

International health: essential public health functions, an emerging topic during the COVID-19 pandemic

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ABSTRACT

The impact of the global COVID-19 pandemic on health systems has created a chaotic scenario, severely hindering the ability to meet health needs and negatively affecting the provision of health services to the population. This prolonged health crisis has exposed the collapse of health systems and their lack of institutional capacity to effectively address health emergencies. This situation is largely attributable to the segmentation and fragmentation rooted in the regional structure of these systems. Meanwhile, limited progress has been made in evaluating their performance.

One of the primary objectives of health systems is universal health coverage. Nevertheless, achieving this goal requires the implementation of strategies aimed at strengthening these systems through the evaluation of their performance and the promotion of international health security. In this context, essential public health functions (EPHFs) emerge as crucial elements representing fundamental actions to maintain and improve population health.

This review was conducted to guide health policy development by updating and disseminating the application of the EPHFs across multiple levels of public health implementation. Understanding and applying these essential functions will enable comparative analyses in national plans related to public health, especially in health crisis situations.

Despite significant evidence closely linking the EPHFs to the improvement of health systems and the promotion of international health, there remains a lack of data and empirical evidence concerning different institutions and specific areas. It is crucial to generate this information in order to support the effectiveness of the EPHFs across various institutional contexts in order to fully understand their impact and scope.

Keywords: Global Health; COVID-19; Essential Public Health Functions (Source: MeSH NLM).

INTRODUCTION

The COVID-19 pandemic, triggered by SARS-CoV-2, highlighted the deep-seated vulnerabilities within global health sector structures. This crisis placed enormous pressure on health systems, disrupting essential medical services and starkly exposing the structural weaknesses that constrained their response capacity. This fact was most clearly evidenced in segmented systems with fragmented functioning, acting as significant barriers to a swift and effective response to emerging challenges in healthcare for the population ⁽¹⁾.

Amid the health emergency, a strategic decision was made to prioritize health sector actions to control COVID-19, with the aim of reactivating the economy and rebuilding health systems through multisectoral policies. In this context it became essential to assess two key aspects: health and the economy ^(2,3).

Under these circumstances, the urgent need emerged to explore and thoroughly understand the essential public health functions (EPHFs) as a core element in strengthening and revitalizing these systems ⁽⁴⁾. The EPHFs, representing a set of fundamental actions to safeguard population health, have gained unprecedented relevance in such context of global crisis ^(5,6).

To achieve this purpose, it was essential for the EPHFs to promote pending reforms and a transformation of health systems through the development of methods to address, analyze and evaluate them at a global level. Therefore, it is now crucial to develop international health policies that promote the implementation of the EPHFs as strategic tools at different levels of public health practice.

A detailed review of the importance and effective implementation of the EPHFs in health systems will allow for charting of a path toward health development, involving governments,

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academia and organized civil society in this reconstruction process toward health for all ^(7,8).

SEARCH STRATEGY

A literature search was conducted, using terms such as “essential public health functions,” “international health” and “COVID-19 pandemic” across the PubMed, Scopus, LILACS and IBECs databases and websites of relevant organizations. As inclusion criteria, articles were selected if they focused on the evaluation of the EPHFs, international health and the COVID-19 pandemic, with an emphasis on comprehensive

systematic studies published in the last ten years. As exclusion criteria, articles published in a language other than Spanish and English were excluded. Titles and abstracts were reviewed and, finally, 22 articles were included after applying the inclusion and exclusion criteria. However, most of the data sources were found in the gray literature. It should be noted that one limitation was the scarcity of up-to-date information on studies related to the topic. Therefore, the data extracted were based mainly on publicly available sources. It is possible that not all relevant data were identified because some are not publicly accessible (Table 1).

Table 1. Search strategy

Source	Search strategy	Studies
PubMed	Search: “essential public health functions” and “international health” and covid*. Filters: Free full text, Associated data, Books and Documents, Review, Systematic Review	15
Scopus	(TITLE-ABS-KEY (essential public health functions) AND TITLE-ABS-KEY (international health) AND TITLE-ABS-KEY (covid))	0
LILACS	essential public health functions [Palavras] and international health [Palavras] and covid [Palavras]	7
IBECs	(“essential public health functions”) AND (“international health”) AND (“covid”)	0

Essential public health functions

The EPHFs are considered a set of actions and capacities of health authorities at various levels of management, aimed at strengthening health system responses and ensuring the right to health ⁽¹⁾. These functions serve as assessment tools to identify and measure factors that influence the management and development of plans or strategies that strengthen the role of health authorities in promoting public health ⁽¹⁾.

