

# Zika outbreak, resilient health systems, and women's sexual and reproductive health: a qualitative study in Colombia

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## Research

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# Abstract

**Background** There is substantial evidence of the profound consequences of Zika on women's Sexual and Reproductive Health. Health system resilience begins by measuring critical capacities ahead of a crisis such as Zika outbreak. Even though Zika as vector-borne disease is well documented, there is dearth of studies linking Zika with women's Sexual and Reproductive Health. The main objective of this study was to analyze the national response to the Zika epidemic and its relation to women's sexual and reproductive health matters through key implementation mechanisms in order to promote resilience of the health system in five cities in Colombia.

**Methods** This study used a qualitative design to enable an in-depth exploration of the national response to the Zika epidemic and sexual and reproductive health matters through key implementation mechanisms (based on facilitators and gaps) within the health system. The overall data set was comprised of 31 semi-structured individual interviews (23 women and 8 men), 25 interviews with key informants responsible for the implementation of the Zika Virus Response Plan; six interviews with pregnant women diagnosed with Zika; and five focus groups discussions with communities (n=122 participants) in five cities in Colombia: Barranquilla, Cucuta, Los Patios, San Andres and Soledad.

**Results** The findings revealed the three major facilitators that promoted the implementation of actions to address the Zika epidemic: i) the role of health care providers; ii) the development of technical equipment capabilities; and iii) inter-institutional coordination. The study also identified implementation gaps: i) absence of a human rights and sexual and reproductive health approach; ii) focus on territorial actions centered on mosquito management; and iii) limited attitudes, behaviors and knowledge at the community level.

**Conclusion** This study provided a comprehensive insight of critical facilitating processes and gaps in the implementation of the government response during the Zika epidemic in Colombia. This study reveals that the lack of understanding of the intersection between gender, the Zika epidemic and Sexual and Reproductive Health limited the adoption, development and implementation of a more comprehensive responses to address the impact on women's sexual and reproductive health.

## Background

Resilience and intersectionality are principles to accelerate the achievements of universal health coverage (UHC) [1]. Health system resilience refers to "the capacity of health actors, institutions, and populations to prepare for and effectively respond to crises, maintain core functions when a crisis appears and, based on lessons learned, reorganize the health system as needed" [2]. Resilience is not only about quality of health services, coverage, equity or financial protection. On the contrary, it must be one of the principles that informs for reform and acts as an accelerator to achieve UHC goals.

While, the intersectionality in health systems is understood around the concepts of social determinants of health, the intersection of topics such as climate factors, [gender](#) and sexual and reproductive health may help combat [health](#) disparities faced by girls and women. The risks of infection diseases are also influenced by gender, often based on social differentiation of occupational and domestic tasks [3, 4]. Vulnerability during infectious disease epidemics is determined not only by its biology factors but also by differences in gender roles and responsibilities, which often expose women and girls to additional risks and burdens [4]. Additionally, gender is related to other axes of inequality that creates social disadvantages, such as ethnic origin, socioeconomic status, type of employment or occupation, age, disability, migration and sexuality [5].

In Brazil, Colombia and Dominican Republic, an increase in the number of newborns with microcephaly in poor communities showed the influence of prenatal infection caused by the Zika virus. The Zika virus circulated in at least in 69 countries and has affected the pregnancies of women in 29 countries [6]. In Colombia, diseases transmitted by vectors, such as malaria, dengue, chikungunya or Zika, affect more women than men [7]. Since the beginning of the Zika epidemic in September 2015 approximately 66% of the confirmed and suspected cases of Zika were in women; 6,363 cases were confirmed in pregnant women and 13,383 suspected cases were reported in pregnant women who reported symptoms compatible with Zika virus disease at some point [8]. Most of the cases were reported in the most socially vulnerable settings and environmentally challenging contexts. This made it necessary to understand the burden of Zika infection with a multidimensional approach given the interrelationships between environmental causes, gender roles, women's Sexual and Reproductive Health (SRH) and the capacity or limitations of the local health systems.

The global health agenda for 2030 emphasizes the importance of gender roles, SRH, the mitigation of climate emergencies, and the ways in which they interact with each other which are often the root cause of the disease burden of populations [9, 10]. Health system resilience begins by measuring critical capacities ahead of a crisis [2]. The government of Colombia has been an advocate of health system strengthening to promote resilience and adaptation with robustness during the Zika outbreak. It has implemented the Zika contingency plan (*Plan de contingencia para Zika*) aiming at strengthening its health system during the response to the Zika epidemic [7, 8, 11, 12].

