

Conformation of the network for knowledge management, research, and innovation in maternal health in Colombia

Juan Felipe Bedoya-Meneses ^a, Johana Camila Chaparro-Bonza ^b

- a. Pharmaceutical Chemist, Project Formulation Specialist, Epidemiology Specialist, Project Bank Group, Public Health Research Direction, National Health Institute, Bogotá, Colombia. ORCID: 0000-0002-0410-6676
- b. Chemist. Project Management Specialist, Specialized Rooms Support Group, Review Commission of Medicines and Biological Products Direction, National Institute for the Surveillance of Medicines and Food – INVIMA (Instituto Nacional de Vigilancia de Medicamentos y Alimentos), Bogotá, Colombia. ORCID: 0000-0001-6509-3576

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Abstract

Objective: To establish the methodology and the main actors in the creation of a network for knowledge management, research, and innovation in maternal health in Colombia.

Methods: A triangular approach, whose main component is qualitative with a quantitative complement, with a descriptive scope, articulated in three main processes: information gathering, information systems and knowledge generation; divided into two stages: planning - conformation and maturity - sustainability.

Results: The information collected made it possible to identify the actors who work in areas related to maternal health in the territories and the types of activities they carry out: social, academic, research, provision of health services. Five geographical regions of influence where the actors intervene were delimited, 66.7% (97) are in the Andean region, 21.1% (31) are located in the Caribbean region; 6.1% (9) are in the Amazon region and 2.7% (4) are located both in the Orinoquia region and 3.4% (5) in the Pacific region.

Conclusions: The formation of this network will provide a strategic platform for the generation and management of knowledge in maternal health that will allow the collaborative promotion of research and innovation projects, supporting decision making for the intervention, development, and

implementation of national public health policies in the framework of the Sustainable Development Goals in Colombia.

Keywords: Maternal health, scientific network, knowledge management, public health.

Resumen

Objetivo: Establecer la metodología y los principales actores en la conformación de una red de gestión de conocimiento, investigación e innovación en salud materna en Colombia.

Metodología: Enfoque triangular, cuyo componente principal es cualitativo con complemento cuantitativo, de alcance descriptivo, articulado en tres procesos centrales: levantamiento de información, sistemas de información y generación del conocimiento; dividido en dos etapas: planificación - conformación y madurez - sostenibilidad.

Resultados: La información recolectada permitió identificar los actores que trabajan en áreas relacionadas a la salud materna en los territorios y los tipos de actividades que estos realizan: social, académica, investigativa, prestación de servicios de salud. Se delimitaron cinco regiones geográficas de influencia donde intervienen los actores, el 66,7% (97) se encuentran ubicados en la región andina, el 21,1% (31) se encuentran ubicados en la región caribe; el 6,1% (9) se encuentran ubicado en la región amazonia y el 2,7 % (4) se encuentra ubicados tanto en la región de la Orinoquia y 3,4% (5) de la región pacífica.

Conclusiones: La conformación de esta red proporcionará una plataforma estratégica para la generación y gestión del conocimiento en salud materna que permitirá impulsar proyectos de investigación e innovación de manera colaborativa, apoyando la toma de decisiones para la intervención, desarrollo e implementación de políticas nacionales de salud pública en el marco del cumplimiento de los Objetivos de Desarrollo Sostenible en Colombia

Palabras Clave: salud materna, red científica, gestión del conocimiento, salud pública.

Introduction

The rights-based approach set forth in the Ten-Year Public Health Plan (TPHP) for a comprehensive approach to pregnant women (1), as well as the recommendations on prenatal care for a positive experience of pregnancy of the World Health Organization (WHO) (2), imply the recognition of maternal health not only as the absence of diseases during gestation and

conception, but also that the pregnant woman can enjoy the highest level of physical and emotional well-being, so that motherhood can be carried with dignity (1). Maternal mortality continues to be one of the main public health problems worldwide (3,4,5,6), which directly or indirectly impacts the different sectors of society in their efforts to reduce the inequality gap for women, due to the difficulty that this problem represents in terms of economic, social and political development (7). According to the World Health Organization (WHO), 830 women die every day in the world from complications related to pregnancy, childbirth and postpartum due to different risk determinants (8) such as barriers to access to health services, level of insurance, costs, educational level, socioeconomic status, geographic access, social and family support, among other factors (9,10). Most of these deaths could have been avoided with simple and low-cost interventions for the health systems of the different countries (8); in addition, the COVID-19 pandemic caused considerable effects on the health of pregnant women both physically and emotionally, not only because of the limited access to sexual and reproductive health services, but also because pregnant women stopped attending these health services for fear of contracting this disease, or because of the restrictions of confinement (11,12,13,14).

