Proposing Criteria for assessment of Health cities in light of global emerging challenges for sustainable and resilient urban health (Focusing on Urban and Environmental dimensions)

Hanem W.I Mohamed Basha[1, ▢], Tarek Abou ElSeoud[2], and Pasent H.A Yousef[3]

Abstract The Healthy Cities movement is dedicated to creating cities that prioritize health, sustainability, and health-conscious urban design. This focus is crucial in our current era, marked by challenges like climate change, urban density, and social inequalities. Collaboration between urban planners, developers, and communities is essential to design environments that promote the health and well-being of all residents. While assessment tools exist for evaluating urban health and sustainability, they often lack clarity on which health aspects they consider. This research addresses this ambiguity through three main objectives: conducting interviews with experts in community-based initiatives, healthy city assessment, urban design, and city accreditation networks; surveying members of the WHO Healthy Cities Program Network; and analyzing the findings to identify and categorize criteria for updating approaches and strategies. The research uses diverse methodologies, including questionnaires, in-depth interviews with healthy urban design experts, and an analysis of assessment tools. A survey is also administered to the WHO Healthy Cities Program Network members. The study's outcomes involve the development of criteria for promoting healthy urban design. These criteria shed light on critical issues in sustainable urban development.

Keywords: Assessment Tools; Health Criteria; Healthy Cities; Urban Health; Urban Planning.

1   Introduction

The concept of a healthy city aims to develop and improve the physical, mental, and social environments. It also expands the resources that assist and motivate communities to work together and support one another

to fully develop the potential of life functions [1]. Several health risks are linked to the current level of global urbanization both in terms of disease outbreaks and lifestyle-related factors which have impacted the environment and people.

Several tools were developed for the assessment of healthy cities and despite the difference in the programmatic focus of each tool, the majority shared common elements of assessment that addressed the urban and environmental dimensions [1].

One of the most recent tools is the Urban Health Equity Assessment and Response Tool (Urban HEART) which has been jointly developed by the WHO Centre for Health Development, Kobe (Japan), in collaboration with regional offices of WHO, and city and national officials from across the world (WHO) [2].

However, the global pandemics and emerging infectious diseases in the past three years have introduced new challenges for the implementation of the Healthy cities' program [3]. Moreover, the impact on the natural and built environments, and human activities due to the ongoing conflicts (e.g. the gas supply issues leading to the delay of phasing out of nuclear plants in several countries) have introduced unprecedented complications for the program [4].

Thus, there is a crucial need to revisit the criteria for assessment of healthy cities to adapt to the new challenges and constraints. This study, therefore, proposes criteria for an assessment tool for healthy cities to provide orientation for health-driven urban design and development.

2   Methods

The World Health Organization defines a healthy city as one that continually creates and improves those physical and social environments and expands those community resources which enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential."

This paper relies on the core concepts such as the World Health Organization (WHO) Healthy Cities Network, the Urban HEART tool, and the collaborative efforts between different international organizations to develop a global vision for healthy cities (e.g., between WHO and UNHABITAT) [5]. Cities must work together to address pressing global issues like the preservation and advancement of public health. Who and infectious (communicable) diseases (e. g. HIV/AIDS, Covid-19, Tuberculosis), non-communicable diseases (NCDs, e. g. cardiovascular conditions, cancer, etc. as "triple threats," injuries, violence, and chronic diseases (such as diabetes and respiratory problems)) [6]. city health. Furthermore, compared to wealthy nations, poor nations have a higher disease burden. city health. Furthermore, compared to wealthy nations, poor nations have a higher disease burden.[7]. The Health Map (Figure1) depicts the "urban components" of the health determinants and sets global objectives for the wellbeing of people and the environment. Grant makes a claim that 'The HealthMap is a systemic tool, and application stakeholders, should treat any definitions of components as loose and all implied relationships as fluid; in each application stakeholders need to reassess the relevance of the map to their local situation' [5].

Fig. 1 The HealthMap. The determinants of health and wellbeing in our cities [6].

