The Evolution of Shared Responsibility and Instructional Risk Communication in Brazil's Campaign against the Zika Virus

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THE EVOLUTION OF SHARED RESPONSIBILITY AND INSTRUCTIONAL RISK COMMUNICATION IN BRAZIL’S CAMPAIGN AGAINST THE ZIKA VIRUS

by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Communication in the Nicholson School of Communication in the College of Sciences at the University of Central Florida Orlando, Florida

Spring Term 2018

Professor: Dr. Timothy Sellnow
ABSTRACT

This study provides an evaluation of instructional risk communication practices in Brazil’s response to the Zika virus during the 2016/2017 campaign. The communication was instructionally focused, explaining the way the disease is transmitted, what to do if the person is infected, and characteristics of the mosquito. The authorities also tried to convince the publics that, because the mosquito breeds in everyone’s houses and apartments, everyone could be part of the solution. The social, economic and cultural characteristics of the country, the population’s low levels of health literacy, and a long-lasting government credibility problem in the country make Brazil’s fight against these types of diseases considerably difficult. The IDEA model (T. Sellnow & D. Sellnow, 2013) was used as the theoretical grounding for the analysis. This study presents the concepts of collective efficacy and shared responsibility and recommendations for risk and crisis communication practitioners as well as government agencies with regard to engaging the population in managing this type of disease outbreak. Knowledge about how to generate and share strategic communication of this nature is increasingly important as the spread of novel diseases is increasing in frequency and intensity (Kilpatrick & Randolph, 2012).
ACKNOWLEDGMENTS

Transitioning from a corporate setting to the Academia after more than 15 years was not an easy task. However, having Dr. Timothy Sellnow as my mentor since the first semester made this journey not only smoother but also enjoyable. Dr. Sellnow gave me the guidance and encouragement I needed. Having him as my advisor was a great honor. Thanks, Dr. Sellnow, for all your patience, support and for valuing and understanding my contributions and potential. I look forward to working with you again soon.

To my committee members: Dr. Deanna Sellnow and Dr. Robert Littlefield, thank you. Your contributions, timely feedback and challenges were key enablers of this study and of my journey as a master’s student.

Finally, thank you to the most special people of my life: to my mother, Dilce and my brother, Henrique, who give me strength when I feel weak; to my beloved grandparents, Lulu, Alnyr, Conceição and Francisco, who I miss every day; and last but not least, to my wife, Renatta, and my children, Leo and Joanna, whose love and support are the main drivers of my life.
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CHAPTER ONE
INTRODUCTION

Review of the Case

Researchers have recently proven the link between the Zika virus and cases of microcephaly (i.e. birth defect where a baby’s head is smaller than expected when compared to babies of the same sex and age) in babies born from mothers who have been infected. (CDC, n.d.). On Feb 1, 2016, the Director General of the World Health Organization reported that microcephaly and other neurological disorders were a Public Health Emergency of International Concern (WHO, 2016a). This declaration was made mainly because of reports about the cases of microcephaly related to the Zika virus in Brazil and previously in the French Polynesia (Heyman, D. et al., 2016). This finding brought considerable attention to the disease.

Brazil has been dealing with Dengue – a disease caused by the same mosquito as Zika, *Aedes Aegypti* – since the beginning of the 20th century (IOC – Instituto Oswaldo Cruz – Brazil, n.d.). When the first cases of Zika were identified in Brazil, in the beginning of 2015, the authorities treated the disease as a lighter type of Dengue. However, in October of the same year, the birth of children with microcephaly motivated a federal health inspection mission to Recife, a city in Northeastern Brazil, jointly with the Pan-American Health Organization. At that moment, there were no available data, but a large number of clinical reports, fearful individuals, doubts, and lack of information (Brazil Ministry of Health, 2017). Although the connection between the Zika virus and microcephaly was received with skepticism at first, in November 2015, scientists from Instituto Oswaldo Cruz (IOC) found the presence of the Zika virus in the amniotic fluid of pregnant mothers whose babies had microcephaly (Brazil Ministry of Health, 2017). This
discovery made the authorities declare the Zika virus as a Public Health Emergency of National Importance. See Table 1 for a timeline of Zika’s development as an epidemic.

In January 2016, through a joint effort formed with health officials in Brazil, the United States Centers for Disease Control and Prevention (CDC) released laboratory findings that were considered as the strongest evidence of an association between the Zika virus and microcephaly (WHO, 2016).

This ongoing and expanding crisis offers insight into the study of instructional risk and crisis communication. Specifically, the Zika crisis required instructional risk communication with the aim of engaging the population and sharing the responsibility of minimizing the spread of the disease. This study examines the communication demands posed by Zika and Brazil’s instructional risk communication response.

The Disease

Zika is a virus transmitted primarily by the *Aedes aegypti* mosquito. The name was given based on the place of its origin. The virus was first identified in sentinel monkeys used for monitoring yellow fever in Uganda’s Zika forest (WHO, 2016b). In February 2016, the United States reported that, in addition to spreading through the *Aedes aegypti* mosquito, Zika could also be transmitted person to person, after identifying a case of sexual transmission of Zika in Texas (CDC, n.d.).

