

Comparison of national health research priority-setting methods and characteristics in Latin America and the Caribbean, 2002–2012

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ABSTRACT

Objective. To compare health research priority-setting methods and characteristics among countries in Latin America and the Caribbean during 2002–2012.

Methods. This was a systematic review that identified national health research policies and priority agendas through a search of ministry and government databases related to health care institutions. PubMed, LILACS, the Health Research Web, and others were searched for the period from January 2002–February 2012. The study excluded research organized by governmental institutions and specific national strategies on particular disease areas. Priority-setting methods were compared to the “nine common themes for good practice in health research priorities.” National health research priorities were compared to those of the World Health Organization’s Millennium Development Goals (MDG).

Results. Of the 18 Latin American countries assessed, 13 had documents that established national health research priorities; plus the Caribbean Health Research Council had a research agenda for its 19 constituents. These 14 total reports varied widely in terms of objectives, content, dissemination, and implementation; most provided a list of strategic areas, suggestions, and/or sub-priorities for each country; however, few proposed specific research topics and questions.

Conclusions. Future reports could be improved by including more details on the comprehensive approach employed to identify priorities, on the information gathering process, and on practices to be undertaken after priorities are set. There is a need for improving the quality of the methodologies utilized and coordinating Regional efforts as countries strive to meet the MDG.

Key words

Research, health; biomedical research; health research agenda; health research policy; Latin America; Caribbean Region.

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There is growing acknowledgement that research and development in health and medicine act as catalysts for socioeconomic development (1–3). This has led, in turn, to the recognition that strengthening a national health research system (NHRS) requires investing in a dedicated national health research policy, plan, or strategy. National governments, as well

as diverse organizations and actors, including the World Health Organization (WHO) and the Pan American Health Organization (PAHO), have articulated this need through the development of health research strategies. These strategies are “essential to improving population health, reducing inequities and social injustice, and attaining the Millennium

Development Goals” (MDG) set by the United Nations (4–9).

In 2009, PAHO adopted a “Regional Policy on Research for Health,” endorsed by Member States, that offers a strategic approach towards strengthening research governance (4). Additionally, the WHO strategy on research for health, the “Global Strategy and the Plan of Action on Public Health, Innovation, and Intellectual Property,” recognizes the importance of organizing health research on a national level (7–9). These documents indicate that the establishment of a research priority agenda is important to ensuring the best possible use of available resources and to strengthening the ties between policy, health practice, scientific knowledge, and technological development. High quality health research is not only crucial to improving a population’s health outcomes and equity, but also to boosting its social and economic growth (1–3, 10).

In the Region of the Americas, collaboration toward setting and monitoring Regional health research goals and priorities has already facilitated progress and marked improvement in its resulting reports: the 1st Latin American Conference on Research and Innovation for Health, held in 2008 (11, 12); a follow-up meeting in 2009; and most recently, the 2nd Latin American Conference on Research and Innovation for Health in 2011 (13). The 2nd Conference focused on three fundamental, interrelated themes: linking innovation to health policy; successful funding mechanisms; and, international cooperation and how it addresses local research priorities (13).

A health research system has been defined as “the people, institutions, and activities whose primary purpose in relation to research is to generate high-quality knowledge that can be used to promote, restore, and/or maintain the health status of populations; it should include the mechanisms adopted to encourage the utilization of research” (14). As discussed in previous publications, the functions of health research systems include governance and management; financing; knowledge generation and use and management of knowledge; and, creating and sustaining resources. Setting health research priorities, which is one of the government and management objectives, is an essential step to strengthening health research systems (4, 14–16).

Several Latin American and Caribbean countries (LAC) have developed research priority agendas in the last decade through varied methods and approaches (17–19). Following a review of research priority-setting methods, one of these studies (17) described nine common themes for good practice in health research priority setting, and proposed a checklist to facilitate transparent and comprehensive priority setting. The checklist is organized into three domains: *preparatory work*, *deciding on priorities*, and *after priorities have been set*. Each of these three domains has respective practices that further identify the goals of each step. Within *preparatory work*, there are five related practices: context, use of a comprehensive approach, inclusiveness, information gathering, and planning for implementation; within *deciding on priorities*: criteria, and methods for deciding on priorities; and, within *after priorities have been set*: evaluation and transparency.

A 2009 review (18) summarized and analyzed the progress of the NHRS in 14 LAC countries according to three main factors: governance and structure; legal frameworks; and health priorities. Based on findings of that review, the authors of the present study sought to produce an update by identifying recent (2002–2012) national health research policies and agendas in LAC. This study also focused on assessing the development and characteristics of the national health research priorities identified, and in order to have a common point of reference, to compare the priority-setting methods according to the instrument previously described (17). By evaluating the priority-settings methods of countries in the Region, the present study aims to encourage research, funding, discussion, and cooperation among the countries and their research systems.