The term of the Healthy city has been used in public health and urban planning to identify the impact of policy on human health [8]. Its recent form was set by the World Health Organization (WHO) initiative on Healthy Cities and Villages in 1986 aiming to create and enhance the physical, mental, and social environments and go furthermore to expand those resources which help and encourage the communities to collaborate and mutually support each other to maximize developing the potential of the life functions [9].

Several assessment tools were developed for sustainable, or environmental building, community, urban and/or city development to assess the implementation and sustainability of healthy cities. Examples of such tools include BREEAM Communities technical manual [4], Fitwel Community Scorecard [1], and DGNB System Districts Criteria Set [6]. Further tools are identified via the conducted semi-structured questionnaire and interviews of this study.The majority of the existing assessment tools fall under one of the following categories that were identified by [9]: Namely, knowledge-based tools, performance-based tools and building rating tools where the latest is the focus of this study [10].

In this study, the adopted methods to identify the criteria to be included in an assessment tool that covers the urban and environmental dimensions include (1) Semi-structured interviews with subject matter experts in the domains of Community-based initiatives, Assessment of healthy cities, Urban design [11], and the network of accreditation of healthy cities [12], (2) A survey with members of the WHO Healthy Cities Program Network (HCP); and (3) Analysis of findings to identify and categorize proposed criteria to update approaches and implementation to be more relevant to the current global context.

1) The semi-structured questionnaire includes a set of two introductory questions and eight open-ended questions (Table 1) to (i) review of the definition of a healthy city considering the recent challenges and emerging global situation of emergencies; (ii) Challenges of implementation of relevant toolkits; (iii) Weaknesses and gaps in existing tools with regard to the Urban and environmental dimensions; and (iv) Recommended Updates (recommendations).

Table 1 List of questions of the questionnaire targeting Subject Matter Experts (SMEs)

Question	Comments
Introducing the study and consent to conduct the interview	
What is your preferred language for the interview?	
Could you please introduce yourself and our professional background?	Ice breaker
How would you explain what a healthy city is	Definition

from your perspective?		
What tools/guidelines are you familiar with, or have worked with?	Familiarity	
What challenges do you think have emerged for the implementation of healthy cities in the past three years, in light of the current and emerging global emergencies and conflicts?	Challenges	
From your opinion, what aspects are not properly covering urban design for healthy cities?	Weaknesses	
What would you recommend to add/update in existing tools to address the highlighted weaknesses	Recommenda-tions	
Any Question that you think I should have included in this survey?		
Finally, could you recommend someone else to interview?		

2) A survey with members of the WHO Healthy Cities Program Network (HCP) is conducted with participating members of the network of Healthy Cities to assess the identified criteria following the first step of interviewing SMEs. The survey follows a template (Table 2) to validate (i) The familiarity of the HCP network members with each element; (ii) The perception of the interviewee on the Relevance of the element to the assessment process for the urban and environmental design aspects; and (iii) The perception of the interviewee on the applicability of including the proposed element in existing tools and practicality of its implementation.

Table 2 Template of assessment of identified Criteria and elements

Assessment element	Details	Familiarity	Relevance	Applicability	Comments
Identified Criteria with SMEs	Criteria description, definitions, tools and sources	Yes/No	Yes/No	Yes/Partial/No	Interviewee notes on each indicator

3) Thematic analysis was conducted based upon the results from stages 1 and 2 to develop a reference of recommended criteria to update existing approaches in order to sufficiently cover the Urban and environmental aspects with relevance to current global context.

The final selection of resources to be included in the analysis was based on the findings of the interviews of this study as well as triangulation of the results with recent literature to facilitate the prioritization and categorization of identified criteria and elements.

Eventually, only assessment tools that address the urban and environmental scales were included where the final proposed list of items represent a broad range of stakeholders and cities. Participations from 17 countries of EM Region have contributed to the survey (17/22, 77%). A total number of 33 records were collected with an average of 2 participants per country (2 participants from 12 countries, 3 participants from 2 countries, and 1 participant from 3 countries). 29 records (29/33, 88%) were retained after applying cleansing and validation processes resulting in rejecting four records (4/33, 12%) recognized as outliers, incomplete and/or inconsistent elements. Familiarity of participants with the investigated elements:

Figure 2 sorts out the familiarity of the participants with the introduced elements. The results show that among the top elements that participants are familiar with are the Quality of life (Demographic assessment; Social infrastructure; Affordable housing; Public health; Emergency management and response), Health and safety (Active living; Community health; Emergency management and response; Food access and nutrition; Health systems; Hazard Mitigation; Safe communities), Community resiliency (Community engagement), Climate and energy (Climate adaption; Waste minimization), and Water efficiency (Water access and quality; Stormwater management).