In 1998, the World Health Organization (WHO) published the first version of the EPHFs, which has since been used by WHO regions, Member States and other global health actors to help developing countries define their public health competencies and guide health systems reforms ⁽⁹⁾. The Pan American Health Organization (PAHO) has also promoted measuring the EPHFs as part of its initiative to strengthen the steering role of health authorities and improve public health practice. Resolution CD42.R14 urges Member States to participate in measuring the performance of the EPHFs and to implement interventions aimed at improving public health ⁽¹⁰⁾.

In 2001, the WHO launched the initiative “Public Health in the Americas,” which included evaluating the EPHFs in 41 countries in such region under the PAHO’s leadership and in collaboration with the corresponding country teams and national institutions. The overall interpretation of the countries’ performance was determined according to the percentages defined by the PAHO, which classify performance as optimal, high-intermediate, low-intermediate or minimal ⁽¹¹⁾.

The overall results obtained in the Region of the Americas showed intermediate and low performance in the EPHFs. The best-performing functions were the reduction of the impact of emergencies and disasters, as well as public health surveillance. In contrast, the functions related to quality assurance and improvement of services, development of human resources for public health and public health research had lower scores ^(12,13).

In September 2005 and May 2006, the measurement of the EPHFs was carried out in Peru’s 24 regions. A low-intermediate performance was observed at the regional level, with an irregular distribution of results across the eleven EPHFs. Some functions showed a high-intermediate performance, while others had a low-intermediate or minimal performance. This evaluation enabled the various sectors of society to orient the actions toward meeting the health needs of the population ^(14,15).

Despite the evident progress in the evaluation of EPHF performance in the Americas and Peru, no products generated by this exercise have been identified as having been used as inputs for health systems reform processes. In addition, Member States were not able to consolidate their role as facilitators of health systems transformation ⁽¹¹⁾.

In response to this context, in 2010, the PAHO launched a report titled “Core competences for public health: a regional framework for the Americas” (RCCFPH) to support health leaders in countries of the region in strengthening the capacities required for optimal performance of the EPHFs within health

systems. This initiative aimed to promote the development of master plans for education and training of health personnel, which would serve both as an indirect factor for evaluating the outcomes of training processes carried out by academia ⁽¹⁶⁾ and as a strategy to achieve optimal performance in the EPHFs ^(17,18).

In addition, the RCCFPH proposed a new domain of work called “global and international health,” to be addressed and included in national agendas as a component for evaluating the EPHFs. This reflects a way of seeing and addressing health as a global public good, a subject of social justice and as a universal right ⁽¹⁹⁾.

Given the dynamic nature of health systems, it is important to analyze the EPHFs based on two overarching categories or macrofunctions: cross-cutting functions, which are based on the development of health systems, and vertical functions, which are based on the public health services provided by health systems ⁽⁹⁾. This helps identify both the exclusive and shared responsibilities with the national health authority (NHA) ⁽²⁰⁾.

The COVID-19 pandemic demonstrated the strong relationship between environmental health and the interdependence of society, the environment and health. This can contribute to achieving sustainable development ⁽²¹⁻²³⁾.

Therefore, environmental health has been recognized as a priority, given that it poses one of the greatest threats than can hinder the achievement of the Sustainable Development Goals (SDGs) ⁽²⁴⁾, widen gaps in health inequality and jeopardize universal health coverage (UHC). In response to this problem, the PAHO has developed a framework to address health and the environment, focusing on the essential environmental public health functions (EPPHFs), which are based on actions targeting the environmental and social determinants of

health. The aim is to achieve SDG 3: Health and well-being, by promoting sustainable and resilient health systems ^(25,26,34), as well as healthy cities and communities, in order to reduce health inequality ^(27,28) and contribute to sustainable development ⁽²⁹⁻³¹⁾.

In view of this situation, it is crucial that health strategies—whether at the level of related policies, plans, programs or projects—focus on studies that address and include the social determinants of health. This will allow us to establish the causal correlation between factors that lie beyond the scope of the health sector. Therefore, it is fundamental to classify the EPHFs into categories that allow for the implementation of intersectoral policies in order to jointly address health issues ^(32,33).