MATERIALS AND METHODS

Information sources

The Health Research Web (HRWeb) is a web-based service for managing and displaying health research information developed by the Council on Health Research for Development (COHRED; Geneva, Switzerland) in collaboration with PAHO (20). In-country representatives are able to upload resources to be shared

in an open-source format. HRWeb and the previously-published review of the topic (18) were the primary initial sources for this study. Each country page was searched for documents and information about its NHRS. In addition, a web-based search was conducted of the official websites of health-related institutions to identify national health research policies and priority agendas in each LAC country.

This material was supplemented with advanced searches in PubMed (National Library of Medicine, Bethesda, Maryland, United States) and LILACS (Latin American and Caribbean Center on Health Sciences Information, São Paulo, Brazil), and by Google Search (Google, Inc., Mountain View, California, United States). To identify articles and documents regarding the national health research systems, the search terms included: ‘Health,’ ‘Research,’ ‘System,’ ‘priorities,’ ‘agenda,’ as well as each LAC country’s Medical Subject Heading (MeSH) term in English, French, Portuguese, and Spanish.

Additional sources of information included documents identified by searching websites of key institutions, such as ministries, science and technology agencies, official public health institutes, as well as documents in the reference lists of existing material. The study excluded research organized by governmental institutions and specific national strategies on particular disease areas.

The search was restricted to the 10-year period from 2002–2012, taking into account that priorities should be updated periodically.

Information selection and extraction

To ensure that knowledge gaps were easily identified and to prevent duplications, a spreadsheet was developed to record data about each document identified. Given the nature of the HRWeb (20), the amount of information available is dependent upon updates by the Member States. A list of documents and key institutions was prepared for each country. A request was first sent to in-country PAHO research representatives, known as PAHO/WHO Research Focal Points, to do the following: (a) review the list of documents and provide any missing resources; and (b) review the list of key institutions and advise of any omis-

sions. The same request was made to a group of experts who had participated in a recent conference (13). Information extracted included the characteristics of the health research prioritization process; areas of research; sub-sections of research; and specific research questions.

Analysis

The information described above was presented in two different manners. The first focused on evaluating characteristics of the agendas with regards to the nine common themes of good practices within the three specific domains delineated by the checklist (*preparatory work, deciding on priorities and after priorities have been set*) (17). Second, the health research priority areas were presented according to the MDG (21). The study analyzed similarities and differences in the methodologies used to identify health priorities and the health priorities themselves.

RESULTS

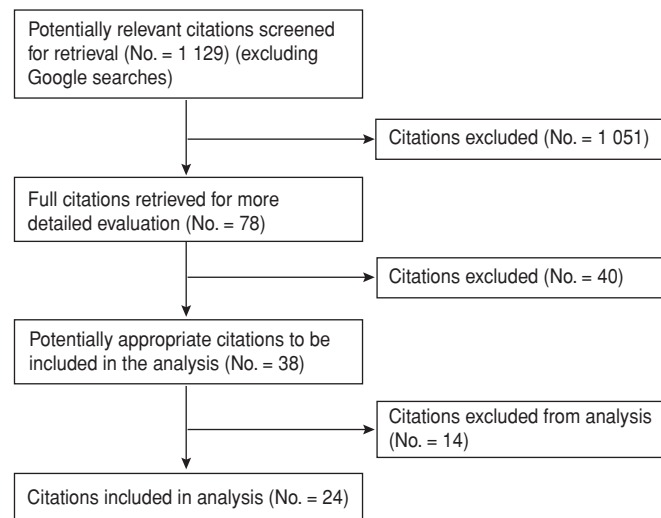
Characteristics of the health research documents

This study identified and assessed 24 documents from 18 LAC countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Guyana, Mexico, Panama, Paraguay, Peru, Dominican Republic, Uruguay, and Venezuela; and one area, the Caribbean Health Research Council (CHRC), which includes Anguilla, Antigua and Barbuda, the Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Christopher and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, and Turks and Caicos (22–52). Of these, 13 and the CHRC had some type of a strategic plan and/or national/council health research priorities. The PAHO/WHO Research Focal Point provided missing documents or updated information that was outdated online; PAHO received access to two non-public, draft documents from the Dominican Republic⁵ and Guyana.⁶ Brazil established its research priorities through the “Na-

⁵ Dominican Republic. Política Nacional de Investigación para la Salud, 2012 [unpublished].

⁶ Guyana National Health Research Agenda, 2010 [unpublished].

