Control measures of *Aedes aegypti*: focus groups research in Recife and Campina Grande

July 2016
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2. Context
3. Impact of the Epidemic
4. Findings
5. Analysis of Strategies
6. Recommendations
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The Study

Question

“How can information on disease outbreaks caused by the *Aedes aegypti* mosquito be turned into preventive actions against its proliferation?”

Objectives

• Explore and understand the perceptions of different actors and profiles regarding the proliferation of the *Aedes aegypti* mosquito
  • Knowledge
  • Risk Perception
  • Individual Behaviour
  • Community Participation and Collective Behaviour (Engagement)

• Identify the most effective communication to mobilize the population against the *Aedes aegypti*
The Study

Methodology

• 10 focus groups conducted in March 16-23, 2016 (five in Campina Grande and five in Recife) with:
  • Municipal managers
  • Community health and endemic diseases/environmental agents
  • Community leaders
  • Pregnant women and child-bearing age women of vulnerable communities
  • Adolescents
Field visits
- Visits to hospitals, centre for zoonotic diseases and schools
- Visit to a zoonotic diseases centre was guided by the coordinator of the site who conveyed information regarding the scientific studies carried out by the centre
- Home visits with endemic diseases agents

Informal meetings
- Informal conversations with a nurse, a doctor, three mothers/pregnant women with babies with Congenital Zika Syndrome
- Conversations with students 4-8 years of age

Interviews
- Informal focus groups with men/fathers
- Interview with an educational coordinator at a grade-school
The Study

Additional activities

- Secondary-sources quantitative study to obtain data on the situation of the epidemics
  - PAHO/WHO bulletins as well as those of the Brazilian Ministry of Health

- Review of most recent academic and scientific literature on arboviral epidemics, in particular zika, chikungunya and dengue

- Review of academic literature to triangulate findings in the field

Visit to the D. Pedro I Hospital, Campina Grande
BASIC DATA

Zika

• The first case of Zika was reported in Brazil in May 2015

• The majority of the cases are asymptomatic, which makes knowing the number of people infected difficult

• Confirmed links:
  • Congenital Zika Syndrome
  • Guillain-Barré Syndrome
  • Acute Disseminated Encephalomyelitis

• Number of cases of Congenital Zika Syndrome in Brazil
  Nov 2015 to Apr 2016: 1,168 cases
  • 89.7% are in the Northeast region of the country

Fonte: Ministry of Health, Informe Epidemiológico nº 22/2016.
Chikungunya

- The first chikungunya case in Brazil was reported at the end of 2014.
- The number of reported Chikungunya cases nearly tripled in the same period.

QUANTITATIVE DATA

Dengue cases Reported

BASIC DATA

Dengue

- It is considered one of the greatest re-emerging diseases, affecting about 390 million people a year
- It has been on the WHO Neglected Tropical Diseases list for many years

Context

Lack of clean water supply and inappropriate sewage disposal

No garbage collection or management

Precarious living conditions: homes become breeding ground for the mosquito

Climatic conditions: higher temperatures, variation in rainfall patterns, high humidity

Challenges related to the supply of larvicide

Water crisis and a culture of storing water

Lack of environmental education and awareness
**The Impact of the Epidemic**

**HEALTH**  **ECONOMY**  **SOCIAL**

Population with symptoms of the diseases

A high number of people with symptoms overburdens health-care units

Population affected by syndromes caused by arboviruses:
- Guillain-Barré Syndrome – recovery within 18 months
- Acute Disseminated Encephalomyelitis – recovery within six months, but patients face long-term symptoms

Long-term symptoms of arbovirus-caused diseases
- Children with Congenital Zika Syndrome
  – It creates demands in the health system
The Impact of the Epidemic

**HEALTH**  **ECONOMY**  **SOCIAL**

- The study identified that there is greater concern with Chikungunya. The population understands that there is little risk of long-term symptoms with Dengue and Zika, and that they are really serious for pregnant women only. On the other hand, Chikungunya has serious symptoms - severe pain in the body for prolonged periods (research indicates up to 3 years), which interferes greatly in the autonomy of children and adults.

- Cases that are not reported may cause the development of faulty strategies for dealing with the epidemic and the symptoms of each disease, as well as significant increase in self-medication.