Estimates by Brazil’s Ministry of Health show that about 80% of people infected by the Zika virus do not develop clinical manifestations. The main symptoms are headache, fever, mild joint pain, red spots on the skin, itching, and redness in the eyes. Overall, the disease progress without complications, and the symptoms usually disappear after about a week. However, joint
pain may continue for nearly one month. In addition to the risk of microcephaly in newborns, severe and atypical forms may occasionally lead to death, as has already been identified in Brazil (Brazil Ministry of Health, 2017).

Besides the already mentioned link between Zika and microcephaly cases, there is another possible connection still being studied between the Zika virus and Guillain-Barré syndrome. Guillain-Barré syndrome is a condition in which a person’s own immune system harms her or his nerve cells. This weakens the muscles and can lead to paralysis in some cases (CDC, n.d.). The Neurogenic Scientific Department of the Brazilian Academy of Neurology strongly believes that there might be a correlation between the Zika virus and the Guillain-Barré syndrome. Current CDC (n.d.) research suggests a strong association between the Guillain-Barré condition and the Zika virus.

There is no specific treatment for the Zika virus. Brazil’s Ministry of Health recommends the use of acetaminophen (paracetamol) and dipyrone to control fever and pain management. In the case of an itchy rash, antihistamines may be considered. Contaminated people must be well hydrated and should not use acetylsalicylic acid (ASA) and other anti-inflammatory drugs due to the increased risk of bleeding complications. Suspected cases should be treated following the Dengue protocol. No vaccine has yet been developed, although the Assistant Secretary for Preparedness and Response of the CDC has a goal of deploying an available vaccine under the appropriate regulatory mechanism to US populations at high risk of exposure by 2018. Commercialization of the vaccine for broad distribution is expected for the year 2020 (ASPR/CDC, 2017).
The vector: *Aedes aegypti*

The mosquito that causes the Zika virus, *Aedes aegypti*, is considered by the European Center for Disease Prevention and Control (ECDC, n.d.) as one of the most common mosquito species on the planet. It is mostly known as the yellow fever mosquito, although in some countries, like Brazil, it is known as the Dengue mosquito. The *Aedes aegypti* mosquito first appeared in Egypt and then spread through tropical and subtropical regions of the planet in the 16th century, during the Great Navigations. Throughout the centuries, the *Aedes aegypti* mosquito found the urban areas a perfect space to breed. It uses standing water (e.g., tree holes, used tires, flower pots) to lay its eggs. After hatching, larvae develop, become pupae and then an adult mosquito (CDC, n.d.).

**Current Situation**

The status of the Zika outbreak reported by the World Health Organization (WHO) in its March 2017 report shows that there are eighty-four countries, territories or subnational areas with evidence of Zika virus transmission through mosquitoes. Thirteen countries have reported evidence of person-to-person transmission of the virus. Thirty-one countries or territories have reported microcephaly and other central nervous system (CNS) abnormalities possibly associated with the Zika virus. And 23 countries or territories have reported an increased incidence of Guillain-Barré syndrome and/or laboratory confirmation of a Zika virus infection among Guillain-Barré syndrome cases. Brazil is considered by the WHO as a Category 1 country. Category 1, the most critical, is reserved for countries or areas with new introduction or re-introduction and with ongoing transmission (WHO, 2017).
Dengue and Zika in Brazil

Brazil has been dealing with Dengue since the beginning of the 20th century (IOC – Instituto Oswaldo Cruz, n.d.). Zika infection rates are higher outdoors and during daytime, when the mosquitoes bite more frequently. However, *Aedes aegypti* breed indoors also and are capable of biting anyone throughout the day. This makes determining higher or lower risk populations difficult. Everyone is at risk.

The fact that the *Aedes aegypti* mosquito uses water containers to breed is a particular challenge for Brazil. Brazil is a developing country with several poor cities, many without the appropriate sewage system and potable water supply. Only 50.3% of the cities have access to a basic sewage system (Brazilian National Sewage Information System, 2015). The so called “favelas” (urban slams) concentrate many of those vulnerable communities. These social and economic characteristics of the country, combined with the process the mosquito uses to breed, make the situation even more difficult to manage.

Health literacy and government credibility are issues the country also faces when fighting diseases like Zika and Dengue. Health literacy stands for an individual’s ability to understand and interpret health matters (Wickline & Sellnow, 2013). Brazil ranks 43 among 60 countries based on their literacy rates (Miller & McKenna, 2016). General education is, therefore, an important issue in Brazil. The U.S. Department of Education found that health literacy varies directly with levels of education (Kutner, M., Greenburg, E., Jin, Y., & Paulsen, C., 2006).

With regard to government credibility, a recent study showed that only 24% of the Brazilian population trusts the government (Edelman, 2017). The country ranks 26 among the 28 that participated in the study. The Zika crisis happened during the worst political crisis Brazil
faced since the military coup in 1964. The country was facing the risk of having its President impeached – which was later confirmed – causing many changes in health management leadership. This political turmoil brought even more complexity to the situation.