FIGURE 1. Process for identifying documents on health research policies/strategic plans and/or agendas in Latin America and the Caribbean, 2002–2012



tional Agenda of Priorities in Health Research,” created in 2006 and updated in 2008 (25, 26). Additionally, the CHRC had developed a “Health Research Agenda for the Caribbean,” guided by the Caribbean Cooperation in Health (28).

For comparison and analysis, only documents explicitly including health research priorities—those of Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Chile, Guatemala, Guyana, Mexico, Panama, Paraguay, and Peru, as well as the CHRC—were included (Figure 1). For several countries, specific documents reporting health research priorities were not found.

All reports provided a list of general strategic areas and/or sub-priorities (research themes or sub-areas, etc.), while fewer indicated specific health research topics/questions (Tables 1 and 2). The methods used and the format for reporting varied greatly, and not all the documents included specific health research priorities. Argentina, Bolivia, Brazil, the CHRC, Panama, and Peru were the only countries to indicate the development of specific research topics/questions in addition to specific areas or sub-priorities (22–28, 39, 44, 46–49). The CHRC, for example, identified eight strategic program areas (e.g., noncommunicable diseases, strengthening health systems); within those eight, a number of sub-priorities were defined (e.g., for strengthening

health systems, five sub-priorities: health financing, risk/disaster management, pharmaceutical policy, regulation, and management); and for each sub-priority, subtopics were identified (e.g., for health financing, 17 sub-topics, including the cost and challenges of achieving universal access). In general, countries differed in their primary research objectives, and these varied widely from strengthening technology to combating disease.

Few reports provided information on planned updates and indicators (Table 3). Several countries focused on health research in human resources; Peru for example, established a specific research agenda on human resources in health (46–49).

It was not uncommon for countries to address the development of health research human resources without having identified specific research questions; this was the case in Colombia, Costa Rica, Guyana, and Mexico (33–35, 42, 43).

Research documents compared to the checklist for health research priority setting

The nine common themes for good practice in health research priority setting (17) are grouped into three categories (A–C) that were used to evaluate the documents included in the analysis (Table 2).

TABLE 1. Documents available on health research policies/strategic plans and/or agendas in Latin America and the Caribbean, by country/geographic area, 2002–2012^a

Country/area	Reference	Type of document (year) / Comments
Argentina	22	Plan Estratégico Nacional de Ciencia, Tecnología e Innovación “Bicentenario” (2006–2010)
	23	Argentina innovadora 2020 plan nacional de ciencia, tecnología e innovación lineamientos estratégicos (2012–2015)
	24	Comisión Nacional Salud. Estado de conocimiento y agenda de prioridades para la toma de decisiones (2008)
Bolivia	39	Agenda Nacional de Prioridades de Investigación en Salud (2009)
Brazil	25	National Agenda of Priorities in Health Research (2006)
	26	National Agenda of Priorities in Health Research (2008)
	27	Agenda Nacional de Prioridades de Pesquisa em Vigilância Sanitária (2011)
CHRC ^b	28	Health Research Agenda for the Caribbean (2011)
Chile	30	Los Objetivos Sanitarios para la Década 2000–2010 / includes health priorities (2002)
	31	Estrategia Nacional de Salud para el Cumplimiento de los Objetivos Sanitarios de la Década 2011–2020 / includes health priorities only
	32	Definition of Priorities in Health Research for the Ministry of Health (2010)
Colombia	33	Plan Estratégico, 2009–2015 (2008)
	34	Líneas de Investigación en Salud—resultados de encuesta interinstitucional (2011) / unofficial document
Costa Rica	35	Agenda Nacional de Investigación y Desarrollo Tecnológico en Salud, 2005–2010 (2004)
Cuba	29	Priority Setting in Health Research in Cuba (2010)
Dominican Republic	Footnote 5	Política Nacional de Investigación para la Salud (2012) / Unpublished; health research priorities not developed yet
Ecuador	36	Política Nacional de Investigación en Salud (2007) / Health research priorities not developed yet
	37	Política Nacional de Ciencia, Tecnología e Innovación del Ecuador 2007–2010 (2007)
El Salvador	38	Política Nacional de Ciencia y Tecnología e Innovación Health research priorities were not developed yet. Seven main strategic areas are listed.
Guatemala	40	Prioridades Comunes de Investigación en Salud, 2006–2010 (2006)
	41	Plan Nacional de Ciencia, Tecnología e Innovación, 2005–2014 (2005)
Guyana	Footnote 6	Guyana National Health Research Agenda (2010) / Draft version; unpublished
Mexico	42	Programa de Acción Investigación en Salud (2001)
	43	Programa de Acción específico 2007–2012 (Comisión Coordinadora de Institutos Nacionales de Salud y Hospitales de Alta Especialidad)
Panama	44	Intersectoral and Interinstitutional Workshop on Health Research Policies and Priorities (2007) / unofficial document
Paraguay	45	Agenda Nacional de Prioridades de Investigación en Salud (2008–2013)
Peru	46	Agendas de Investigación en Salud (2010)
	47	Prioridades de Investigación en Salud del Perú: análisis del proceso (2007)
	48	Prioridades regionales y nacionales de investigación en salud, Perú 2010–2014: un proceso con enfoque participativo y descentralista (2010)
	49	Process of Construction of the National Research Agenda on Human Resources in Health in Peru, 2011–2014 (2011)
Uruguay	51	Plan Estratégico Nacional de Ciencia, Tecnología, Innovación (2010)
Venezuela	52	Plan Nacional de Ciencia, Tecnología e Innovación, 2005–2030 (2005)