- The underreporting of cases occurs mainly due to: (i) an excess of patients at healthcare facilities that leads those who are sick to give up on receiving care; (Ii) naturalization of symptoms since they resemble those of low-risk diseases; (Iii) low incidence of symptomatic Zika cases; and (iv) similar symptoms in people whose relatives or acquaintances have been diagnosed.

![Ratio of Chikungunya and Zika symptomatic and asymptomatic cases](image)
The Impact of the Epidemic

Healthcare facilities are full

Symptomatic cases

Seek medical attention

Healthcare facilities are full

Gives up on receiving medical attention

Perception that cases are similar and use of same prescription given to others

Naturalization of symptoms

Under reporting

Self medication

Asymptomatic cases

Low perception of risks
The Impact of the Epidemic

**HEALTH**

The buying and selling of articles of personal protection are stimulated as are measures to prevent the proliferation of mosquitoes.

**Expenses related to actions, education and community awareness**

Impact on family income depending on the work arrangement of the person who is sick.

**ECONOMY**

**Short-term**

- Workforce affected by the syndromes
- Negative impact on tourism and international investments

**Medium-term**

**ECONOMY**

- Benefits of continued provision to families with babies born with Congenital Zika Syndrome
- Workforce affected by the long-term symptoms of the diseases and syndromes

**SOCIAL**

- Loss of wages due to absences and deaths

**Long-term**
The Impact of the Epidemic

• The impact and its dimensions are directly associated with how quickly the epidemic can be controlled. The more people with long-term symptoms and the more populated the territory affected, the greater the impact on micro and macroeconomics. In the short term, the economic impact is directly related to behaviour to prevent transmission, especially of high-risk groups.

• Practices to Control the Epidemic
  • Buying and selling of personal protective items and those that prevent mosquito proliferation is stimulated. Mosquito repellents, protective screens on windows, water storage containers with lids, long-sleeved clothing, and larvacide are examples.
  • Expenses related to actions, education and community awareness.
The Impact of the Epidemic

HEALTH  ECONOMY  SOCIAL

• Economic activity of the labor force and household income

• Sick adults are prevented from working
• Adults who need care for sick family members and children with the Congenital Zika Syndrome
• The Pan-American Health Organization (PAHO) estimates that one in five of the likely 4 million people infected in 2016 will be out of work for at least one week

• Local Economy

• Economic activities such as tourism and foreign investments may be affected by epidemics. PAHO indicates that the recent confirmation that the Zika virus, microcephaly and Guillain-Barré Syndrome are linked tends to have serious impact on countries in Latin America and the Caribbean that are highly dependent on tourism, and that may need additional help
Impact on public expenditures

- Ongoing benefits paid to the population with permanent symptoms
- Investment in the control of the epidemic
- The economic impact on those with more severe symptoms or who develop one of the diseases associated with the Zika virus range from the cost of health treatments to the impact of being out of work
The Impact of the Epidemic

HEALTH  ECONOMY  SOCIAL

The school life of children and adolescents is impaired

Short-term

Men and women stay away from social circles because they must care for children with Congenital Zika Syndrome and other sick adults

Medium-term

Renewed discussion on the expansion of reproductive rights

Long-term

Mothers raising children without support from their partners

Avoiding pregnancy for long periods of time can affect the demographics of a region

Children with Microcephaly can face discrimination and prejudice

Perpetuation of the poverty cycle

The education field will need to offer support to children with Congenital Zika Syndrome when they are school-age
The Impact of the Epidemic

HEALTH ECONOMY SOCIAL

• Children **are not able to attend school** due to symptoms of the disease. On a visit to a public school in Recife about 5% of the students were out with Chikungunya.

• Pregnant women whose children have confirmed cases of Congenital Zika Syndrome or "microcephaly" and who decide to continue the pregnancy run the risk of being - both mothers and children - abandoned by their partners/fathers.

• In addition to the possibility that the child might be abandoned, there is concern that she/he may **face discrimination and prejudice during childhood, adolescence and adulthood**. It is still early to affirm that will be the case, but it is possible to that that will be the case since discrimination, stigma and prejudice already occur against children who have other disabilities or health problems such as obesity.
Knowledge about illnesses, transmission and prevention

- **Illnesses**
  - There is knowledge about the three viruses, although there is no clarity on the vector. We identified the belief that there are three mosquitoes, each one transmitting one of the arbovirus.
  - No knowledge about the long-term impact on health.