In response to the evaluation methods applied and the results achieved globally over the past two decades, the WHO issued a strong resolution (WHA69.1) during the World Health Assembly, which calls for support to Member States in strengthening the EPHFs as the most efficient and sustainable way to achieve key health goals that are central to achieving UHC and advancing the SDG agenda ⁽⁹⁾. This mandate seeks a genuine transformation of health systems through their refoundation or revolution. As part of this process, a reorganization of the EPHFs is proposed to address them more effectively ^(36,37), along with the incorporation of the essential dimension of international/global health as the twelfth EPHF or as a metafunction ⁽³⁸⁾.

In the health context, the term “metafunction” refers to a higher-level or overarching function that encompasses or oversees others. This may imply a strategic or coordination-oriented approach aimed at optimizing the overall efficiency and effectiveness of the health system to address social determinants and contribute to the achievement of the SDGs (Figure 1) ^(39,40).

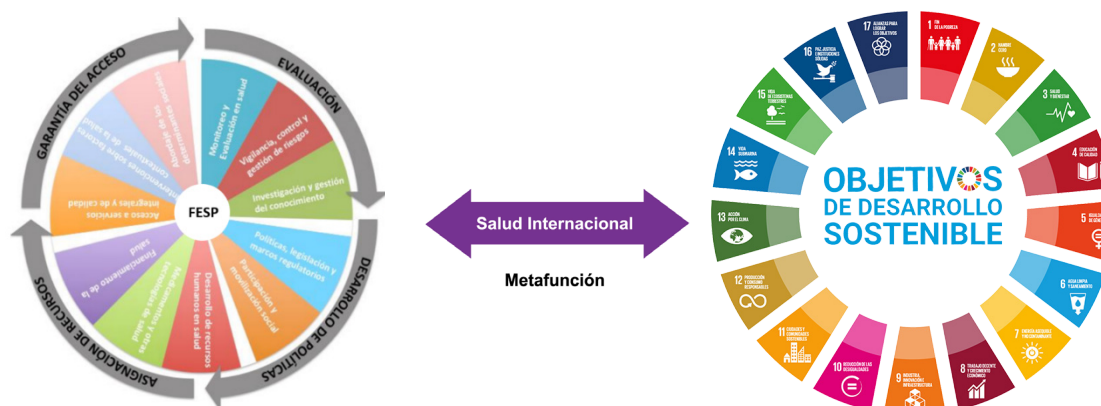


Figure 1. Relationship between the EPHFs and the SDGs through the metafunction ^(25,39,41)

Source: Adapted from: Towards applying the essential public health functions for building health systems resilience: A renewed list and key enablers for operationalization. *Frontiers in Public Health*. 2023 January; 10.

It is important to emphasize that the EPHFs should remain part of a dynamic preparedness process, prioritized in the political and development agendas of the countries in the region, and contribute to building strategic and catalytic capacities to strengthen public health ^(42,43).

All these transformation processes involve the sector's steering role in health, which is an inherent function of the State, exercised through the NHA, typically carried out by ministries of health. In order for the steering role to be fulfilled, a series of functions must be implemented, among which is the "measurement of the EPHFs" ⁽⁴⁴⁾. Therefore, it is crucial to strengthen the steering role in health to ensure the efficient performance of the NHA, since it provides a solid foundation for the optimal development of public health policies, the promotion of social accountability in health, the improvement of health conditions with equity, the promotion of the advocacy of health as a public good and the coordinating role of the other functions through the EPHFs ⁽⁴⁴⁻⁴⁶⁾. To achieve this, an analytical orientation of the EPHFs is required—one that is adapted to the conditions and characteristics of each national context in order to analyze health systems. For this reason, three lines of analysis are proposed: 1) the strategic activities of the steering role of health systems, such as strengthening the International Health Regulations (IHR), 2) the catalysts of transformation processes within health institutions, and 3) the impact on developing a new health management model focused on people and communities ^(47,48).

Public health structures and practices are broad in scope and are characterized by their cross-cutting and intersectoral nature. These unique conditions also present inherent difficulties in institutionalizing the process of evaluating the effectiveness of EPHF measurement, which must include systematic monitoring and evaluation in the public health policy cycles of States ⁽⁴⁹⁾.

In this regard, it is of utmost importance to view the EPHFs as strategic instruments for advancing health system transformation and as collaborative tools for addressing international public health challenges in partnership with the countries of the region.

International health (policy)

Analyzing international health in the context of the EPHFs involves examining the development of epidemics, with particular emphasis on the cholera outbreak as one of the most significant for the region. This outbreak, which affected Europe between 1830 and 1847, triggered intense diplomatic efforts to manage and control infectious diseases and fostered multilateral cooperation in the field of public health. As a result, the first International Sanitary Conference was held in Paris in 1851. The Constitution of the WHO entered into force in 1948; the IHR were approved by Member States in 1958 and later adopted by the World Health Assembly in 2005 ⁽⁵⁰⁾.