Table 1: Zika Timeline (CDC, n.d.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2015</td>
<td>First cases of Zika in Brazil are considered a lighter type of Dengue</td>
</tr>
<tr>
<td>September 2015</td>
<td>First case of microcephaly identified in Brazil</td>
</tr>
<tr>
<td>November 11, 2015</td>
<td>State of Emergency in the State of Pernambuco – more than 140 cases of microcephaly</td>
</tr>
<tr>
<td>November 12, 2015</td>
<td>Authorities recommend women not to be pregnant.</td>
</tr>
<tr>
<td>November 18, 2015</td>
<td>Zika virus identified in the amniotic fluid of pregnant mothers whose babies had microcephaly</td>
</tr>
<tr>
<td>November 21, 2015</td>
<td>Federal task-force established to fight the risk of an epidemic</td>
</tr>
<tr>
<td>November 28, 2015</td>
<td>Ministry of Health confirms link between the Zika virus and microcephaly</td>
</tr>
<tr>
<td>January 12, 2016</td>
<td>First case of Zika in the USA</td>
</tr>
<tr>
<td>January 16, 2016</td>
<td>First case of microcephaly caused by Zika in the USA and joint effort Brazil/USA confirms the link between Zika virus and microcephaly</td>
</tr>
<tr>
<td>February 2016</td>
<td>Person to person contamination confirmed by the CDC</td>
</tr>
<tr>
<td>February 1, 2016</td>
<td>The WHO declares the Zika virus a Public Health Emergency of International Concern (PHEIC)</td>
</tr>
</tbody>
</table>
**Rationale**

This study provides an evaluation of instructional risk communication practices in Brazil’s response to the Zika virus. The communication was instructionally focused, explaining the way the disease is transmitted, what to do if the person is infected, and characteristics of the mosquito. The authorities also tried to convince the publics that, because the mosquito breeds in everyone’s houses and apartments, everyone could be part of the solution. The social, economic and cultural characteristics of the country, the population’s low levels of health literacy, and a long-lasting government credibility problem in the country make Brazil’s fight against these types of diseases considerably difficult. This study presents the concepts of collective efficacy and shared responsibility and recommendations for risk and crisis communications practitioners as well as government agencies with regard to engaging the population in managing this type of disease outbreak. Knowledge about how to generate and share strategic communication of this nature is increasingly important as the spread of novel diseases is increasing in frequency and intensity (Kilpatrick & Randolph, 2012).

**Summary**

The Zika virus is a disease transmitted primarily by the *Aedes aegypti* mosquito. This mosquito is considered by the European Center for Disease Prevention and Control (ECDC, n.d.) as one of the most common mosquito species on the planet. It uses natural and artificial water-holding containers (e.g., tree holes, used tires, flower pots) to lay its eggs (CDC, n.d.). The fact that the *Aedes aegypti* mosquito uses water containers to breed is a particular challenge for Brazil, due to the country’s social, political and economic characteristics.
The first cases of Zika in Brazil were identified in 2015. However, the association between the Zika virus and microcephaly (WHO, 2016) brought a new sense of urgency to the management of this disease outbreak in the country (WHO, 2016).

This crisis offers insight into the study of instructional risk and crisis communication. Specifically considering the aim of engaging the population and sharing the responsibility of minimizing the spread of the disease. This study examines the communication demands posed by Zika and analyses the campaign used by the Brazilian government to instruct and engage the publics.
CHAPTER TWO
LITERATURE REVIEW

Organizations or institutions can and should learn from previous crises because this learning process is essential for responding to new crises that emerge over time. The possibility of remaining resilient in responding to crises is much less likely without learning from previous crisis events (Argyris, 1982; Veil, 2011; Sellnow & Seeger, 2013). During the fight against Dengue, Brazil started using instructional communication to inform and engage the population in the fight against the disease. The messages were crafted aiming at inviting the population to be part of the solution and act to protect themselves, their loved ones and their communities against the mosquito that causes Dengue and Zika (Aedes Aegypti). This strategy was then used when the country faced the challenge of communicating about Zika. In order to effectively analyze Brazil’s communication strategy on dealing with the Zika virus, an understanding of organizational learning and instructional risk and crisis communication is crucial.

Organizational Learning

Some crisis communication strategies can lead to change in attitudes and behaviors. In many cases, however, organizations fail to take advantage of the crises they experience. Veil (2011) argues that a shock to an organization is needed so that the persistent use of a problematic routines can stop. From the perspective of organizational learning theory, crisis creates a period of awareness that often leads to change (Sellnow & Seeger, 2013). There are three general stages encountered through this learning process: experience, meaningful change and healing.

When experiencing a crisis, an organization can evaluate its performance and procedures to adapt and fortify its resilience. This experience can be derived both directly and indirectly.
Direct experience is when the organization faces the crisis from its origin to the post-crisis recovery stage (Sellnow & Seeger, 2013). The organization needs to accept and face the crisis, confronting risks and errors as part of that journey. These are some of the factors that will lead to meaningful changes in the organization. However, learning and changes are not guaranteed simply based on the organization’s failure. Successful crisis management cannot ensure that similar problems will not happen in the future. Organizations must, therefore, be engaged in a process of recognizing and correcting errors that preceded the crisis (Argyris, 1982).

The learning process is not restricted to when the organization faces the crisis directly. Companies or institutions also can learn by observing other organizations indirectly as they experience crises. This indirect or vicarious experience allows the observer to adopt successful strategies that may enable their companies to avoid similar crises. Meaningful changes happen when the errors observed through experiencing crises are analyzed and, then, become lessons shared throughout the organization, inspiring changes in procedures (Popper & Lipshitz, 2000; Veil 2011).