On the other hand, the top unfamiliar elements are the Sociocultural and functional quality (Thermal comfort in open space; Open space; Workplace comfort; Noise, exhaust, and light emission; Barrier-free design; Urban design; Social and functional mix; Social and commercial infrastructure), Innovation and process(Local innovation), Habitat (Helping people design homes that nudge them into eating less and moving more), Prepared food areas (Grocery and food markets; Healthy food retail; Local produce; food quality), and Education, arts, and community (Arts and culture; Community Cohesion; Educational Opportunity and attainment; Historic preservation; Social and cultural diversity; Aging in the community).
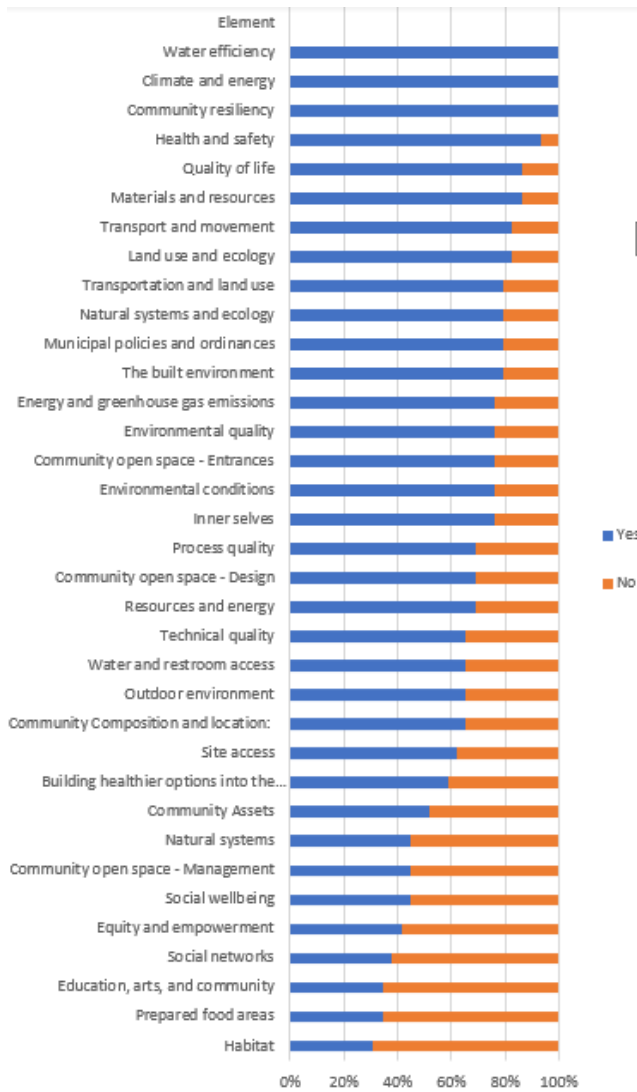
Fig. 2 Familiarity of survey participants with the investigated elements

Fig. 3 Relevance of investigated elements as perceived by the survey participants