^a Science, technology, and innovation documents when they referred to health research priorities.

^b Caribbean Health Research Council: Anguilla; Antigua and Barbuda; the Bahamas; Barbados; Belize; Bermuda; British Virgin Islands; Cayman Islands; Dominica; Grenada; Guyana; Jamaica; Montserrat; St. Christopher and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; and Turks and Caicos Islands.

Category A: Preparatory work

1. **Context.** Table 2 indicates that every country reported some contextual factors as a common theme of good practice for health research priority setting (17, 18). Overall, documents frequently described the focus of the exercise and the underlying values or principles; however, fewer documents presented information on the health, research, and political environment (24–29, 32, 39, 42, 43, 45–49). Although countries indicated

the presence of context as a process to set the stage for research priorities, the extent to which those contextual factors could have underpinned the process was more vague (17).

2. **Use of a comprehensive approach.** Fewer documents described comprehensive approaches to the process of priority setting. Comprehensive approaches provide detailed step-by-step guidance for the priority-setting process. The methods of the comprehensive approach vary by country. Argentina and Bolivia (24, 39)

used the 3D Combined Approach Matrix (CAM) approach (53), while Cuba (29) and Panama (44) used the Hanlon method. The other countries, including Chile (32), Panama (44), and Paraguay (45) used a meeting/consensus approach.

3. **Inclusiveness.** The inclusion of diverse key actors, such as policymakers, researchers, funders, and academicians was performed in most cases; public consultation was reported in the two documents from Brazil (25–27). No explicit description of the

TABLE 2. Characteristics of health research agendas according to the nine common themes of good practice for health research priority setting,^a by country/area and document, Latin America and the Caribbean, 2002–2012

Country/area and document (year)	Objective	Context	Comprehensive approach	Inclusiveness	Information gathering	Plan for implementation	Criteria	Priority-setting method	Evaluation	Transparency
Argentina										
Plan Estratégico Bicentenario (2006–2010)	To establish strategic priority areas for research, development and innovation	Yes	Unclear	Two ministries participated	— ^b	—	—	—	No update planned	Basic report available
Comisión Nacional Salud Investiga (2007–2008)	To set health research priorities for a limited number of areas / diseases	Yes	Yes	Actors from diverse sectors participated	Research team applied CAM ^c and produced a diagnosis of morbidity/mortality situation	—	Burden of disease; determinants; state of the art regarding the problem; cost-effectiveness of interventions; flow of research funds	CAM	No update planned	Report available
Bolivia										
Agenda Nacional de Prioridades de Investigación en Salud (2009)	To set major topics for health research priorities	Yes	Yes	Researchers, NGOs, policymakers, funding agencies	—	—	Burden of disease; determinants; latest information on the problem; cost-effectiveness of interventions; flow of funds for research	CAM	No update planned.	Report available
Brazil										
National Agenda of Priorities in Health Research (2008)	To set health research priorities	Yes	Yes	Researchers linked to teaching and research institutions; managers from three Unified Health System areas; public input; convened National Conference on Science, Technology and Innovation in Health	Unclear. Oral presentations, work groups, plenary sessions for debate. Work groups to debate each sub-agenda	—	Disease burden, measured in DALY ^d / other indicator; determinants; top knowledge available; cost-effectiveness of interventions and probable success; social impact; appropriateness; possibility of finding solutions; quality of proposed research; feasibility	Group consensus	No update planned	Report available
Agenda Nacional de Prioridades de Pesquisa em Vigilância Sanitária (2011)	To set research priorities for health surveillance	Yes	Unclear	Researchers, universities, policymakers; public input	—	—	—	Group consensus	No update planned	Report available
Caribbean Health Research Council ^e (2011)	To set health research priorities	Yes	Yes	Policymakers, program managers, researchers, health professionals	—	Yes	Appropriateness; relevancy; feasibility; impact of research outcome	Delphi methodology	Yes	Report available