In the early 1990s, following the resurgence of cholera and plague, as well as the emergence of infectious agents such as the Ebola virus, health sector reforms were initiated in nearly

all countries of Latin America and the Caribbean (LAC). These reforms were conceived as processes to introduce significant changes across the various levels and functions of the sector, with the aim of increasing equity in the provision of services, improving management efficiency and meeting the health needs of the population ⁽⁵⁰⁾.

However, these reforms overlooked public health, leading to negative consequences such as the inadequate allocation of financial resources. This produced management issues in health institutions, particularly concerning human capital. All this resulted in the reemergence of health issues that had seemed to be under control, including those arising from the accumulation of cases, ranging from nutritional deficiencies such as malnutrition to diseases linked to lifestyles and living conditions ⁽⁵¹⁾.

It should be noted that these reforms occurred in parallel with significant international changes that affected the health systems of the region, including globalization (economic, technological, cultural and political), armed conflicts and socioeconomic problems. These factors have positioned health as a cornerstone of development, as the relationship between health and social and economic progress acquires new characteristics in an open and highly competitive international system ⁽⁵²⁾.

To address all these challenges, in the late 1990s, the PAHO launched the regional initiative "Public health in the Americas," which defined the EPHFs as the structural conditions and elements of institutional development that improve public health performance ⁽⁵³⁾. These functions focus on strengthening the steering role of health authorities at all levels of the State across different countries, improving public health practices and reinforcing the leadership of health authorities ⁽⁵⁴⁾. Eleven EPHFs were identified, which were weakened by the structural reforms carried out in the region during the 1980s and 1990s ^(55,47).

It is important to note that the countries of the region share many similarities in history, culture, and level of development. However, differences in the economic, political and social contexts of each country affect their health situation and the implementation of changes within the sector. The proposed public health reforms underscore the importance of strengthening the steering function of the health authority, and a fundamental part of this role involves ensuring compliance with the EPHFs at the state level ⁽⁵⁶⁾. These functions are the core of the agenda to strengthen the health sector in the region ⁽⁵⁷⁾.

Thus, in 2020, the PAHO urged the countries of the Americas to update the EPHFs that must be complied with by all health systems. This was proposed as a means to provide quality services and actions, respond to epidemics and advance toward universal health. To implement this proposal, it was suggested to work under the policy cycle approach, which consists of four stages: assessment, policy development, allocation of resources, and equitable access. This approach seeks to

promote the integration of actions through the analysis of public health issues and the search of comprehensive solutions to address current and emerging challenges in this field ⁽⁵⁸⁾.

In 2022, the COVID-19 pandemic exposed the deficiencies of health systems across countries. Although there were numerous issues, there was also an opportunity to strengthen these systems by reformulating and revitalizing the EPHFs. This would provide better preparedness and response capacities for the current health crisis and future similar situations ^(59,60).

After four decades of implementing reform processes in the health sector, the countries of the region still face issues as a result of negligence by their authorities. These include the lack of investment in health, the so-called “pseudo reforms” to improve health care, as well as the lack of attention and support for public health by the States. In addition, countries face exhaustion and an overburdening capacity to carry out the EPHFs and to implement comprehensive and coordinated measures both within and outside the health sector ^(59,60).

In this context, the WHO needs to know the performance of health systems in order to address these issues and take measures to improve public health practice. With this purpose in mind, the application of the EPHF instrument is expected to enable the global identification of strengths and weaknesses in public health practice, strengthen critical performance areas in the NHA ⁽⁶¹⁾ and reinforce public health infrastructure to develop the institutional capacities required for good performance ⁽⁶²⁾.

In addition, countries and international organizations worldwide have undertaken the difficult task of translating public health functions from theory into practice to improve the performance of health institutions. For this reason, a new conceptual framework for the EPHFs was proposed, shifting from viewing them as isolated functions to conceiving them as a set of capacities within a research, development and innovation (R&D&I) approach ⁽⁶³⁾. This entails promoting and guiding collaborative work among public health institutions, grounded in the dimensions of development and human rights, in order to improve public health performance ^(64,65).

However, the recent experience with COVID-19 revealed the importance of implementing and strengthening technologies for case control and follow-up, as well as for the provision of health services—measures that had a positive impact on developing countries ⁽⁶⁶⁻⁶⁸⁾.