Some key aspects of organizational learning, detailed above, are particularly relevant for analyzing Brazil’s response to the Dengue and Zika virus outbreaks: Organizations can and should learn from previous crises, this learning is essential for responding to new crises that emerge over time, and without learning from previous crisis events, organizations are much less likely to remain resilient in responding to crises (Argyris, 1982; Veil, 2011; Sellnow & Seeger, 2013). Focusing on organizational learning provides a means for better understanding the influence the previous Dengue response has had on the current strategies for managing the Zika virus.
Instructional Risk Communication and the IDEA Model

The need for specific instructional messages during times of crises is directly related to the disaster warning research (D. Sellnow, Lane, T. Sellnow & Littlefield, 2017b). Mileti and Peek (2000) state that the content of a warning message must contain information on what the publics should do for self-protection. T. Sellnow and D. Sellnow (2010) assert that instructional communication covers all messages sent and received with the purpose of teaching and learning. Currently, scholars consider that “learning can only be measured accurately by considering comprehension, retention and application” (T. Sellnow and D. Sellnow, 2010, p. 121). This concept derives from Dewey’s (1938) research, stating that learners must know, do and reflect. Thus, T. Sellnow and D. Sellnow (2010) contend that in crisis situations, effective instructional messages must follow the entire learning cycle.

For D. Sellnow et al. (2017b) message absorbing is measured based on comprehension, relevance and performance. Specifically for crises involving health concerns, T. Sellnow and D. Sellnow (2010) consider that the communication leaders must “embrace the instructional dynamic of risk communication” (p. 113). Consequently, instructional communication regarding health-related issues should include information about the threat itself, its relevance to the publics and information on how to avoid or prevent it (Frisby, Veil & Sellnow, 2014).

The IDEA Model for effective instructional risk and crisis communication was conceptualized by T. Sellnow and D. Sellnow (2010; 2011 & 2013) for the design of accurate and effective instructional risk and crisis messages. Since its conceptualization, the model has been applied in a variety of research studies of risk and crisis communication (e.g., Frisby, et al., 2014; Littlefield et al., 2014, D. Sellnow, Iverson & T. Sellnow, 2017a; Sellnow, Johansson,
Sellnow & Vigso, 2016). The framework is simple and practical, covering not only the informational aspects but, also, the internalization and actions as a result of the messages (see Figure 1).

Figure 1: IDEA Model

The ‘I’ in the IDEA model stands for Internalization or the means to gain and keep audience attention by highlighting personal relevance and potential impact on them. This notion of relevance can be influenced by culture, as people can understand differently what can or cannot affect them based on their cultural influences. These influences can cause publics to react differently to risk messages (Sellnow, Ulmer, Seeger & Littlefield, 2009). Distribution (‘D’) relates to the appropriate mix of channels to deliver the messages (e.g. social media, TV, posters etc.). The ‘E’ of the model covers the explanation or the way the messages are crafted to inform the audience in ways that are both accurate and comprehensible. The ‘A’ stands for specific action steps audience members should take (or not take) to protect themselves from the risk prior to its onset or during the actual event.
For Wrench (2007), instruction is pertinent to all aspects of risk and crisis communication studies and applications. Specifically with regard to the warning messages literature, Mileti and Sorenson (1990) found that if the messages are understandable, believable and personalized, the publics will be more likely to respond and take action. This conclusion corroborates the elements of the IDEA Model, specially Internalization, Explanation and Action.

Other scholars who found similar conclusions were Petty and Wegener (1998). They correlated the motivation to respond to a message with the perceived significance of it to one’s personal well-being. This, likewise, supports the concept of internalization, or the awareness of the potential impact on the publics.

The concept of self-efficacy is also relevant to this study as it relates to the idea of “executing the behavior required to produce the [desired] outcomes” (Gordon, 2003, p.1287). This study analyzes the communication practices used to respond to the Zika crisis in Brazil, and how the authorities crafted the messages to turn instruction into action.

Brazil fought Dengue for decades before addressing Zika in 2015. The learning acquired during the Dengue outbreaks was important for the continuing use of instructional communication messages. The link between Zika and microcephaly was a new element that brought considerable concern and complexity to the situation.

This study analyzes how the country managed this crisis, focusing specifically on how the communication strategy took advantage of the utilization of instructional communication to inform and engage the publics, educating about symptoms, treatments, procedures, possible ways to get infected and actions to prevent, amongst other subjects. This study expands the literature
by exploring how instructional messages can lead publics to manage their own personal environments.

**Research Questions**

Based on the communication needs created by Zika in Brazil and the existing literature on instructional risk communication, the following two research questions are posed for this study:

RQ1: To what extent were elements of the IDEA model present in the 2016/2017 Zika campaign materials developed by the Brazilian Ministry of Health to communicate with publics?

RQ2: How did the 2016/2017 Zika campaign materials resonate with the publics according to the perceptions of those who were utilizing them to gain compliance?

**Summary**

Organizations or institutions can and should learn from previous crises because this learning process is essential for responding to new crises that emerge over time. This is one of the main elements of the organizational learning theory (Sellnow & Seeger 2013). As the authors consider that crises create a period of awareness that often leads to change, focusing on organizational learning provides a means for better understanding the influence the previous Dengue response has had current strategies for managing the Zika virus.