Relevance of investigated elements: Results show that innovation and process is perceived as the least relevant element to integrate in the new tools. Equity & empowerment, and sociocultural and functional quality are among the top irrelevant elements that require special interventions to influence the perception of communities and stakeholders. The figure shows 14 elements with a negative perception of relevance that need dedicated studies to understand the reason of exclusion by experts despite being included in some tools.
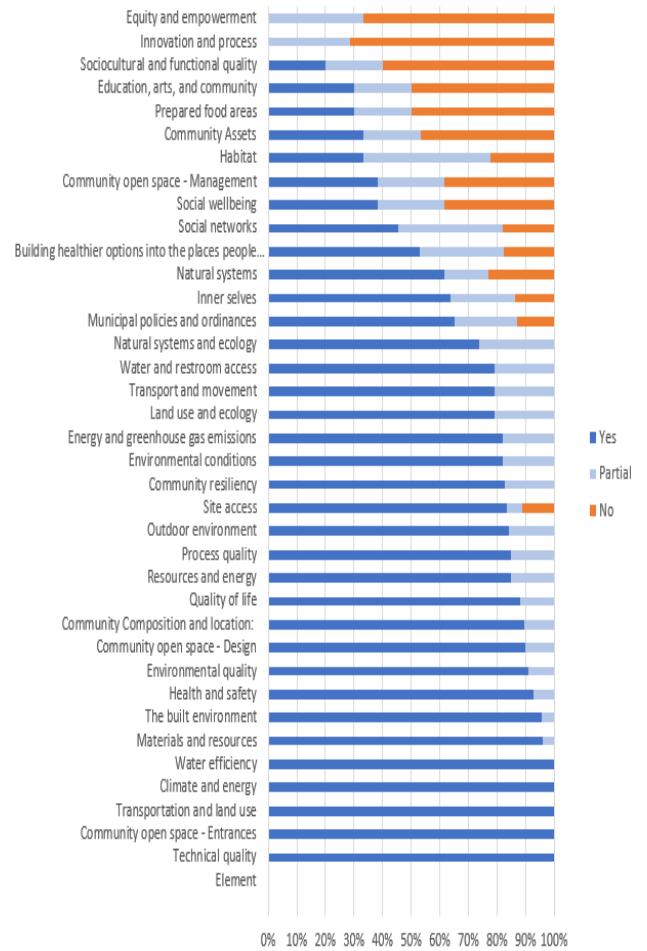
Applicability of investigated elements: Figure 4 reveals that participants perceive the elements of social networks, Habitat, and Sociocultural and functional quality to have low applicability in the Eastern Mediterranean Region. It is also interesting to note that participants consider it inapplicable (low) to include elements related to education and arts among other elements that highlight the verticality between health and other domains in the Healthy city concepts.
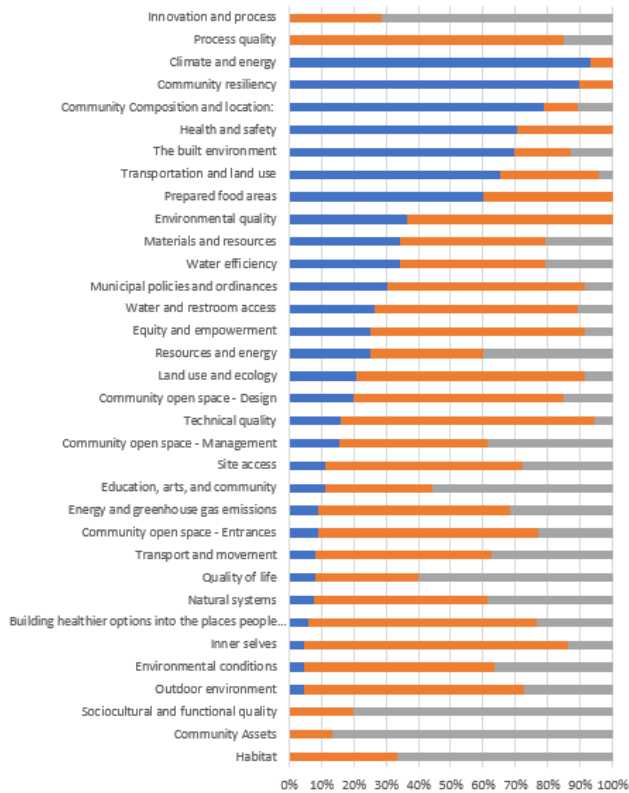
Fig. 4 Applicability of investigated elements

3   Results

The findings of this research, which involved a qualitative study with SMEs, provided insights into the definition(s) of a healthy city, the quality and comprehensiveness of existing tools, the challenges and weaknesses during implementation, and recommendations for enhancing healthy urban governance and collaboration to ensure the development of a comprehensive approach covering all health and non-health aspects of a healthy city, including environmental elements and urban planning and design.

