Air pollution (11)	Air pollution is due to particulate matter in the air. The average daily density of fine particulate matter is reported in $\mu\text{g}/\text{m}^3$. Fine particulate matter is defined as particles of air pollutants with an aerodynamic diameter $< 2.5 \mu\text{m}$ ($\text{PM}_{2.5}$).
Particulate matter (PM_{10}) concentration ($\mu\text{g}/\text{m}^3$) (6,9)	PM_{10} is the concentration of particles with a diameter $\geq 10 \mu\text{m}$, which are often produced from construction and mechanical activities. WHO has set guidelines for PM_{10} at $20 \mu\text{g}/\text{m}^3$ annual mean. Diesel PM values were derived from PM_{10} emissions from on-road and non-road mobile sources burning diesel or residual fuels. The exposure measure consisted of estimated inhalation exposure concentrations of diesel PM modelled on annual average ambient outdoor concentration, human activity patterns, demographic features and micro environmental factors.
Population exposed to noise levels $> L_{\text{den}} 55 \text{ db}$ (%) (6)	
Population potentially affected by flooding (%) (6)	
Vegetation index (4)	Indicator that reflects the amount of vegetation by assessing the amount of green observed from a satellite picture
Education	
School drop-out rate (%) (6)	
Number of children enrolled in primary education (12)	
Literacy rate of children in the first cycle of primary education (12)	
People aged 16–29 years with primary level education or less (%) (4)	
High-school education (%) (9)	Derived from the total number of individuals with a high-school diploma divided by the total population
Bachelor's degree (%) (9)	Derived from the total number of individuals with a bachelor's degree or more divided by the total population.
Economic conditions and social protection	
Healthy economy (10)	Increase high-quality employment opportunities for local residents, including jobs that provide healthy, safe, meaningful work. Increase equality in income and wealth, which benefits and protects natural resources and the environment.

Indicator	Explanation
Family available income index (4)	Compound index that reflects the distribution of the neighbourhood mean family income as compared with the city mean and five indicators: people aged ≥ 25 years with university level education (%), registered unemployment among people aged 16–64 years (%), number of cars per inhabitant, new cars (< 2 years) with > 16 horsepower (%) and second-hand housing prices
Unemployment rate (%) (6)	Number of unemployed people as a percentage of the labour force, adjusted seasonally. The labour force is defined as the total number of unemployed people plus those in employment.
Employment rate (%) (9)	Percentage employed derived from the total number of employed individuals divided by the total population in the labour force (employed and unemployed)
Registered unemployment among people aged 16–64 years (%) (4)	One of the five indicators of available income index
Young people neither employed nor in education or training (%) (6)	
Homeless people (number) (6)	
People receiving social integration subsidies (number per 1000 active population) (6)	
Rate of people aged ≤ 17 years assisted by child and adolescent assistance teams (4)	
Rate of people assisted by social services, excluding those attributable to the dependence law (4)	
Children living above the poverty line (%) (9)	Nonpoverty status determined by comparing the total family income with the poverty threshold relative to the family size and composition. The percentage of children living above poverty line derived from the total number of children not in poverty divided by total number of households with children.

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