The IDEA Model for effective instructional risk and crisis communication was conceptualized by T. Sellnow and D. Sellnow (2010; 2011 & 2013) for the design of accurate and effective instructional risk and crisis messages. This study applies the IDEA model as a framework to analyze how the 2016/2017 Zika campaign took advantage of the utilization of
instructional communication to inform and engage the publics, educating about symptoms, treatments, procedures, possible ways to get infected and actions for prevention, amongst other subjects. This study expands the literature by exploring how instructional messages can lead publics to manage their own personal environments.
CHAPTER THREE
METHODOLOGY

This study applies the case study method to analyze how Brazil responded to the Zika virus. Specifically, the study assesses how Brazil’s communication strategy incorporated instructional communication to inform and engage the various at-risk publics. Gomm, Hammersley and Foster (2000) describe case study as a research method that is driven by the kind of data collected and the type of analysis. Most often, the data are unstructured and qualitatively analyzed. Another important characteristic is that, due to the case uniqueness, case studies are not in and of themselves generalizable. The authors also highlight the narrative approach to case study as a method, rather than a process of analyzing variables.

Scholars and practitioners in public health have frequently used case studies as an effective approach to research (Rogers, 2003; Tuschman & Anderson, 1997). Moreover, case studies are a valuable tool for analyzing real risk and crises events (Sellnow et al., 2008).

Another dimension making the case study method fitting for this study is the capacity to include multiple sources of information when describing a real-life context or situation. These sources can include newspapers, websites, social media sites, interviews and personal interpretations (Sellnow et al., 2008). Furthermore, as Littlefield, Reierson, Cowden, Stowman & Feather (2009) stated, case study is an appropriate method “due to its capacity to explore, describe, and explain the dynamics of a crisis situation” (p. 366).

This study applies the case study method to analyze Brazil’s application of instructional communication in their risk and crisis communication about the Zika virus. In doing so, the presence of this concept is described, interpreted, and evaluated in an effort to answer the following research questions:
RQ1: To what extent were elements of the IDEA model present in the 2016/2017 Zika campaign materials developed by the Brazilian Ministry of Health to communicate with publics?

RQ2: How did the 2016/2017 Zika campaign materials resonate with the publics according to the perceptions of those who were utilizing them to gain compliance?

Data Set

To present and analyze this case study, materials (7 printed ads/posters, 3 TV spots and 2 radio spots) produced by the Brazilian Ministry of Health during the 2016/2017 campaign were collected and analyzed. The campaign took place during the months with the highest incidence of rain in the country, from November 2016 to April 2017. The printed materials were distributed by the Federal Government through a joint effort of the States Secretaries of Health and Education, who could download the materials from the Ministry of Health website and print locally. Some adaptations could be done locally, if appropriate. The TV and radio spots were advertised through national broadcast, internet and social media. Additionally, a network of more than 1 million administrators and teachers in the public education system was asked to communicate these messages. The materials were distributed by all states in the country (Brazil Ministry of Health, 2017). The Ministry of Education considered this communication effort the largest mobilization in the history of the public education system in Brazil. The program covered more than 4.2 million students in 11,300 schools in the country, besides direct distributions in communities all over the country (Brazil Ministry of Health, 2017). Spontaneous media was also a key complementary distribution channel to the campaign. Morning shows and local news programs reproduced the themes of the campaign in a very frequent and intense manner (M.
In addition to the campaign materials, the study also includes interviews with two Brazilian State Representatives responsible for managing disease control and prevention within their regions. Additionally, a Federal Communication official from the Ministry of Health was interviewed. The interviewees were intentionally selected to cover the experiences and perceptions of representatives from two states with high incidence of both Dengue and Zika. Furthermore, the third interviewee was invited to provide insights from the perspective of one involved in the development of the campaign. These interviews are intended to provide context for the messages distributed to Brazil’s publics and to share their perception about the effectiveness of the messages. IRB approval for these interviews was obtained (Appendix C). The translation method for these interviews is described below in the section dedicated to procedures.

The interview questions are as follows:

1. How long have you been dealing with Dengue and Zika? When you think about Dengue and Zika, what comes to your mind?

2. To what extent do you think that what the State has learned from Dengue was helpful on the fight against Zika? Please explain.

3. What was the importance of instructing the population about the aspects of the diseases?

4. What were the most effective channels to distribute the messages?

5. How could this understanding help engaging the population in helping prevent the spread?
6. Do you believe that instruction has turned into action? Why or why not?

7. What are the key elements that can make the population engage in the fight against the disease?

8. What do you think the State could have done differently?

9. What were the most successful actions / campaigns the State has implemented? Why?

10. What would be the score of the population from 0-100, with 100 being their complete understanding about the risks of these diseases?

11. What would be the score of the population from 0-100, with 100 being their complete engagement on the fight against the diseases?

12. To what extent do you believe that there is a sense of shared responsibility between the population and the government?

The interviews provide further context for interpreting the content of the materials. Specifically, the interviews reveal the degree to which these Brazilian officials believe the messages have been successful.

**Procedure**

To complement the information gathered from different sources to develop this case study, the campaign materials were also thematically coded using an etic approach (Lindlof & Taylor, 2011). This process can be used when there is substantial research in a specific field. An etic approach uses established “conceptual categories provided by our disciplinary knowledge and theory” (p. 95). This study investigates the presence of each of the four categories of the IDEA model: Internalization, Distribution, Explanation and Action in the content of the campaign materials produced by Brazil’s Ministry of Health and the perception of the
effectiveness of the message by some of the persons who utilized the messages to gain compliance.

The campaign materials were originally in Portuguese. Translation to English was made by the author. Back translation to Portuguese was made by a certified bilingual instructor of English as a Second Language, who confirmed accuracy. Additionally, nonprofessional bilingual (Portuguese and English) speakers confirmed the understanding and convergence of the messages in both languages.