Although there was a clear and agreed-upon definition among SMEs for Healthy City Program (HCP) as a multisectoral platform under a common vision to address different aspects of health and, in particular, the Social Determinants of Health, some comments were made regarding the integration of other supportive concepts and initiatives within the main definition. One such example is the concept of Safe Community (SC), which covers the concepts of a safe lifestyle and violence prevention, which is closely connected to health. An attempt to develop a joint model for both programs of HC and SC was conducted in the city of Sahand, Iran in 2020, and the result was approved by both the International Safe Community Certifying Centre (ISCCC) and the WHO separately.

The study identified 13 main tools and guidelines that could be used by national authorities to cover health, safety, environment, and urban planning [13], among other thematic areas of a healthy city. However, insufficient multi-disciplinary efforts to develop a joint and comprehensive kit of tools make it difficult to cover all targeted themes in an integrated plan and a harmonized timeline of implementation. Moreover, different organizational regions have developed localized models of implementation of the Healthy City program and emergency response measures for COVID-19, leading to low awareness among organizations/entities of existing efforts and tools in other parallel areas/themes. This, in turn, facilitates the initiation of separate sub-projects for each thematic area, eventually encouraging verticality among local organizations and governmental bodies.

To address these challenges, a comparative study is recommended to evaluate existing attempts of integration, and to identify best practices and discrepancies among different implementations. The WHO translation program can support the translation of local tools to enhance the inclusion of tools from different levels and experiences. Consultation with member states is recommended to develop a unified list of indicators and a process to support the assessment and monitoring of implementations. Another key challenge in increasing the number of healthy cities is related to sustainability of projects and activities, which requires long-term planning and allocation of funds. Additionally, national authorities perceive the developed platforms as mainly targeting High-Income Countries (HI) (e.g., GCC member states) more than Middle- and Low-Income countries. However, Healthy cities were found to have few COVID-19 cases, regardless of their levels of income and development. Yet, COVID-19 era was the first barrier to implementing the program since "different leaders did not notice that implementation of healthy cities concepts would have supported their battle against COVID-19." Another identified challenge is the Infodemic that took place during COVID-19. Infodemic is defined as "an excessive amount of information about a problem that is typically unreliable, spreads rapidly, and makes a solution more difficult to achieve." This resulted in declining trust in existing health systems and some governmental bodies during the crisis.

One of the identified potential enhancements is related to urban planning and urban safety. Several examples were mentioned related to designing public places to ensure entry and exit during emergency situations and outbreak events. Some aspects of healthy cities are among the core mandate of other UN agencies such as UN Habitat, and sufficient coordination among different UN agencies is in the early stages of development to involve different organizations in each healthy city aspect, regardless of the mandate of each organization.

4   Recommendations

1. A dedicated entity needs to be established for healthy cities, with the involvement of different UN organizations and active stakeholders. This approach would minimize the verticality among existing policies of different agencies that leads to (unharmonized) policies and guidelines, duplicate efforts, and gaps in implementations.
2. Addressing risk factors and enhancing the health outcome within healthy cities calls for better coordination among different UN organizations.
3. Advocacy efforts are necessary to raise awareness among stakeholders about the benefits, challenges, and cost-effectiveness of healthy cities, particularly in areas with geographical imbalances due to insufficient resources.
4. It is essential to raise the awareness among communities and stakeholders about the least familiar elements related to habitat, prepared food areas, education, art, and social networks.
5. Further investigation is required to understand the reasons for considering innovation, Equity & empowerment, and sociocultural and functional quality to be irrelevant to the concept and tools of Health city.
6. Further investigation is recommended to understand the challenges facing implementation of some non-health elements that are perceived as inapplicable (low to medium) and the reason for the high verticality between different non-health categories.