(Continued)

TABLE 2. Continued

Country/area and document (year)	Objective	Context	Comprehensive approach	Inclusiveness	Information gathering	Plan for implementation	Criteria	Priority-setting method	Evaluation	Transparency
Chile										
Definition of priorities in health research for the Ministry of Health (2010)	To set health research priority areas	Yes	Unclear	Policy makers, health researchers, health professionals, various organizations	—	Unclear	—	Three meetings and voting—consensus	—	Article published
Colombia										
Strategic plan (2008)—priority areas (2011)	To set health research priority areas	Yes	Unclear	Policy makers from science, technology agency; researchers	—	—	—	—	—	—
Costa Rica										
Agenda Nacional de Investigación y Desarrollo Tecnológico en Salud 2005–2010 (2004)	To set health research priority areas	Yes	Unclear	Policy makers, health researchers; health professionals; various organizations	—	—	Related to Millennium Development Goals	Two meetings and a final forum—consensus	—	Basic report available
Cuba										
Priority Setting in Health Research (2010)	To set health research priorities	Yes	Yes	Health professionals to define health priority needs; science and technology team. Diverse panel of experts (medical, non-medical; Ministry of Health methodologists, administrators, clinicians, researchers)	Unclear; health priorities identified by two different groups of health professionals	Not explicitly reported	Magnitude of the health problem; severity; effectiveness of solution; feasibility of conducting research	Nominal group technique to define health priority needs; Hanlon method for health research priorities	—	Report available
Guatemala										
Plan Nacional de Ciencia, Tecnología e Innovación (2005)	Setting research priority areas	Yes	Unclear	Policy makers, health researchers, health professionals from several universities	—	—	Importance of the problem/disease burden; relevance in contributing to health development and decreasing inequity; pertinence to public health development	Meeting—consensus	—	Basic report available

(Continued)

TABLE 2. Continued

Country/area and document (year)	Objective	Context	Comprehensive approach	Inclusiveness	Information gathering	Plan for implementation	Criteria	Priority-setting method	Evaluation	Transparency
Guyana										
Guyana National Health Research Agenda (2010)	To set health research priority areas	Yes	Unclear	Policy makers, researchers, health professionals	Yes	—	Does research support program implementation?; Has evidence been used extensively to support program implementation or re-definition of actions?; Is funding feasible/adequate?	Delphi methodology—workshop	—	Report available
Mexico										
Strategic Plan (2007–2012)	To set health research priority areas	Yes	Unclear	Unclear	—	Yes	Relevance; originality; feasibility; political acceptability; information needs; ethics	—	Yes	Report available
Panama										
Workshop on Health Research Policies and Priorities (2007)	To set health research priorities	Yes	Yes	Policy makers, researchers, health professionals, various organizations	Yes	—	Magnitude; burden of disease; benefits; intervention feasibility	Hanlon method	—	Report available
Paraguay										
Agenda nacional de prioridades de investigación en salud (2008–2013)	To set health research priorities	Yes	Yes	Policy makers, researchers, health professionals, various organizations	Unclear	—	—	Meeting—consensus	—	Basic report available
Peru										
Agendas de investigación en salud (2010–2014)	To set health research priorities	Yes	Yes	Policy makers, researchers, health professionals, various organizations	Yes	Unclear	Possibility of conducting research on the topic; feasibility and cost; impact and cost effectiveness of interventions	Meeting—consensus	—	Report available

^a Viergever RF, et al. (17).

^b Not reported.

^c Combined Approach Matrix.

^d Disability-adjusted Life Years.

^e The following are members of the CHRC: Antigua and Barbuda; the Bahamas; Barbados; Belize; Bermuda; British Virgin Islands; Cayman Islands; Dominica; Grenada; Guyana; Jamaica; Montserrat; St. Christopher and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; and Turks and Caicos Islands.

TABLE 3. Health research agendas addressing specific research questions and/or health research human resources in Latin America and the Caribbean, by country/area and year 2002–2012

Country/area (year)	Specific research questions	Health research human resources
Argentina (2007–2008)	Yes	Yes
Bolivia (2009)	Yes	Yes
Brazil (2008)	Yes	— ^a
CHRC ^b (2011)	Yes	Yes
Chile (2010)	No	No
Colombia (2011)	No	Yes
Costa Rica (2004)	No	Yes
Cuba (2010)	No	Yes
Guatemala (2004)	—	—
Guyana (2010)	No	Yes
Mexico (Strategic Plan, 2007–2012)	No	Yes
Panama (2007)	Yes	Yes
Paraguay (2008–2013)	—	—
Peru (2007)	Yes (for specific topics)	Yes

^a Not reported.