There is substantial evidence of the profound consequences of Zika on women's SRH health because of its intersection with gender, particularly in the way it affects pregnancy outcomes and the cases of Zika through sexual transmission [13,14], the risks for pregnant women and women of reproductive age [15], mother-to-child transmission of the Zika virus as well as birth defects (neurological damage and disability in children of women infected with the Zika virus) [16]. There is a clear rationale for gender influences on SRH, women's social welfare, and the role of the health system; however, research linking these intersections is limited. At the time of this study, there was no evidence as to how the government responded to the Zika outbreak considering SRH. The purpose of this study was to analyze the Colombian national response to the Zika epidemic in five cities with special emphasis in SRH considering key implementation mechanisms in order to promote resilience of the health system.

## Methods

### Study settings

The study was conducted in five cities in Colombia: Barranquilla, Cucuta, Los Patios, San Andres and Soledad. The capital city Bogotá was included in order to collect information from national government representatives.

### Study design and data collection

We used a qualitative approach based on constructivist grounded theory [17] to analyze the national response to the Zika epidemic in Colombia. Analyze included SRH issues through key implementation mechanisms that were undertaken in order to promote resilience of the health system. We selected five cities with the highest number of cases of Zika in Colombia. An interpretive approach was applied for the collection and analysis of qualitative data from in-depth interviews and focus group discussion (FGD) with participants from the cities of Barranquilla, Cucuta, Los Patios, San Andres and Soledad.

Participants were selected using a non-probabilistic sample strategy which focused on the selection of key informants through regional health authority offices. The participants were consecutively selected in order of appearance according to their convenient accessibility (also known as consecutive sampling) [18]. The qualitative study sample was subject to saturation criteria. The overall data set was comprised of 31 interviews (23 women and eight men), 23 interviews with government representatives and regional health authority leaders responsible for implementing interventions, two with health care providers, and six with pregnant women with a confirmed Zika diagnosis. Additionally, five Focus Group Discussion (FGD) with communities (n= total of 122 participants). Written informed consent was obtained prior to initiating interviews. Table 1 provides the number of research participants by type of group and city.

Table 1. Zika outbreak, resilient health systems, and women’s sexual and reproductive health: qualitative approach by group and city, 2019

Place	Responsible for implementing actions	Health Care Providers	Pregnant women	Community
Country-level				
Bogotá	4 interviews (2 M, 2 W)	----	----	----
Sub-national level				
Barranquilla	5 interviews (2 M, 3 W)	----	1 interview	1 focus group
Cúcuta	5 interviews (1 M, 4 W)	----	1 interview	1 focus group
San Andrés	3 interviews (3 W)	----	2 interviews	1 focus group
Local level				
Soledad	2 interviews (1 M, 1 W)	2 interviews (1M, 1 W)	1 interview	1 focus group
Los Patios	4 interviews (1 M, 3 W)	----	1 interview	1 focus group

M= men; W= women

Geographically, the cities are located as follows: Bogotá is located in the central region; Cúcuta and Los Patios in the eastern region (border with Venezuela); and Barranquilla, Soledad and San Andrés are located in the northern region of the country.

This study addressed gender considerations aimed at ensuring equal opportunities for women and men for participating in in-depth interviews. Special attention was given to possible gender power relations in decision-making and during implementation of the action plan for Zika at all levels of the health system.

### Data collection

We conducted semi-structured interviews and FGD with key research participants at five levels of the health system: i) central government; ii) sub-national and municipal level; iii) health care providers; iv) communities; and v) pregnant women diagnosed with Zika. Three types of questionnaires were designed and piloted in the city of Cucuta, and applied accordingly to: i) those responsible for the Zika Virus Response Plan, containing questions related to the implementation of health guidelines in relation to detection, prevention and care; ii) community leaders and; iii) pregnant women who had been diagnosed with Zika. The latter included questions related to knowledge, perceptions and experiences concerning Zika, SRH and healthcare received.

Face to face semi-structured interviews were carried out between February and April 2018 by the principal investigator and a trained associate researcher, both experienced in qualitative methods (average time 25 to 60 minutes for each interview). The interview guide was reviewed by the research team to assess clarity of the questions prior to the fieldwork. Interviews were audio recorded and transcribed.