5   Conclusion

The significance of the proposed criteria on urban making decision has a direct impact on strengthening the environmental health aspects (i.e. Air Quality, Water Quality and Access, Sanitation and Waste Management, Noise Pollution, Access to Green Spaces and Nature, Urban Heat Island Effect, Exposure to Toxins and Hazardous Materials, Quality and Accessibility of Housing, Active Transportation and Walkability, and Social Cohesion and Community Engagement).
Integrate the concept of a smart city in the healthy city policy development to properly utilize innovative technologies (e.g. AI, image processing and advanced analytics) to support implementation and adopt concepts that support energy reservation, decreasing car accidents, digitalization of services, air quality management, enhanced waste management, and detection of heat islands. Review of healthy city related indicators and incorporate the input of different sectors and/or UN organizations (e.g. UN Habitat) to incorporate urban and

green indicators. To improve the composition of the HC committee, the WHO-EMRO 2022 revised Short Guide could include details of sectoral and thematic sub-committees, such as those related to health, environment (including water sanitation), education, social activities, economic activities, emergency preparedness and response, advocacy, communication, and documentation, women, and youth development. Continuous communication with the public to understand the capacity and limitation of HSs would increase trust during crises. Proper management of the infodemic is also necessary.

Overall, the adoption of a comprehensive approach to healthy cities, incorporating the concept of smart cities, innovative technologies, and multi-sectoral collaborations, would help ensure that healthy cities become a reality, and improve the health and wellbeing of communities around the world.

Acknowledgment

References

[1] Sudermann, S., et al. (2022). Healthy City Assessments: Reviewing assessment tools for healthy cities [preprint]. The Evolving Scholar | ARCH22
[2] Hanem W. I Mohamed Basha, Pasent H. A Yousef, & Tarek Abou ElSeoud. (2022). Addressing Urban Health Inequalities Using Urban HEART in the Eastern Mediterranean Region. International Journal of Applied Engineering & Technology, 4(1).
[3] UN-Habitat (2021). Urban health. Retrieved from https://unhabitat.org/topic/urban-health
[4] UN-Habitat & World Health Organization (2020). Integrating Health in Urban and Territorial Planning: A Sourcebook. Nairobi, KE: UN-Habitat & Geneva, Switzerland: World Health Organization. Retrieved from https://apps.who.int/iris/handle/10665/331678
[5] Grant, M. (2019). Planning for Healthy Cities. In Nieuwenhuijsen, M. & Khreis, H. (Eds.). Integrating Human Health into Urban and Transport Planning. A Framework (1st ed., pp. 221-250). Basel, Switzerland: Springer, Cham. Retrieved from https://doi.org/10.1007/978-3-319-74983-9_12
[6] (Barton & Grant, 2006 developed from the model by Dahlgren & Whitehead, 1991).
[7] Grant, M., Brown, C., Caiaffa, W. T., Capon, A. et al. (2017). Cities and health: an evolving global conversation, Cities &Health, 1(1), 1-9. Retrieved from https://doi.org/10.1080/23748834.2017.1316025
[8] Grant, M. et al. (2022). Supporting a Healthy Planet, Healthy People and Health Equity through Urban and Territorial Planning, Planning Practice & Research, 37(1), 111-130. Retrieved from https://doi.org/10.1080/02697459.2021.2000144
[9] Urban Land Institute (2015). Building Healthy Places Toolkit:

Strategies for Enhancing Health in the Built Environment. Washington, DC: Urban Land Institute

[10] Grant, M. & Barton, H. (2013). No weighting for healthy sustainable local planning: evaluation of a participatory appraisal tool for rationality and inclusivity. Journal of Environmental Planning and Management, 56(9), 1267-1289. Retrieved from https://doi.org/10.1080/09640568.2012.717887

[11] World Health Organization. Regional Office for the Western Pacific. Healthy Cities: Good Health is Good Politics. Toolkit for local governments to support healthy urban development. 2015;66. Available from: http://www.who.int/iris/handle/10665/208242

[12] Heart U. Urban HEART Urban Health Equity Assessment and Response Tool. [cited 2021 Oct 17]; Available from: www.who.or.jp/urbanheart

[13]de Leeuw E, Simos J. Healthy Cities The Theory, Policy, and Practice of Value-Based Urban Planning / edited by Evelyne de Leeuw, Jean Simos. Healthy Cities 2017. 2017