^b Caribbean Health Research Council: Anguilla; Antigua and Barbuda; the Bahamas; Barbados; Belize; Bermuda; British Virgin Islands; Cayman Islands; Dominica; Grenada; Guyana; Jamaica; Montserrat; St. Christopher and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; and Turks and Caicos Islands.

balance of different expertise, gender, or regional participation was found in most reports. Peru developed a process of citizenship consultation that included an advocacy phase and workshops in 20 parts of the country, a second phase of analysis with 200 experts, and a national forum, with 500 representatives (48). A similar process was developed in Brazil (25–27). Brazil's agenda was constructed through a five-stage process and approved during the country's 2nd National Conference on Science, Technology and Innovation in Health. The Caribbean agenda was developed similarly, at the council level (28).

4. Information gathering. With regard to information gathering, four documents were considered to report on the collection of technical data needed to inform the discussion on research priorities: Argentina (24), Guyana (42), Panama (44), and Peru (46–49). However, no document compiled nor used the best available information (e.g., literature review, impact analysis, etc.) to identify research gaps. Initial surveys of stakeholders were performed in Brazil (25–27) and Peru (46–49), while a nominal group technique was used in Cuba (29) to identify health research priorities within specific areas of activity.

5. Planning for implementation. Planning for implementation was only mentioned in the CHRC agenda (28). The involvement of non-public funding organizations was not reported nor was the adaptation of global or Regional research priorities to the national or local level.

Category B: Deciding on priorities

6. Criteria. Although most countries described criteria used to set priorities, no report indicated how the criteria themselves were developed and agreed upon. Commonly used criteria included burden of disease, cost-effectiveness, and feasibility. While an ethical framework supporting the process of priority setting was not reported in any document, Brazil and Mexico included ethical aspects as one of the criteria used to set priorities (25–27, 43).

7. Methods for deciding on priorities. Countries adopted either a consensus-based approach, based on group consensus, or metrics-based approach, based on ranking several favorable options or a combination of both. Most documents reported to have used consensus-based approaches; only Guyana (42) and the CHRC (28) (Delphi method) and Cuba (29) and

Panama (44) (Hanlon method) used metrics-based approaches.

Category C: After priorities have been set

8. Evaluation. No document mentioned plans to update research priorities. Also, very few reports were found evaluating the process (e.g., impact analysis, review of research conducted, and/or funding allocated based on previous priority-setting exercises) in the broader context of health research coordination. Although no specific indicators were proposed in the documents to assess the progress of the research agenda, some strategic plans mentioned this issue.

9. Transparency. Reports of the prioritization process were available; however, the extent to which an explanation on how priorities were established varied widely across countries. Most countries had a basic report indicating a plan for transparency by explaining the list of priorities and how those priorities were established. Some countries provided more detailed reports; for example, Peru (46–49) published an evaluation of the process used to set the research priorities.

Common areas and country-specific priorities

In many cases, research priorities were associated with health priorities. For example, most research agendas/priorities focused on areas related to the MDG. Research on food security and nutrition (related to eradicating extreme poverty and hunger) was considered a priority in several countries. Most countries agreed that improving maternal and child health; combating HIV/AIDS, malaria, and other diseases; and ensuring environmental sustainability were health research priorities. In addition, promoting gender equality/empowering women was considered a priority in many countries. However, research that targets universal primary education or collects evidence to support a global partnership for development were not considered since they are related to sectors other than health (Table 4).

While some documents prioritized health problems (e.g., communicable diseases; mental health; violence, accidents, and trauma), others established catego-

TABLE 4. Health research priorities as aligned with the United Nations' Millennium Development Goals, Latin America and the Caribbean, 2002–2012