Sellnow-Richmond, George and Sellnow (2018) conducted the study entitled, *An IDEA Model Analysis of Instructional Risk Communication in the Time of Ebola*. The researchers used a codebook to thematically analyze instructional messages considering the elements of the IDEA model. For this study, due to its similarities with the Sellnow-Richmond, et al. (2018) analysis, an adapted version of their codebook (Appendix B) was used. Two independent coders reviewed the data. The coders determined the presence of each of the IDEA model categories in the campaign content. Since the way the messages were distributed (the “D” of the IDEA model) has been described in the Data Set section of this study, this category was not coded. Thus, the coders focused only on the presence and absence of the message content elements of internalization (“I”), explanation (“E”) and action (“A”). A specific consideration of the analysis was the inclusion of the “Other” category. Elements of the texts that could not be considered as Internalization, Explanation or Action were identified as “Other.” This category included mainly campaign taglines, sentence connectors and other pieces of content that were repeated throughout the materials.
After a training session the coders received copies of the printed materials and colored pens to mark the presence of the categories in each sentence. Radio and TV spots were provided in both printed (transcripts) and electronically (audio/video files with English subtitles). During the coding meeting very few disagreements occurred. All disagreements were resolved through discussion.

This study’s objective is to analyze the presence of the IDEA model categories in the communication campaign content. The analysis of visual aspects of the materials was not included in this study.

Summary

This thesis applies the case study method to analyze the crisis Brazil has experienced while managing the Zika virus. The analysis is based on materials from the 2016/2017 Zika campaign that were thematically coded to give structure to the analysis. Moreover, interviews with government representatives provide further context and interpretation to the analysis. This investigation aims at verifying to what extent the elements of the IDEA model are present in the messages and how effective were these messages based on the perception of some of the ones who developed or implemented the campaign.
CHAPTER FOUR
RESULTS AND DISCUSSION

This chapter presents the results and discussion based on the following research questions:

RQ1: To what extent were elements of the IDEA model present in the 2016/2017 Zika campaign materials developed by the Brazilian Ministry of Health to communicate with publics?

RQ2: How did the 2016/2017 Zika campaign materials resonate with the publics according to the perceptions of those who were utilizing them to gain compliance?

Each message from the 2016/2017 Zika campaign produced by the Brazilian Ministry of Health was thematically coded to determine the presence of Internalization, Explanation and Action. Furthermore, three interviews were conducted with government health authorities in Brazil at a State and Federal levels.

As the campaign used a mix of media types (printed ads, flyers, video and radio spots), the coding results were combined per the type of media (print and audio/visual) and then, altogether as a campaign. This was done as the analysis presented different levels of detail and tone in the content, depending on the type of media.

Printed Materials

Sentences or expressions within the printed materials totaled 72 units. A unit was defined as complete statement, sentence or paragraph, within the materials. For example, a sentence in a printed ad that says: “Clean the water containers weekly, inside and outside, using a brush and soap” was counted and coded as one unit.
Table 2: Results – Printed Materials

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>%</th>
<th>EXCEPT &quot;OTHER&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>72</td>
<td>100%</td>
<td>56</td>
</tr>
<tr>
<td>Internalization</td>
<td>8</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Explanation</td>
<td>15</td>
<td>21%</td>
<td>27%</td>
</tr>
<tr>
<td>Action</td>
<td>33</td>
<td>46%</td>
<td>59%</td>
</tr>
<tr>
<td>Others</td>
<td>16</td>
<td>22%</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2 shows that the vast majority of units in the printed materials were identified as Action (46%), followed by Explanation (21%) and Internalization (11%). Units of content identified as “Other” represented 22%. Excluding the “Other” category, the results showed Action with 59% of the units, Explanation with 27%, and Internalization with 14%. These results can also be seen below, on Figures 2 and 3.

Figure 2: Printed Materials
Internalization. Internalization was present in the printed materials with messages calling for shared responsibility, or a common sense that a joint effort can bring faster and more meaningful results: “This fight belongs to all of us.” This idea of shared responsibility, where each and every one is responsible to join the effort and do their part in the fight against the mosquito was the main theme in terms of internalization. The emotional aspect of internalization was also present with messages such as: “Many lives are being changed by Dengue, Zika and Chicungunya. These are very dangerous diseases that can lead to death.” These types of messages bring a sense of danger and potential risk to the audiences.

Explanation. Explanation was present, mainly reinforcing the idea that the Aedes Aegypti is the vector of the Zika virus and other diseases. One of the ads instructed the publics about the mosquito cycle: “When the mosquitoes become adults, they start to bite and transmit very dangerous diseases, such as, Zika, Dengue and Chicungunya.” Moreover, the printed materials also presented details about the symptoms of the disease: “The main symptoms are: headache, fever, itching - more intense with Zika - joints, muscles and eyes' pain, red spots and red eyes.” These messages provided a description of the various aspects of the disease, from the characteristics of the mosquito, to the transmission of the disease, its symptoms and treatment.
**Action.** The results clearly show that Action was the most present element of the IDEA model in the messages from the printed materials, followed by Explanation and, finally, Internalization. Actions were presented as a list of steps with the focus on eliminating the mosquito breeders (see Figure 4). “Put the trash in sealed trash bags and keep the trash bin well shut” was one of the measures suggested by a poster. Avoiding water accumulation to eliminate the mosquito breeders was the most present theme in these materials regarding Action. In addition, the printed materials presented actions to be taken if one becomes infected: “You should rest, drink plenty of fluids, specifically the homemade solution made by one liter of filtered water, one teaspoon of salt and one teaspoon of sugar”.