Currently, these technologies have evolved, giving rise to artificial intelligence, which is still in its early stages in the field of public health. However, there are emerging initiatives applying the EPHFs, primarily in epidemiological surveillance, health education, and public health research. Together, these developments pose a major challenge that will need to be addressed in the near future ^(69,70).

The identification and assurance of the EPHFs remain priorities on the WHO’s agenda for strengthening the health systems of its Member States. However, one of the main obstacles is the lack of contextual information on their implementation across countries, as well as the identification of the challenges that the sector faces in contributing to the achievement of the health-related SDGs (Figure 2) ^(71,72).

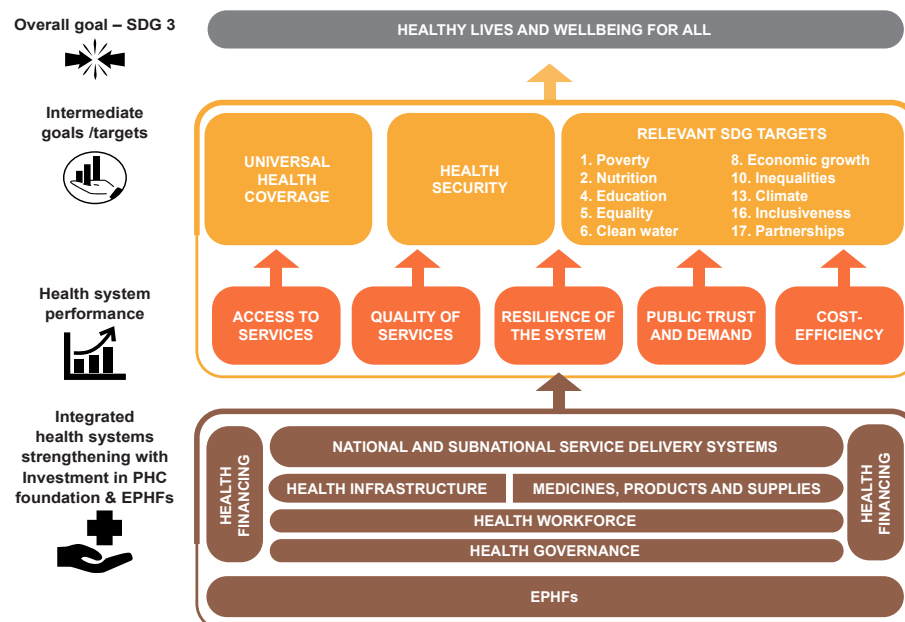


Figure 2. Relationship between the strengthening of integrated health systems and the EPHFs ⁽⁷³⁾

Source: Health systems resilience toolkit: a WHO global public health good to support building and strengthening of sustainable health systems resilience in countries with various contexts. Analysis. Geneva - Switzerland: World Health Organization; 2022.

CONCLUSION

Health sector reforms have weakened the NHA and reduced public health capacity. The pandemic exposed deficiencies of the region's health systems, revealing limitations in their ability to cope with future crises and disasters, which may disproportionately affect the most vulnerable groups.

This situation demonstrates the need for more resilient health systems that promote social protection and upgrade EPHFs to address epidemics, advance toward UHC and respond to current societal challenges.

However, major issues persist in the health sector, including the absence of a systemic approach, incomplete reforms, inadequate decentralization processes, fragmentation of health systems and insufficient priority given to collective health and UHC. These factors hinder health policies from helping close inequality gaps and achieving national and international goals.

Therefore, to ensure the sustainability of initiatives related to the EPHFs, countries in the region will need strategic decentralized oversight, enhanced communication, the inclusion of key partners, and support from academic institutions to strengthen and implement the evaluation of essential functions. This could significantly impact economies and social development.

The WHO plays a key role in providing conceptual, methodological, and operational clarity on the EPHFs, establishing links with the IHR, and strengthening health systems. The essential functions should be considered as a strategic instrument for designing and implementing health policies, analyzing gaps, and responding to health challenges and crises, with the aim of advancing toward UHC in the Region of the Americas.

It is critical to develop a public health data platform to monitor how States perform the essential functions, enabling evidence-based comparative analysis of the implementation and outcomes of reforms. This will support decision-making by authorities and provide relevant information on the response to the COVID-19 pandemic.

The application of artificial intelligence in developing countries, such as Peru, will improve public health management and help address some of the weaknesses stemming from the segmentation and fragmentation of the Peruvian health system.

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