- **Transmission**
  - Many people know that the illnesses are transmitted by the mosquito, but a significant portion of the population does not believe that a “little mosquito” can transmit them. They also do not believe that the mosquito needs water to reproduce.
  - There is no certainty that the Aedes is the vector for Zika and Chikungunya or whether the vector is a “mutant mosquito”.
  - There is no certainty and there are rumours about the transmission of the syndromes and the Chikungunya. People consider the possibility that transmission can occur via an expired vaccine or the larvacide itself, etc.
Findings

Knowledge about illnesses, transmission and prevention

Prevention Measures

• People seem to have knowledge about controlling the proliferation of the mosquito but their knowledge is limited to and associated with practices most discussed in the media:
  • putting sand on the flower-pot dish – not realizing that if you overwater the plant and water gathers on the sandy dish the danger will persist
  • Turning buckets over and closing water tanks
• People make connections between stagnant water and the proliferation of the Aedes aegypti, but seldom realize that garbage can also be a breeding ground for the mosquito.
• There is not enough information or convincing arguments about why it’s important for people to prevent transmission.
• People are aware of ways to protect themselves individually – long-sleeved shirts and long pants, mosquito repellent, mosquito nets/screens – even though few people follow the recommendations. Reasons people do not follow them: Brazil’s hot climate and the high price of repellents.
Risk Perception

• Different levels of perception for the public and illnesses
  • Those interviewed are highly aware of the risks associated with the illnesses caused by the mosquito
    • Community leaders are less aware
  • They report that neighbours and others in their circles are not as aware as they are
    • Adolescents, pregnant women, the elderly people with less formal education

• Higher awareness of the risks associated with Zika and Chikungunya
  • Long-term: Zika – only Congenital Zika Syndrome
  • Medium-term: Chikungunya
  • Short-term: Chikungunya and Haemorrhagic Dengue Fever

• There is a perception that children, pregnant women and the elderly are more vulnerable
  • There is evidence that people who are malnourished are also vulnerable

• Low-level awareness of the risks related to Dengue indicate that part of the people surveyed have naturalized the disease
Barriers to Risk Awareness

• Lack of knowledge regarding the effects of contracting Zika and Chikungunya and the recurrent uncertainty about whether Aedes aegypti is in fact the vector.

• The lack of knowledge contributes to the low-level awareness regarding the gravity and susceptibility of the illnesses.

• High incidence of cases with mild or no symptoms.

• Naturalization of illnesses because they are part of daily life and because of the perception that they are not serious (“Neglected Tropical Diseases”).

• Cultural, religious and social factors can interfere in risk-awareness.

• Risk-awareness and the need to adopt measures to control the mosquito vary according to social class.
Findings

What makes people change their behaviour?

To explain the findings regarding individual and collective behaviour, we adopted four theoretical Models as baseline:

- Health Belief Model
- Protection Motivation Theory
- Integrated Model of Communication for Social Change
- Socio ecological Model

- Results indicated that there is a combination of all models.
Health Belief Model

Behaviour change occurs in three phases:

(i) Individual perception: Individuals must feel susceptible to the illnesses and believe that getting sick will severely damage their health.

(ii) Factors that can bring changes (i.e.: policies): They should instil the notion that a change in behaviour is needed in order to avoid contracting a particular disease. Factors that lead to the awareness that it is important to change behaviour beyond the perception of imminent threat: sociodemographic and psychological conditions, knowledge of prevention methods and actions to suggest changes in behaviour.

(iii) Propensity to act: the combination of individual risk-awareness and modifying factors tends to make individuals prone to changing their behaviour; but for that to happen, they must also believe that the benefits of adopting such an attitude are bigger than the adversities they would encounter.
Protection Motivation Theory

In addition to the individual risk-awareness caused by the perceived severity of and vulnerability to disease, two factors will be decisive in carrying out measures to prevent the proliferations of the mosquito: response efficacy and self-efficacy.

Response-efficacy: the degree to which individuals believe in the preventive actions available and suggested by the authorities.

Self-efficacy: the perception an individual has of their own ability to carry out preventive measures.