Country/area (year)	Eradicate extreme poverty and hunger	Achieve universal primary education	Promote gender equality and empower women	Reduce child mortality	Improve maternal health	Combat HIV/AIDS, malaria, other diseases	Ensure environmental sustainability	Develop a global partnership for development
Argentina (Plan estratégico bicentenario, 2006–2010)	Yes (i.e., food security, nutrition, employment)	Not explicit (only teen and youth education mentioned)	Not mentioned	Not mentioned	Not mentioned	Yes	Yes	Not mentioned
(Comisión Nacional Salud Investiga, 2007–2008)	Not mentioned	Not mentioned	Yes	Yes	Yes	Yes	Not mentioned	Not mentioned
Bolivia (2009)	Yes (i.e., food security and nutrition)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Not mentioned
Brazil (2008)	Yes	Not mentioned	Yes	Yes	Yes	Yes	Yes	Yes
CHRC ^a (2011)	Yes (i.e., food security and nutrition)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Yes (Caribbean in health context)
Colombia (2011)	Yes (i.e., food security and nutrition)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Not mentioned
Costa Rica (2004)	Yes (i.e., food security and nutrition)	Not mentioned	Yes	Not explicit	Not explicit	Yes	Yes	Not mentioned
Chile (2010)	No	Not mentioned	Not explicit	Not explicit	Not explicit	Not explicit	Yes	Not mentioned
Cuba (2010)	Not mentioned	Not mentioned	Not explicit	Yes	Yes	Yes	Yes	Not mentioned
Guatemala (2004)	Yes (i.e., food security and nutrition)	Not mentioned	Not explicit	Yes	Yes	Yes	Yes	Not mentioned
Guyana (2010)	Yes (i.e., food security and nutrition)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Not mentioned
Mexico (Strategic Plan, 2007–2012)	Yes (i.e., food security)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Not mentioned
Panama (2007)	Yes (i.e., food security)	Not mentioned	Yes	Not explicit	Not explicit	Yes	Yes	Not mentioned
Paraguay (2008–2013)	Yes (i.e., food security)	Not mentioned	Yes	Yes	Yes	Yes	Yes	Not mentioned
Peru (2007)	Yes (i.e., food security and nutrition)	Not mentioned	Not explicit	Yes	Yes	Yes	Yes	Not mentioned

^a Caribbean Health Research Council: Anguilla; Antigua and Barbuda; the Bahamas; Barbados; Belize; Bermuda; British Virgin Islands; Cayman Islands; Dominica; Grenada; Guyana; Jamaica; Montserrat; St. Christopher and Nevis; St. Lucia; St. Vincent and the Grenadines; Suriname; Trinidad and Tobago; and Turks and Caicos Islands.

ries according to strategies or programs (e.g., policy organization and evaluation, programs and services, health production complex, health technologies assessment), health systems (e.g., human resources, financing, governance, service provision), populations (e.g., indigenous peoples' health), global problems (e.g., environmental changes), fields (e.g., ethics), type of study design (e.g., health technologies assessment), or used mixed categories. Sub-areas of sub-priorities also incorporated health problems, specific

populations, types of studies (i.e., epidemiological, observational, interventional, economic, health technologies, etc.), strategies, programs, and so on. For example, in Peru, seven national priorities for health research were established according to five health priorities: research on health human resources, research on mental health issues, impact evaluations of child malnutrition programs, impact evaluations of maternal mortality interventions, operative research, and impact evaluations of current and new communicable

disease interventions. Brazil established 24 sub-priorities, some of which included oral health, health technologies assessment and economic evaluation, health promotion, communicable diseases, and the health of African-Brazilians.

DISCUSSION

Main findings

National health research systems in LAC countries have made important

progress in setting health research priorities during the last decade (12). Findings from this study indicate that improvements could be made to the quality of future priority-setting methods. There is no gold standard or single approach to setting health research priorities; however, by applying a standardized checklist (17) to the LAC agendas/documents, a number of strengths and weaknesses were noted. As stated by the authors of the instrument, the checklist enables health research priorities to be identified in a transparent and comprehensive manner (17). The main areas that need improvement are: the descriptions of *use of a comprehensive approach*, the *information gathering*, and the *practices after priorities have been set*. Plans to evaluate the benefit of setting research priorities and the impact these, sometimes costly, exercises have had on funding-patterns or improving the alignment between research priorities and public health needs should also be developed (54). In addition, the difficulty of drawing comparisons across borders—due to differences in classification and reporting—highlights the need to develop a standardized language.

Although some documents established specific research issues/questions, others established broad areas or sub-areas of priority without determining what is actually needed. For example, some documents determined “osteoporosis” or “diabetes” as research priorities without further specifying the type of research needed. Given that research entails an investment of society’s limited resources, research-driven knowledge-generation needs to be refined in a way that policy-makers, funders, researchers, and other key stakeholders have a clear idea of what type of research is needed (2, 3).

The checklist identifies the stage at which gaps were present by looking at the life-cycle for each research agenda, from planning to implementation. In addition, the findings of this study highlight the importance countries are giving to the fulfillment of the MDG. This illuminated the fact that countries share many common health research needs. These findings affirm the call for establishing Regional/sub-Regional health research agendas, harmonizing research setting approaches to enable

greater comparability while improving the coordination at the Regional and global level, and strengthening collaboration between group of researchers sharing the same interests. Additionally, the findings acknowledge the importance of developing international and/or Regional mechanisms to fund research, as suggested by the Consultative Expert Working Group on Research and Development (55). Other health priority exercises (56) have also highlighted the importance of knowledge exchange among countries.