![Image of a poster with a list of procedures to eliminate mosquito breeders](image)

**Figure 4:** Printed material with list of procedures to eliminate mosquito breeders

Furthermore, the concept of collective efficacy or the idea that an action taken by an individual or family can gain scale when combined by others taking the same types of actions, was present in the content with messages such as: “Ask your neighbors to collaborate”, “Cleaning your own house is not enough.”
Audio and Video Materials

Coding of the content from the audio and video campaign materials show the presence of the IDEA model elements in a very balanced fashion. The results also showed a high presence of the “Other” category. This can be explained by the fact that all the audio and video materials used the campaign tagline and hashtag, which was not considered as any of the IDEA model elements. Moreover, one of the videos lasts 2:40 minutes. Because of its long duration, there are many expressions and sentences used as transitions in the script (e.g. Good morning; I am your health agent; You can come in). These content pieces were coded as “Other” making the occurrence of this category more frequent.

Table 3: Results – Audio/Visual Materials

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>%</th>
<th>EXCEPT &quot;OTHERS&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>55</td>
<td></td>
<td>31</td>
</tr>
<tr>
<td>Internalization</td>
<td>10</td>
<td>18%</td>
<td>32%</td>
</tr>
<tr>
<td>Explanation</td>
<td>11</td>
<td>20%</td>
<td>36%</td>
</tr>
<tr>
<td>Action</td>
<td>10</td>
<td>18%</td>
<td>32%</td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>44%</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 3 and Figures 5 and 6 show that Explanation was the most present element (20%), followed by Internalization and Action, both with 18%. “Other” represented 44% of the units coded. When the “Other” category was isolated and only the elements of the IDEA model were totaled, the results also show a very well-balanced distribution: Internalization (32%), Explanation (36%) and Action (32%).
Internalization. The radio and TV spots used proximity and emotional appeal to address internalization. This was done through real stories and real people, instead of actors.

Three TV spots focused on the link between the Zika virus and microcephaly. This was done through a very emotional tone. In one of the spots, a father holds a baby and the narrator explains how a simple mosquito can change a family’s life (Figure 7).
In another TV spot, a health agent visits a woman’s house and brings a person suffering with the consequences of the disease. The infected individual gives a very emotional testimony to alert the house owner to take all possible preventive actions to eliminate the mosquito breeders.

In a third TV spot, a mother describes the moment she found out her son had microcephaly and how she and her husband dealt with that. This type of message sought to raise the awareness of the publics to the danger of this novel disease, that can happen to anyone. That raises the sense of personal relevance, considered as a key pillar of Internalization. Microcephaly and its unknown characteristics scared the population and made them more aware and alert to the messages (M. Turcatto, personal communication, February 14, 2018). Although the exposure to decades of messages about Dengue made the population familiar with the aspects of this type of disease, this new condition triggered a readiness for information. The use of emotion and real cases in the campaign helped to drive the messages in that direction.

The concept of shared responsibility was also present in the audio and video materials. The idea that government and the publics can and should act together could be heard, for
example, in a radio spot narrated by a health agent: “Guys, there is only one way my job can be done: with your participation”.

**Explanation.** Complementing the printed materials, some of the audio and video pieces provided detailed explanations about the symptoms of the disease and the mosquito cycle, reinforcing that it is the main vector of this type of disease. To understand that taking preventive actions in everyone’s houses and apartments has a powerful impact on the fight against this disease, one of the films presented an accelerated view of the mosquito cycle. In one minute, the video shows the transformations that happen from day one to the tenth day of the cycle. It emphasizes how fast the mosquitoes grow in still water, from the larvae stage to becoming an adult mosquito (see Figure 8). This vivid explanation was an important complement to the action steps provided in the other audio, video and printed materials.

![Figure 8: Frame of the “Mosquito Cycle” spot](image)

A radio spot presented a health agent as the narrator, detailing to the audience the main symptoms of the disease: “I ask you to pay attention to the main symptoms of Dengue, Zika and Chicungunya: fever, red spots all over your body, headache, pain in the joints, muscles and eyes. Specially with Zika, a very intense itching.”
**Action.** Action was presented in the audio and video materials both by addressing what measures an infected person needs to take and, also, by providing simple procedures that can be implemented at home to eliminate mosquito breeders. Some of the messages were direct, such as: “If you have any of these symptoms, please see your healthcare provider,” whereas others recommended a more detailed action to be taken: “Always clean the air conditioning tray to avoid water accumulation” or “If your drain cannot be sealed, use a drain screen to avoid the mosquito to access the water.”

The health agents were key characters of this campaign. In the radio and TV spots, specifically, they spoke directly with the population, reinforcing that publics can act jointly towards collective efficacy: “Check your backyard and ask your neighbors to collaborate”.