The death of a pregnant woman is a tragedy that can be avoided and occurs in most cases in developing countries (15). The risk of women dying from pregnancy-related causes in a developing country is 1 in 48 compared to 1 in 1800 in developed countries (8,16). Colombia is no exception to this global public health problem, and according to figures published by the National Institute of Health (NIH), 661 maternal deaths related to complications during pregnancy, childbirth and postpartum were reported to SIVIGILA in 2021; 98% of these maternal deaths could have been prevented (17), 485 of these deaths corresponded to early maternal mortality (occurring during pregnancy, childbirth and up to 42 days after the end of gestation), 134 correspond to late mortality (occurring from day 43 to one year after the end of gestation) and 42 due to coincidental causes (external cause injuries), with an increase of 20.3% in early maternal mortality compared to 2020 (17); This has occurred in recent years with a much higher frequency in pregnant women who are in a precarious economic situation (18).

According to the Pan American Health Organization (PAHO), maternal mortality cannot be considered an isolated event and should reflect the relevance or shortcomings of the health system, as well as the political, social

and health inequalities and inequities that women go through during the entire gestation process (19). In addition to these deaths, there is the health impact of the short- and long-term sequelae, often permanent, caused by poorly performed procedures or preventable diseases during pregnancy; thus, for every maternal death, the WHO estimates that between 30 and 100 women are left, to a greater or lesser degree, disabled (8).

Collaborative work processes through health knowledge networks are fundamental in the generation and management of new knowledge, bringing with them specific solutions to public health problems that will have an impact on the social and economic well-being of the population. For this reason, it is necessary to seek mechanisms for the multiplication of this type of knowledge management, research and innovation networks (20).

The identification of the actors and subsequent formation of the network of knowledge management, research and innovation in maternal health provides a strategic platform of collaborative work for the generation of fundamental and decisive knowledge to promote scientific research and innovation, as well as the generation of proposals that lead to the implementation of public health policies based on scientific evidence and focused on improving maternal health in Colombia.

Methods

The network of knowledge management, research and innovation in maternal health was created under the methodology for the Construction of Knowledge Management Networks in Public Health proposed by the National Health Observatory (NHO) of the NIH (21). The work planning is based on applied research, with a triangular approach methodology, whose main component is qualitative with a quantitative complement, of descriptive and explanatory scope, mixed information was used by means of a documentary component through a search of secondary sources of information.

The formation of the network is articulated in three central processes: 1. Information gathering process: in which data and information were collected from the different actors that will participate in the network according to their competencies, strengths and experience in the field of scientific and technical research related to maternal health; 2. Information systems and knowledge management process: the network is made up of different public and private institutions, academia, research groups and researchers, decision makers, state entities, foundations and individuals that guarantee the improvement and continuity of the generation of knowledge focused on

solving the problems associated with maternal health, ensuring the durability of the network; 3. Knowledge and innovation process: the knowledge generated in the network will be managed by developing processes that lead to innovative ideas or products that help solve key public health problems in the field of maternal health.

According to the methodology proposed by NHO (21) and taking into account the stages proposed by Paula Robeson (22), two stages were defined for the conformation of this network within the three central processes: planning and conformation, and a following medium- and long-term stage of maturity and sustainability.

Specifically, for the planning and network formation stage, a search, identification, characterization and prioritization of the different actors involved in maternal health in Colombia who could belong to the network was carried out; the geographic areas in which the actors involved intervene were delimited and validated; then a preliminary list of key actors was drawn up using a format in which the information was consolidated to identify and differentiate each actor according to interest, influence and position. Subsequently, the key actors were characterized according to their interests, level of influence and position in relation to the conformation of the network; by means of the variables actor, role and capacity of the actor to limit or facilitate the actions of the network (1. high, 2. medium, 3. low).