### Data processing and analysis

This study used a thematic approach to analyze the data. The initial coding analysis and interpretation framework was discussed with the research team to produce a plan of analysis where the identification of drivers of the Zika

virus response was prioritized. Based on the interpretation, the emergent topics were shared with selected interviewees and found to resonate with their experience, thus further increasing the authenticity of the analysis. The interviews were codified into two topics of interest: i) facilitating factors; and ii) implementation gaps. In order to enhance trustworthiness and credibility of the data analysis, a data triangulation technique was applied by identifying connections and similitudes across different sources. The qualitative data analysis was performed using Atlas.Ti7 version 7.5.18. No group or individual recruited to participate in the study was involved in the design, planning or conception of the study.

## Results

The findings of the study have been presented in two broad themes. First, factors that contributed to the implementation of actions in order to face the Zika outbreak, in terms of operations and functions. Secondly, gaps and critical barriers that emerged during that implementation of health interventions and that needed to be addressed in order to improve the resilience of the health system in view of future health emergency crises.

Figure1 illustrates the main facilitators and gaps in the implementation of the ZIKA response plan in Colombia. This figure resulted from the most common answers and agreements among research participants during in-depth interviews and FGD.

Figure 1. Facilitators and gaps of the Colombian response to Zika.

### Facilitating factors

Three major facilitators that promoted the implementation of actions to address the Zika epidemic were: i) the role of health care providers; ii) inter-institutional coordination; and iii) capabilities and capacity building of technical teams

#### *Health care provision*

The first topic that emerged was associated with the role of health care providers, specifically at the primary health care level, building capacity among health care staff and the implementation of follow-up systems of pregnant women at an individual level. Participants highlighted how health care providers promoted SRH through the adaptation of a gender-oriented approach and offered information regarding abortion as an alternative, postponement of pregnancy and use of contraceptive barrier.

*Campaigns were carried out even by the health care providers of the university. At that time, there was a campaign in a particular neighborhood, I do not remember very well where this was, in which Zika prevention campaigns were carried out...; it was Dengue and Zika and Sexual and Reproductive Health issues that were presented.*

Public Health Officer, Health Service Provider, Barranquilla.

#### *Inter-institutional coordination*

The second topic that emerged was associated with the need to share common objectives among government institutions, private health care providers and research institutes, which helped to increase the capacity of surveillance, diagnosis and response of the health system. There was an agreement among key participants that inter-institutional coordination played a key role during the outbreak. Many participants emphasized that the

research on Zika Virus generated jointly by the National Health Institute (INS by its Spanish acronyms), the Ministry of Health and Social Protection (MSPS by its Spanish initials) in Colombia and the Center for Disease Control and Prevention (CDC) in United States helped the scientific community to identify the consequences of the virus in pregnant women, and the risk of microcephaly and early diagnosis of neurological disorders during conception, antenatal care and abortion.

*The support of the National Health Institute was fundamental in this whole process and continues to be fundamental since, particularly in the Atlantic, they have been very vigilant, and we are still developing surveillance processes for pregnant women during the first trimester. They have not had Zika but they once had some contact [...].*

Deputy Director of departmental public health.

In addition, this collaborative work was highlighted as the main facilitator of timely and effective control measures of the outbreak, as well as for the monitoring of the cases of pregnant women at greater risk of infection. Several participants noted that the inter-sectoral coordination was also fundamental to raise awareness among different government sectors.

*We are coordinating with other health and social sectors, working hand in hand with the National Health Institute and the registered academic societies that are part of health; we work with other social actors as well, social leaders, such as the department for social prosperity.*

Ministry of Health and Social Protection worker.

#### *Capacity building of technical teams*

The third topic that emerged as a facilitator was associated with building capacity and skills as a result of the inter-institutional coordination. Most of the participants highlighted the fact that technical teams were strengthened with the fieldwork experiences. They pointed out that the first cases reported allowed the identification and characterization of the virus, the identification of potential health impacts, improvement of the epidemiological surveillance, and implementation of clinical protocols.

*Apart from raising awareness, everyone was trained, they were all trained: the health assistants, technicians, doctors, nurses; everything was done with the entire interdisciplinary group in the surveillance area [...] So that was a pretty good job and well done, providing awareness to all the staff [...] sometimes, it was not easy because, you know, the individual responsibilities [that] everyone has, and it takes time, but it was a very nice experience.*

Secretary of departmental of public health.