Concerning the implementation of research agendas, few explicit reports assessing the fulfillment of health research agendas were identified. An important Brazilian study (54) reported that the research agenda launched in 2004 was used to guide the country’s budget allocations. It estimated that the budget allocated by the Ministry of Health of Brazil and a number of partners was US\$ 419 million in support of approximately 3 600 research projects (54). Diverse strategies were developed to implement the research agenda, some of which included: collaborative agreements between the Ministry of Health and the Ministry of Science and Technology, decentralization at the state level, and the strengthening of key agencies and institutions as well as research networks (54, 57, 58). The National Institute of Health of Peru, published a report of all research projects that were approved and funded during 2004–2008; the executed budget was more than US\$ 5 million and the distribution of the budget according to each study subject was 61% for communicable diseases, 12% for non-communicable diseases, and 27% for technological development (59). Other reports from diverse institutions are also publicly available (60, 61).

Financial flows to research were identified as a key area for development at the 2nd Latin American Conference on Research and Innovation for Health (13). There has been a steady increase in funding for health research in recent years, but this is not necessarily keeping up with target increases (62). A goal of health research spending equivalent to 2% of a Ministry of Health budget, as proposed by a WHA resolution (63), was

not met by any LAC country on the 2009 Global Health Forum report card (13).

Study limitations

The study had a number of limitations, particularly regarding its reliance on the HRWeb and some Ministry of Health websites that were not updated. This resulted in variable information from countries, with inconsistencies in data and document quality. To deal with “publication bias,” additional searches were conducted and a number of experts were contacted. Although results were based on the information available, it is probable that not all documents used to set priorities were identified and/or accessible to PAHO.

The descriptions of methods used for prioritizing were often limited (e.g., was the Delphi exercise adequately performed?). Also, the study focused solely on how the agendas were set; no information was considered regarding whether or not they were fulfilled, linked to financing mechanisms, or endorsed by the stakeholders.

Conclusions

National health research systems need to develop strategies to strengthen the prioritization process and to coordinate national, Regional, and global efforts. The findings of this study are expected to encourage countries to utilize a standard approach to developing research priorities specific to their context (64). Considering the call for greater global and Regional research coordination (55, 65–67), any improvement to the reporting of health research priority-setting will facilitate communication among the Region’s countries and, in turn, enable greater cooperation where there are shared priorities.

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RESUMEN**Comparación de los métodos de establecimiento de prioridades de investigación nacional de salud y sus características en América Latina y el Caribe, 2002 al 2012**

Objetivo. Comparar los métodos de establecimiento de prioridades de investigación de salud y sus características en los países de América Latina y el Caribe durante el período del 2002 al 2012.

Métodos. Se llevó a cabo una revisión sistemática que determinó las políticas nacionales de investigación de salud y los programas prioritarios mediante una búsqueda de bases de datos ministeriales y gubernamentales relacionadas con instituciones de atención de salud. Se llevó a cabo una búsqueda ajustada al período de enero del 2002 a febrero del 2012 en PubMed, LILACS, Health Research Web y otras fuentes. El estudio excluyó las investigaciones organizadas por instituciones gubernamentales y estrategias nacionales específicas sobre áreas de enfermedades particulares. Se compararon los métodos de establecimiento de prioridades con los “nueve temas comunes para unas prácticas adecuadas en materia de prioridades de investigación de salud”. Se compararon las prioridades nacionales de investigación de salud con las de los Objetivos de Desarrollo del Milenio (ODM) de la Organización Mundial de la Salud.

Resultados. De los 18 países latinoamericanos evaluados, 13 disponían de documentos que establecían las prioridades nacionales de investigación de salud; además, el Consejo del Caribe de Investigación de Salud disponía de un programa de investigaciones dirigido a sus 19 integrantes. Estos 14 informes variaban ampliamente en cuanto a objetivos, contenido, difusión y ejecución; la mayor parte de ellos proporcionaban una lista de áreas estratégicas, sugerencias o subprioridades para cada país, sin embargo, eran pocos los que proponían temas y cuestiones específicos de investigación.

Conclusiones. Se podrían mejorar los informes futuros mediante una descripción más detallada del método integral empleado para determinar las prioridades, del proceso de recopilación de información y de las prácticas que deben emprenderse una vez fijadas las prioridades. Es necesario mejorar la calidad de los métodos utilizados y coordinar las iniciativas regionales a medida que los países tratan de cumplir los ODM.

Palabras clave

Investigación; investigación biomédica; agenda de investigación en salud; política de investigación en salud; América Latina; región del Caribe.