If the interest of the actor in participating in the network is not known, the rating is one; if the actor shows little or no interest in participating in the network, the rating is two; if the actor has shown some interest in participating in the process of creating the network, the rating is three; if the actor is interested in participating in the network, the rating is four; if the actor is very interested in participating in the network, the rating is five; and if it is of utmost importance for the actor to participate in the network, the rating is six.

The position was measured by the position or attitude of each actor in participating in the creation of the network, for this purpose, the disposition of the actors with a positive position in supporting the creation of the network or, on the contrary, with a negative position in the creation of this network was evaluated; if the actor is passively opposed to the process of creating the network, it was valued at one; if the actor is neither in favor nor against or is indifferent to the creation of the network, it is valued at two; if the actor does not know what position to take even with regard to the

creation of the network, it is valued at three; if the actor is in favor of the creation of the network, it is valued at four; if the actor passively supports the activities of the network, it is valued at five; and if the actor actively supports the activities of the network, it is valued at six.

Influence was measured according to the mobilization capacity with which each actor will participate in the network, whether it is an actor with a positive position ready to support the network or, on the contrary, with a negative position, being a detractor of the activities to be carried out; if the level of influence that the actor has on the creation of the network is not known, it was valued at one; if he has little or no influence, it was rated two; if he has some influence, it was rated three; if his activities have a moderate influence on the process, it was rated four; if he has a lot of influence, it was rated five; and if he is the most influential of all the actors, it was rated six.

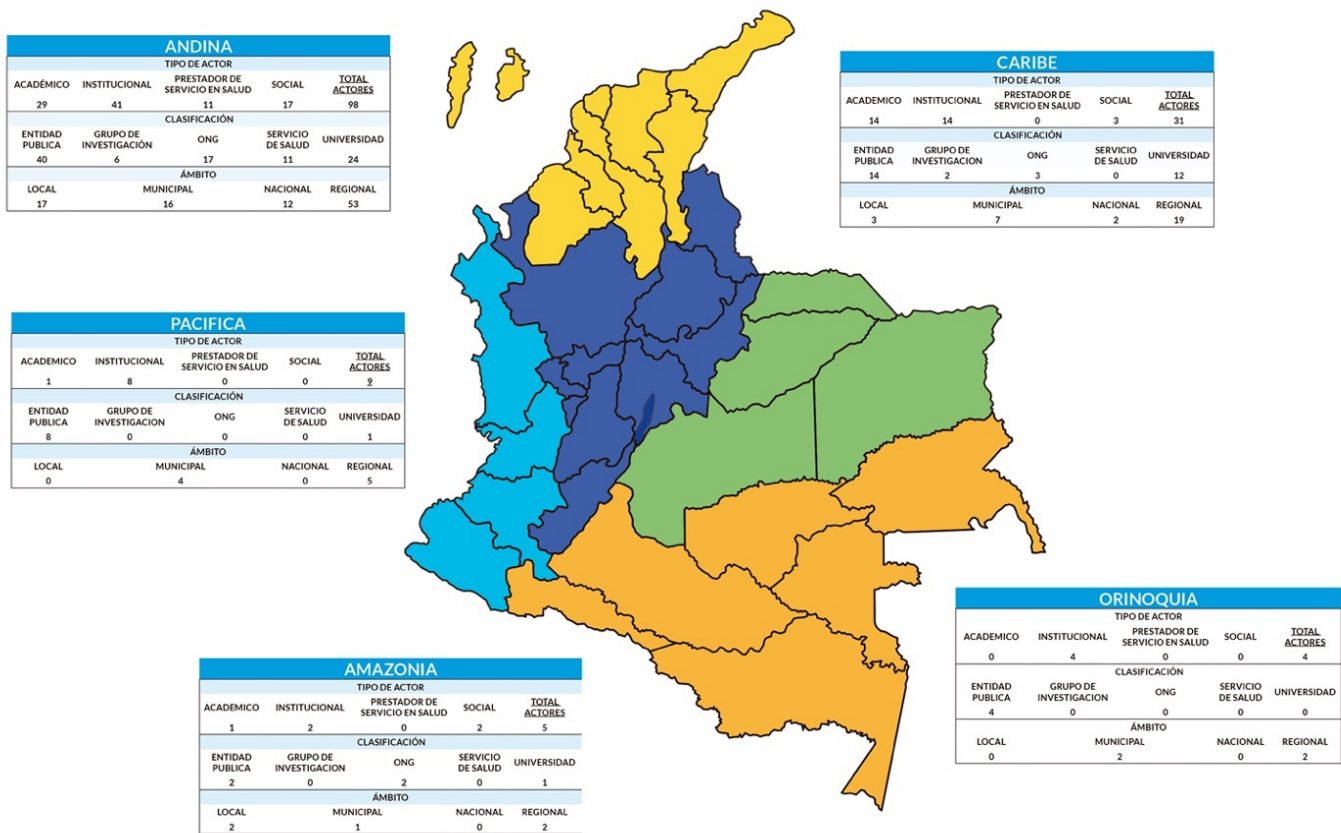
With the actors fully identified and prioritized, a directory was made where they were characterized according to their geographic location, the nature of the actor, the area of knowledge of maternal health, the institution to which they belong and the social segment (civil society, governmental entity, association, etc..)