But individual risk-awareness only increases when people believe in the recommended actions and believe they can carry them out – or when the actions are feasible.
Findings

Integrated Model of Communication for Social Change (IMCSC)

**KNOWLEDGE**
- Internal Stimulus
- Agent of Change
- Innovation
- Policies
- Technology
- Mass Media

**RISK**

**BEHAVIOUR**
- Community Dialogue
- Recognizing the problem
- Identification and involvement of leaders and stakeholders
- Clarify perceptions
- Expressing individual and collective interests
- A vision of the future
- Action Plan
- Consensus on action to be taken
- Opinions on the action to be taken
- Establish objectives
- Evaluation of current state
- Implementation
- Outcome
- Participatory Evaluation

**ENGAGEMENT**
- Determining responsibilities
- Mobilizing organizations
- Value of ongoing improvement
- External restrictions and support

**ACTIONS**

**Individual Change**
- *Ability*
- *Ideation*

**Social Change**
- *Leadership*
- *Degree of Equity and Participation*
- *Informative Equity*
- *Collective Self-Efficacy*
- *Sense of belonging*
- *Social Cohesion*
- *Social Norms*

**SOCIETAL IMPACT**

- *Sense of belonging*
- *Social Cohesion*
- *Social Norms*
Eventual changes both in individual and collective behaviour derive from community dialogue and a set of actions taken at the collective level; there is evidence that change in collective behaviour tends to push changes in individual behaviour. In short, the collective appropriation of preventive measures is key to ensuring that changes in behaviour at both levels can be sustainable.

- The model describes a dynamic process that starts through a catalysing factor
- Internal stimulus, agent of change, innovation, policies, technologies, mass media
- The catalyser promotes dialogue within the community and when that is effective it stimulates the adoption of collective actions to solve common problems
- Individual and collective results are expected at the end of the process
- The objectives regarding individual results are development of abilities, knowledge, risk-awareness, self-image, self-efficacy and behaviour
- Objectives regarding collective results are leadership, equal participation, equal information, collective-efficacy, ownership/leadership, social cohesion and changing social norms
For the behavioural change to be sustainable, it must occur at five different levels

- **Individual**: characteristics that influence behavior - knowledge, attitudes, gender, age, sexual orientation, social class, etc.
- **Interpersonal**: social networks that can influence individual behavior - family, friends, co-workers, and the church are the most effective way of influencing behavior
- **Community-based**: organizations, institutions and informal networks such as neighborhood associations, and community leaders; together they can change collective behavior and social norms.
- **Organizational**: social organizations and institutions that control rules and regulations; they can create conditions for actions to occur at the levels previously mentioned
- **Political**: federal agencies with the power to create laws and policies. They can create a favorable environment for the work of agencies at other levels of government
Findings

HBM + PMT + SEM + IMSCS

Susceptibility and severity

More benefits than barriers

Favourable local and social norms context

Self-efficacy

Response-efficacy

Favourable political and organizational context

Collective-efficacy

KNOWLEDGE  RISK  BEHAVIOUR  ENGAGEMENT  ACTIONS

Change of individual behaviour

HBM

PMT

IMCFS

SEM

Knowledge

Risk

Behaviour

Engagement

Actions

Response-efficacy

Collective-efficacy

Favourable local and social norms context

Favourable political and organizational context

More benefits than barriers

Favourable political and organizational context

Change of individual behaviour
Perceptions of Individual Behaviour

• The study identified different levels of behaviour:
  • Many participants have taken action within their homes and claim that neighbours and people living nearby have also been careful with garbage disposal and with avoiding standing water where the mosquito can breed
  • However, they know other neighbours and people who have not changed their behaviour and who refuse to do so
  • There is a strong tendency for behaviour to change because of the information shared individually and interpersonally
  • Awareness of the severity of illnesses tends to increase after people become sick
  • Awareness of susceptibility when someone close has had one of the illnesses
  • It is more likely that a combination of factors can positively impact individual behaviour than a single element
Barriers to the Adoption of Practices to Fight the Proliferation of the Mosquito

- Little knowledge and therefore little risk-awareness
- Lack of individual and collective awareness
- There is a naturalization of symptoms due to their similarities and the way Dengue is transmitted
- Many communities have other priorities in addition to preventing the mosquito: violence and drugs
- Preventive measures may affect the way of life and the economic activity of the population: it is the case with the perception that the accumulation of waste is not due to a lack of care and prevention against the mosquito but rather a form of earning income (recycling)
- The middle and upper classes do not feel responsible for the problem
- Difficulty to adopt all preventive measures because they are labor-intensive or costly
- Lack of a sense of responsibility; people believe that it is the government's obligation to develop a solution and demand action from agents sometimes confusing the role these professionals play
Perceptions of behavior in families with infants who have Congenital Zika Syndrome