Similarly, they emphasized that the role of the National Health Institute (INS) was key at all levels of the health system, particularly to facilitate the alignment of the response plan with the existing healthcare provision.

*When we started to see the complications of what the Zika virus epidemic implied, and that it was not easy to manage because, forever type of case we had surveillance protocols and clinical practice guidelines, but not for this specific health problem. An initial difficulty was the need to quickly issue guidelines considering that during a non-emergency period, clinical practice guide takes more than a year to be developed.*

Director of epidemiology and demography. Ministry of Health and Social Protection.

However, capacity building and training was completely focused on technical issues described above. No actions concerning how to better understand the how and why sex and gender influence the acquisition of the Zika virus, the differential outcomes of the disease for women, particularly pregnant women, and the consequences of disability were developed. Nor were training processes identified in gender roles, human rights, SRH and its relationship with the Zika virus.

## **Implementation gaps**

This study identified implementation gaps that had an impact to the response of the Zika epidemic in three categories: i) absence of a human rights and sexual and reproductive health approach; ii) focus on territorial actions centered exclusively on vector control management; and iii) limited attitudes, behaviors and knowledge of the Zika epidemic and its relation with SRH at the community level.

### *Lack of a human rights and sexual and reproductive health-oriented approach*

The first topic that emerged was associated with the insufficient human rights and sexual and reproductive health-oriented approach in the response to the Zika epidemic. This highlighted that gender roles on SRH rights and access to health services were not fully managed by the government within the context of the Zika epidemic,

*Prevention and education to the community. In what sense? the slogan is how to*

*reduce mosquitoes -less mosquitoes, less diseases- instead of sexual and reproductive health issues.*

Epidemiological surveillance coordinator

Many participants emphasized that the interconnection between the protocols to address the Zika outbreak and SRH matters were not constant or lacked completeness. They underlined the restricted alignment of the Zika Response Plan with the National Policy of Sexuality and Sexual and Reproductive Rights, and the Ten-Year Public Health Plan 2012-2021. Participants highlighted that this lack of alignment was due to religions and stigma around abortion. Nevertheless, national health officials were able to carry out actions regarding SRH and gender among affected women. In addition, the government recommended postponing pregnancy, guaranteeing the right to voluntary interruption of pregnancy and the use of condoms.

*The issue of abortion induced due to congenital malformations was an issue that was strongly talked about; however, there was, and there is here, a lot of reluctance [...].*

Deputy Director of departmental public health

Conversely, these recommendations had limited acceptance at the local level with reluctance among health professionals. Most of the participants from communities and pregnant women at the local level said they had insufficient knowledge to understand the impact of a Zika outbreak on people's lives, in particular the impact for women's SRH. They highlighted that the emphasis on health was focused only on the microcephaly risk of the newborns of mothers infected by Zika.

*The Ministry of Health was one of the first health ministries in the world to say that women should postpone pregnancies because of this epidemic. I think that was very important and progressive in Colombia [...].*

Officer, Center for Disease Control and Prevention CDC

### *Approach of territorial actions focused mainly on mosquitoes*

The second topic that emerged was associated with the problem of limiting health interventions only to a mosquito-oriented control approach during the Zika epidemic. There was an agreement among participants that capacity building and training need to be focused on intervention concerning reproduction mechanisms of mosquitoes: water, sewerage and environment. Only one participant at the local level was able to talk about the Zika virus as a health problem with an impact on women and as a sexually transmitted infection.

*We apply different types of strategies, but there is one implemented in Los Patios which is the "selling point" strategy; with it we have done different actions, among them: days of waste collection, days of promotion and prevention, and environmental days. With this, we are not only talking about dengue or Chicunguña, or Zika but infectious diseases*

Departmental Health Secretary

### *Attitudes, behaviors and knowledge at the community level*

The third topic that emerged is associated with problems related to gender norms in the communities. Many participants showed important misunderstanding of the impact of Zika on SRH of pregnant women and gender inequalities.

*Is Zika also transmitted through sexual intercourse? I did not know that by having relationships you could also harm your partner, and all the negative consequences that could happen, because you do not have the information.*

Participant of Focal Group in Los Patios, Norte de Santander.