An official invitation to the different actors to participate in the network was made, in which the methodology for the creation of the network, the indicators of collaborative work for the operation of the network and the work schedule to define the priority lines of research that the network will have, were explained.

Results

Planning and network formation stage

In the planning and formation stage of the network of knowledge management, research and innovation in maternal health, the search, identification, characterization, and prioritization of the actors that would make up this network in Colombia was carried out; for this purpose, the areas of influence where the actors intervene were delimited in five geographic regions: Caribbean region, Pacific region, Andean region, Orinoco region and Amazon region (Figure1).



Different sources of information were used to obtain data on the actors that carry out their activities in the respective territory, making it possible to create a preliminary list of actors.

The information collected made it possible to identify the actors working in areas related to maternal health in the territories and the types of activities they perform: social, academic, research, provision of health services, among others. The information provided by each of the sources consulted defined the directory of actors in the maternal health network in Colombia (Table 1).

«With the actors fully identified and prioritized, a directory was made where they were characterized according to their geographic location, the nature of the actor ...»

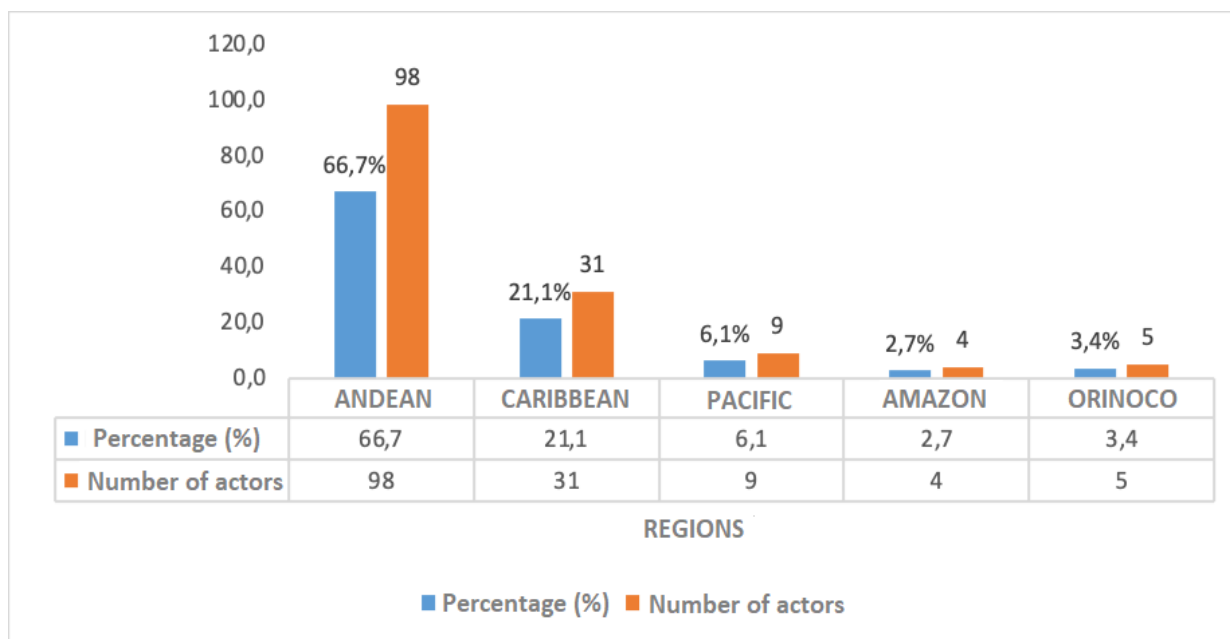


Table 1. Actors and activities associated with maternal health identified in the Colombian regions