• The research method does not measure stigma, but there is evidence that babies affected by the syndrome tend to arouse curiosity, and at times mothers perceive prejudiced attitudes
  • it is not possible to say whether the perceived stigma and discrimination in this small sample is a result of Congenital Zika Syndrome or are common to any disability

• The research method does not allow us to say whether there is a large number of fathers abandoning mothers and babies as a result of the Congenital Zika Syndrome
  • The reported number of fathers who abandoned their children after diagnosis or after birth was very low; only two people knew someone personally, others saw stories on TV
  • We cannot affirm that there is a causal link between diagnosis and abandonment
  • Sample does not analyze whether the cases of abandonment differ from the usual pattern of fathers who abandon pregnant women and newborns
Findings

Perceptions regarding community participation and collective behaviour

• The majority of people recognize that the work in the community is more effective in changing individual and collective behavior.

• People need to feel part of the process of coping with the epidemic and according to accounts this feeling is not strong enough.
  
  • Some participants seemed engaged with the wellbeing of the community
  
  • Others seemed engaged with the wellbeing of their family circle only
  
  • The majority understands that the community is not engaged in actions to control the mosquito
    
    • Women are an exception: they see an improvement in engagement

• Community leaders have not been using their ability to reach many people and influence them.

• Leaders and religious settings, as well as associations could be better utilized.
Barriers to Community Engagement

- They must be analysed according to each locality’s context.
- Blaming the government for the proliferation of the mosquito diminishes the perception of the importance of community engagement.
- Community engagement becomes more effective and sustainable where there is more organizational and political engagement.
Findings

Actions carried out in the studied localities

- **Individual Actions**
  - Dialogue with friends and neighbours, mainly promoted by engaged young people and pregnant women and their families

- **Collective Actions**
  - Task force and “D-Day” events to eliminate mosquito proliferation points
  - Designing campaigns that address the local context to communicate the importance of preventive measures

- **Public Policies**
  - Inter-sectoral actions between health, education, environment and urban management agencies
  - Development of activities in schools, especially public ones
  - Urban sanitation actions
  - Army-conducted activities, but they are considered inefficient
  - Actions managed by public health and endemic diseases agents
    - expansion/intensification of actions
    - Lack of human resources and inputs
    - No fundraising for actions (Recife)
Analysis of Strategies

What seems to work?

• The intersectionality between different public actors when it provides greater breadth and scope to the actions developed.

• Information given to children and young people in their school environment. Although young people have greater potential for implementing practices, children reinforce the information at home. The two groups end up playing the role of multipliers.

• Interpersonal communication actions; the "word of mouth" is important in raising individual and community awareness. The actors who engage in such actions must have some ‘familiarity' with the area in which they operate and use language that can be understood by the community. The actors usually are:
  
  • Health, endemic diseases and environmental agents
  • A person of reference/community leader

• Communication campaigns serve to reinforce what is communicated interpersonally.
Analysis of Strategies

The role of community health workers and endemic disease control agents. It is one of the most important community awareness public actions for coping with epidemics.

Although they are considered key actors to control epidemics, agents report difficulties in exercising the fight against the epidemic with the quality and scope required. What is missing:

• Personnel – they are overburdened
• Inputs – they do not have the necessary materials to carry out preventive actions
• Trainings that focus on current information regarding the arboviruses transmitted by the Aedes aegypti
Analysis of Strategies

Perception Regarding Past Campaigns

• Campaigns on the elimination of mosquito breeding grounds do not bring new information when compared to those of previous years.
  • Most people believe that the campaigns do not contribute to risk-awareness, accountability nor to change in behaviour
  • Some images do not reflect the reality of the living conditions of fringe populations = lack of identification.
  • Bellicose language used is not appreciated; it seems to transfer the responsibility to the mosquito.

• The #ZeroZika hashtag does not convey a good message.
  • To eradicate the mosquito is neither possible nor recommended.
  • It makes it seem as if Zika is the only problem
  • It could lead some to believe that Zika is the mosquito itself.