In this regard, the attitudes and actions taken by the communities against the Zika virus and the practices assumed to prevent the outbreak, were that some people with Zika who did not have access to health services made the decision to self-medicate with "home-made medicines" such as beverages for symptoms such as fever. There are facilitating processes identified by this study which are relevant to the Zika outbreak: implementation of the Zika response plan, knowledge transfer and management undertaken, and early preparedness at the government level. Gaps identified included lack of coordination between different levels of the health system, and insufficient alignment with the National Sexual and Reproductive Health Policy.

## **Discussion**

For most of the participants, there were three common facilitating processes and three major gaps in the implementation of the health system response to address the Zika epidemic in Colombia. Overall, the capacity of health actors and health care providers to prepare for and effectively respond to the Zika epidemic was key to address the outbreak. The Colombian health system showed the capacity of health policy makers and health care providers to prepare for and effectively respond to the Zika epidemic; maintain core functions and reorganize the health system if required. Conversely, despite the well-known mediating impact on women's SRH, the response was exclusively focused on the management and control of the vector. This placed gender roles in the background of strategies to meet the needs and priorities of women of reproductive age. Additionally, the knowledge concerning SRH and its relationship with the Zika virus was reduced to the right to abortion, but not within the broad framework of women's health. This implies losing the opportunity of strengthening and involving SRH services, in particular,

promoting the use of contraceptive methods and counseling for vulnerable women in environmentally and socially affected areas.

This study has significant strengths. First, we used a qualitative design to enable an in-depth exploration of the national response to the Zika epidemic and sexual and reproductive health identifying key facilitating processes and implementation gaps. Additionally, the characterization of the roles and experiences of the participants including key health staff from the different levels of the health system, provided an insight into their perceptions through the semi-structured interviews and focus groups discussion.

Even though it is difficult to compare qualitative studies, this study provides a comprehensive insight of critical facilitating processes and gaps in the implementation of the Colombian national response during the Zika epidemic. Our results can be contrasted with findings by Possas and colleagues in the Brazilian context which have shown the need for greater attention to the Zika epidemic as a public health problem with sensitive approaches to the effects of gender and the environment [19]. Accordingly, it also highlights the need to consider ethical, gender and race implications as dimensions of the Zika epidemic [20]. Nevertheless, there are differences in results since our study calls for an inter-sectional approach between gender, SRH rights and the Zika epidemic.

The Zika virus epidemic in Colombia allowed to demonstrate the well-coordinated institutional capacity and a remarkable potential of the health system facing an outbreak with important implications for women's SRH. This study pinpoints three recommendations for policymakers. Firstly, keep improving health system's resilience in anticipation to infectious disease outbreaks. Colombian's health system showed the capacity of health care providers and managers to prepare for and intervene effectively to respond to the Zika epidemic. Secondly, the necessity to continue improving coordination mechanisms between health actors and the government sector with shared objectives to address Zika and SRH. For this, there is a need to involve other sectors of government and increase the participation of SRH providers as well as support the social participation of local communities. It is essential to sustain health system capacities including the surveillance system and laboratories for the early management of future infectious disease outbreaks. This will require the alignment of the Zika Response Plan with the guidelines of the National Sexual Health and Sexuality Policy. In particular, expanding the access to contraceptives and counseling services and eliminating barriers to abortion care. Thirdly, there is a need to increase funding to strengthen the capacities of health system and invest in research to improve the prevention and management of future health emergencies.

## **Conclusions And Recommendations**

This study aimed at analyzing the national response to the Zika epidemic and its relationship with SRH through key implementation mechanisms that promoted resilience of the health system in five cities of Colombia. The study concludes there is a lack of understanding of the intersection between gender, the Zika epidemic and SRH in Colombia and the necessity to adopt, develop and implement a more comprehensive response that addresses the impact on women's sexual and reproductive health. The findings suggest that future actions should be considered such as an integrated and people-centered approach with an SRH component rather than focused mainly on vector control strategies.

## **List Of Abbreviations**

UHC: Universal Health Coverage

## Declarations

### Ethics approval and consent to participate

This research received ethical approval from Profamilia's Research Ethics Committee (CEIP) and PAHO/WHO Ethical Revision (PAHOERC). To ensure confidentiality and data security matters, information regarding origin of the interviewees and the names of the participants of the FGD were anonymized. A consent form was obtained from respondents. Respondents were informed of their right to withdraw from the study any time they wished and were also assured of confidentiality of any information deemed necessary to be treated so. All interviews were audio-recorded after getting consent of the respondents. The recordings of the interviews and transcripts were only accessible to the researchers.