	ACTOR TYPE				
REGION	ACADEMIC	INSTITUTIONAL	HEALTH SERVICE PROVIDER		SOCIAL
ANDINA	29	41	11	17	98
CARIBE	14	14	0	3	31
AMAZONÍA	1	2	0	2	5
PACÍFICA	1	8	0	0	9
ORINOQUÍA	0	4	0	0	4
TOTAL ACTORS					147
	CLASSIFICATION				
REGION	PUBLIC ENTITY	RESEARCH GROUP	NGO	HEALTH SERVICE	UNIVERSITY
ANDINA	40	6	17	11	24
CARIBE	14	2	3	0	12
AMAZONÍA	2	0	2	0	1
PACÍFICA	8	0	0	0	1
ORINOQUÍA	4	0	0	0	0
	FIELD				
REGION	LOCAL	MUNICIPAL		NATIONAL	REGIONAL
ANDINA	17	16		12	53
CARIBE	3	7		2	19
AMAZONÍA	2	1		0	2
PACÍFICA	0	4		0	5
ORINOQUÍA	0	2		0	2

The actors identified were characterized as institutional actors represented in public entities such as governments (departmental health secretary), mayors' offices (district or municipal health secretary) and national entities; academic actors represented in higher education institutions, research groups and researchers; actors from accredited health institutions such as hospitals, clinics, health centers. For each of these actors, the scope was defined as the space or territory of action or influence of the actor (national, departmental/regional, municipal, and local). Of the total number of actors identified (Graph 1), 66.7% (97) are located in the Andean region, 21.1% (31) are located in the Caribbean region, 6.1% (9) are located in the Amazon region, 2.7% (4) are located in the Orinoco region and 3.4% (5) in the Pacific region.

Graph 1. Actors by region

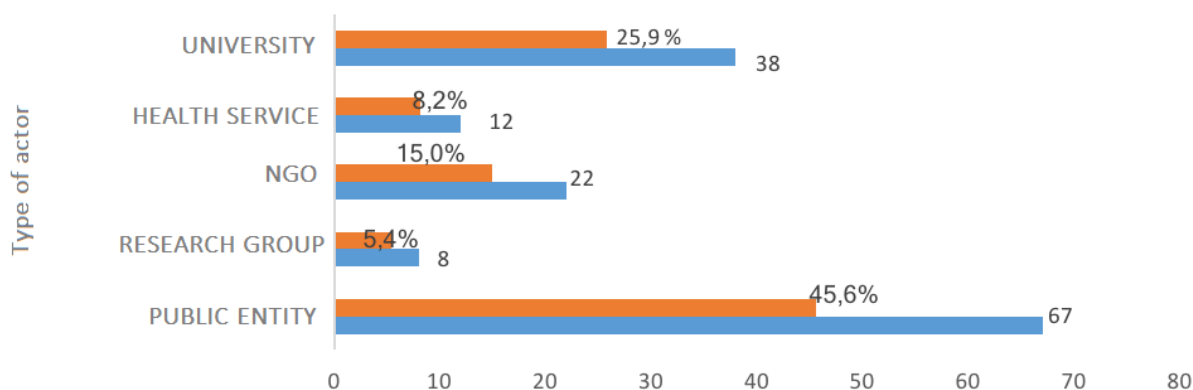


In the general mapping described (Graph 2); 67 public entities were identified 45.6%, of which 8.9% (6) are national, 44.8% (30) are regional and 44.8% (30) are municipal; 22 NGOs and 11 health service providers were identified, representing 15% and 7.5% of the total number of actors respectively. As for academic actors, 38 universities with programs in health sciences that can support the activities of the network were identified, representing 25.8% of the actors and eight research groups recognized or classified by Minciencias, representing 5.4% of the total number of actors that meet the research needs in maternal health and whose efforts are focused on the development of research projects and activities in the fields of interest of the health of pregnant women.

«For each of these actors, the scope was defined as the space or territory of action or influence of the actor (national, departmental/regional, municipal, and local).»