• Campaigns that show what is right and also what is wrong are not clear and generate confusion.
Analysis of Strategies

Perception Regarding Past Campaigns

• Dráuzio Varella’s* video
  • Most people believe he is a good person to share knowledge
    • He is reliable and appeals to all ages and social classes
  • Adolescents in Recife are the exception - they do not feel represented by Dr. Varella: “adults are boring”
    • They believe campaigns should use young actors and singers
  • Agents believe that the campaign places the responsibility on the government
  • Community leaders believe that the campaign has a class bias since it shows a typical area in the outskirts of a city

• Brochures are not efficient
  • Not everyone reads them
  • It is common for people to throw them away

* Drauzio Varella is a Brazilian physician, educator, scientist and best-selling author. He is also renowned for popularizing medical science in the press and on TV.
Analysis of Strategies

Type of Campaign Suggested

General

- People prefer the type of communication that is informative, dramatic and that has a call to preventive action.
  - They believe campaigns should have information that goes beyond how to avoid the proliferation of the mosquito.
  - Campaigns need to address risks, consequences and the impact of the disease.
- They must have a balance between images, drawings and text.
- People believe that it is important to include local context.
  - Brazilian Funk beat mosquito song
  - Connection with football (soccer) teams
- Campaigns should include children, young people, adults and the elderly.

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<tr>
<th>Group</th>
<th>Communication</th>
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<tbody>
<tr>
<td>Municipal managers and</td>
<td>Prefer images and text that present reality in a direct way and with little</td>
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<tr>
<td>community health agents</td>
<td>content; compelling approach would be more effective</td>
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<tr>
<td>Leaders</td>
<td>Informational campaigns: illnesses, symptoms, treatment, etc.</td>
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<tr>
<td>Women</td>
<td>More images than text; show reality in a more aggressive way, but with little</td>
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<td>content</td>
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<td>Adolescents</td>
<td>More information, as long as it is well organized, combined with some</td>
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<td>attractive images</td>
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Suggestions Regarding Other ways to Communicate and Mobilize

- Community leaders
- Churches
- Associations
- Soap operas
- Videos
  - Participation of artists/celebrities in shows
  - More collective actions

Main Source of Information for Each Group

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<tr>
<th>Community health, endemic diseases and environmental agents</th>
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<th>Women</th>
<th>Adolescents</th>
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<td>• Television</td>
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<td>• Television (including local news)</td>
<td>• School</td>
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<td>• Newspapers</td>
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<td>• Mobile phone/internet</td>
<td>• Television (including local news)</td>
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<td>• internet</td>
<td>• Internet</td>
<td>• Posters (street and at community health centres)</td>
<td>• Mobile phone/internet (Facebook and WhatsApp)</td>
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<td>• Agents</td>
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<td>• Church and community health centres (when youth attend)</td>
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Participation of artists/celebrities in shows and more collective actions are suggested to reach the community effectively.
UNICEF

Short-term

a. Invest in communication campaigns that inform about the risks of mosquito proliferation as opposed to just prevention methods, and that consider local context and social norms, as well as the different age groups and needs.

b. Explore other communication channels that the population can easily access at any time, such as mobile phones and other services to answer questions.

c. Support the realization of lectures and individual, interpersonal and community trainings so that the population can own the knowledge (through a community leader of reference).

d. Utilize the UNICEF Seal to engage communities.

e. Support the development and implementation of actions focused on engaging children and adolescents.
UNICEF

Long-term

a. Advocate for the development and strengthening of public policies to control the mosquito.

b. Provide technical support for activities related to environmental education and awareness of children and adolescents in public and private schools, respecting the language to be used with each age group.
Recommendations

Government
Short-term
a. Invest in communication campaigns that inform about the risks of mosquito proliferation as opposed to just prevention methods, and that consider local context and social norms, as well as the different age groups and needs.
b. Explore other communication channels that the population can easily access at any time, such as mobile phones and other services to answer questions.
c. Support the realization of lectures and individual, interpersonal and community trainings so that the population can own the knowledge.
d. Establish partnerships with civil society organizations to expand actions to promote health.
e. Provide training to community health and control of endemic diseases agents.
f. Partner with different agencies for the development of inter-sectoral policies.
g. Recommendation to carry out studies.
Government

Long-term

a. Invest in the universalization of urban infrastructure: housing, water supply, sanitation and solid waste management.

b. Hire staff to carry out awareness and education of the population, as well as for the control of endemic diseases.

c. Invest in activities for the environmental education and awareness of children and adolescents in public and private schools, respecting the language to be used with each age group.


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