### Consent for publication

Not applicable

### Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to protection of participant's confidentiality but are available from the corresponding author on reasonable request.

### Competing interests

All authors declare not have any financial competing interest nor not-financial.

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### Authors contributions

LJF and RM made substantial contributions to the conception and design of the paper; JCR, LJF, VVP and RM contributed with the collection, analysis and interpretation of data; JCR wrote the first draft; MCJ, JCR and FP made a critical revision and provided important intellectual inputs. All authors approved the final version of the manuscript for publication, agreed to be accountable for all aspects of the paper; and assured that questions related to the accuracy or integrity of any part of the paper were appropriately investigated and resolved.

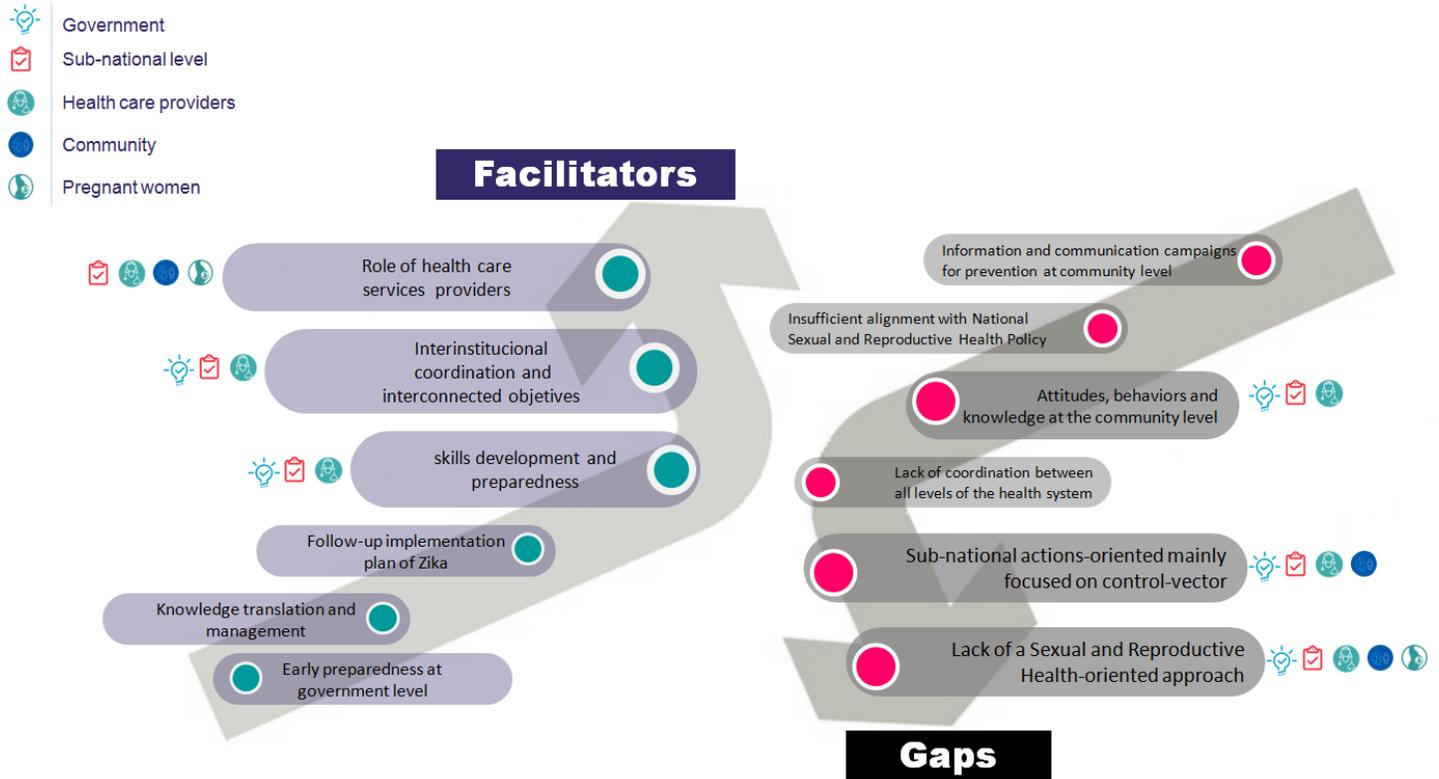
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## Figures



**Figure 1**

Facilitators and gaps of the Colombian response to Zika.