Graph 2. Type of actors



	PUBLIC ENTITY	RESEARCH GROUP	NGO	HEALTH SERVICE	UNIVERSITY
■ Percentage %	45,6	5,4	15,0	8,2	25,9
■ Number of actors	67	8	22	12	38

Actors (%) and number of actors

The eight research groups characterized are made up of 214 researchers, of which 148 are women and 66 are men.

Departmental and municipal health entities, as well as research groups, were the most willing to form the maternal health network. 86% of the actors accepted to belong to the network, which shows a great acceptance and indicates that collaborative work among the different actors is one of the solutions to strengthen research, reduce costs and increase its scope and impact; likewise, 90% of the actors consider that the most assertive communication channel for communication among the different members are virtual meetings; this is in accordance with the new reality in which virtual synchronic meetings can bring together more people and therefore reach dispersed populations of the territory.

Discussion

Knowledge management, research and innovation networks have become in recent years a fundamental tool for collaborative and participatory work between different actors for the exchange of knowledge, experiences and ideas through communities that converge, manage and share this knowledge in a structured and organized manner (23,24).

The identification and characterization of the actors involved in the issue of maternal health in the country allows the articulation, construction and consolidation of collaborative work, through the construction and execution of joint research proposals, which avoid duplication of research or

that these do not have the expected impact for the community. Knowledge management, research and innovation have become the main promoters of the economic improvement of societies (25).

The processes of generation and management of knowledge, research and innovation through collaborative networks will be of great importance and impact on public health in Colombia, being recognized as transformational factors of the economy, culture and society in general, so that the way in which these resources are managed in the community allows determining the prospective path that enables societies to draw future plans based on the pillars of knowledge, research and innovation for the solution of public health problems.

For the consolidation of this network, it is necessary to define a medium and long term action plan that strengthens the collaborative and participatory work between the different actors through strategic alliances that strengthen the mechanisms of scientific cooperation, social appropriation of knowledge, development of new research, generation of priority lines of research, capacities of the territorial entities, search for national and international funding, promotion of innovation, construction of evaluation and monitoring mechanisms, All this will allow strengthening the process of scientific knowledge generation through the construction of proposals and programs that will allow closing the knowledge gap in the field of maternal health in Colombia, leading to a decrease in the risks and preventable diseases related to pregnancy, childbirth and postpartum, which will promote the right to a desired, healthy and safe motherhood, which responds to the Sustainable Development Goals (SDG) No. 3 'Health and Well-being' and No. 5 'Gender Equality' in Colombia (26).

Conclusions

Knowledge management, research and innovation networks are the result of collaborative work among actors, whose flexible and participative work configuration allows the management and application of knowledge in the solution of specific problems (27).

«The processes of generation and management of knowledge, research and innovation through collaborative networks will be of great importance and impact on public health ...



The objective of this project was to promote the constitution of a network of knowledge management, research and innovation in maternal health that contributes to the strengthening of scientific research, the generation of ideas, decision making and the orientation of interventions within the framework of the Sustainable Development Goals for the solution of the problems related to the high maternal mortality rate in Colombia and the problems derived from pregnancy, childbirth and postpartum.

The formation of this network was based on the need of the actors to contribute and manage knowledge through collaborative work that generates research and innovations that lead to changes that have a positive impact on maternal health in the country; therefore, a bank of actors interested in participating in the network was formed. The data found in the inventory of information on the actors indicate a limited number of actors working on the topic of maternal health in Colombia in the area of scientific research and innovation; in terms of research groups recognized by Minciencias, of the 5939 research groups recognized and categorized, only 8 groups work exclusively on research related to maternal health, which shows that Colombia should encourage the formation of research groups and train researchers who work in this area to increase the country's research and innovation capacity in the field of maternal health in Colombia.

As one of the first objectives after the creation of the network, the actors agree on the need to define the priority lines of research in the area of knowledge of maternal health, since this includes a large number of subtopics that should be prioritized according to the research capacities of the actors and the needs of the pregnant population.

The work carried out with the different actors, in the specific case with the territorial health entities, shows that they are not consulted on the research projects that are carried out and that they are not taken into account to know if such research is relevant and a priority for the department or the region; the civil society represented by leaders and NGOs state that they are not taken into account when prioritizing research topics, having in the collective imaginary that these researches contribute little to the community. All the actors expressed the need for the research to result in applied knowledge that can be appropriated by the community and at the same time be applied to the solution of a specific problem.

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E-mail correspondence: jbedoya@ins.gov.co

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