**Summary: All Materials Combined.**

Table 4: Results - All Campaign Materials

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
<th>%</th>
<th>EXCEPT &quot;OTHER&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units</td>
<td>127</td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>Internalization</td>
<td>18</td>
<td>14%</td>
<td>21%</td>
</tr>
<tr>
<td>Explanation</td>
<td>26</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Action</td>
<td>43</td>
<td>34%</td>
<td>49%</td>
</tr>
<tr>
<td>Other</td>
<td>40</td>
<td>31%</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 and Figures 9 and 10 showed that when all materials were coded together, regardless their media type, the results presented 34% of the units coded as Action, followed by Explanation (20%) and Internalization (14%). “Other” represented 31% of the cases. When the “Other” category was excluded, the frequency of Action went up to 49%, while Explanation resulted in 30% and Internalization, 21%.
**Internalization.** In the IDEA Model, Internalization translates into messages of personal relevance and potential impacts of the risk. A total of 21% of the messages from Brazil’s 2016/2017 Zika campaign showed elements of internalization, excluding the “Other” category.

This campaign expressed personal relevance through two main strategies: real-life emotional examples and an emphasis on shared responsibility to reach the audiences and trigger action. The messages addressed the notion that the authorities cannot win the fight against the mosquito by themselves. If each family did not act, the effort would be unsuccessful. Messages such as: “Be part of this fight.”, “This fight belongs to all of us” were used to address the idea of shared responsibility. A. Chieppe (personal communication, October 18, 2017) mentioned that
microcephaly reinforced the idea that each pregnant woman or their families should take care of their own environment, eliminating the mosquito breeders, and influencing the neighbors to do the same.

Internalization was the IDEA model component with the lowest percentage of presence in the campaign messages (21%) when compared with the other two elements analyzed: Explanation and Action. This can be supported by the fact that the publics have been exposed to messages about Dengue for decades and already knew the risks and characteristics of diseases caused by the *Aedes Aegypti* mosquito. Although microcephaly has brought a new component to this crisis, most of the basic information about the risks and personal relevance have already been used in the past Dengue campaigns. Therefore, we can assume that lessons learned from Dengue inspired this campaign’s emphasis on Explanation and, mainly, Action.

**Explanation.** Explanation is the element of the IDEA model that relates to both accuracy and comprehension of the messages. Most of the pieces of content coded as Explanation covered the description of the new aspects of Zika, complementing previous knowledge of the population about Dengue. Again, microcephaly was relevant, as the campaign materials needed to address a new and critical component of the disease. Moreover, many of the aspects that are common between Zika and Dengue were also addressed, mainly because it is critical to keep educating the population who, as previously stated, has a low level of literacy.

The information that Zika can also be transmitted person to person is a weakness of this campaign from the explanation standpoint. Only one printed piece (Figure 11) covered the subject. M. Turcatto (personal communication, February 14, 2018) revealed that some internal
discussions within the Ministry of Health departments delayed the decision about including more messages addressing this critical matter.

Figure 11: Zika Can Be Transmitted Through Sexual Relations

**Action.** The main objective of this campaign was to engage the publics to fight against the mosquito that causes the Zika virus, by implementing day to day actions in everyone’s houses and apartments and influencing others to do the same. The messages covered detailed measures that are easy to be implemented. “Eliminate the breeders” was a call to collective efficacy present in all the materials. In many of the materials, a step by step guideline was provided, educating the publics about what exactly they need to do to minimize the risk by preventing the mosquito to breed. Almost half of all messages coded related to some sort of procedure or measure the publics could implement to either prevent the mosquito from breeding or seeking treatment in when one is infected.

**Spontaneous media.** A key element in this campaign was the role of spontaneous the media in the process of educating and engaging the population about actions for preventing the spread of Zika. The amount of spontaneous media disseminating these messages was much
higher than what the Ministry of Health or the State Secretaries of Health could have afforded to buy via advertising or other forms of publicity (M. Turcatto, personal communication, February 14, 2018). The morning shows and other TV and radio programs targeted at the general population played a key role in sending the messages in a very comprehensible way and complemented the initiatives already being taken by the official channels.

**Interviews**

This study included interviews with two Brazilian State Representatives responsible for managing disease control and prevention within their regions and a Federal Communication official from the Ministry of Health. These interviews are intended to provide context for the messages distributed to Brazil’s publics and to share their perceptions about the effectiveness of the messages.

M. Turcatto is a Communications Officer in the Brazilian Ministry of Health. She has worked with health campaigns and related contents since 1999. During the interview, she mentioned how devastated families were when their children were born with microcephaly as a consequence of Zika. Some of the families self-organized as Non-Governmental Organizations (NGOs) to pressure the authorities at all levels to provide resources to children with microcephaly. They understood how critical the situation was and got the attention of the authorities. These authorities eventually provided services such as, physiotherapy, transportation and some changes to public policies related to this novel condition. Turcatto believes this movement was a great example of a bottom-up movement that created meaningful changes (M. Turcatto, personal communication, February 14, 2018).
Another common outcome from the interviews is that social mobilization is a key component of a comprehensive communication strategy to fight these types of disease. “To mobilize, the publics need information. We need to have something happening that triggers the engagement” (M. Turcatto, personal communication, February 14, 2018). Turcatto also believes that the discovery of the link between microcephaly and the Zika virus acted as a critical event for this crisis communication process and influenced the campaign development and the consequent reaction from the population.

Another significant finding in the interviews is the distinction between understanding the action that needs to be taken and transforming this knowledge into concrete preventive recommendations for the citizens. H. Javi is the Secretary of Health of the State of Ceará. During his interview, he noted how people in his state know that they need to take action to eliminate the mosquito breeders, but most of the time they rely on the public sector to help, creating a collective inertia. The campaign helped reinforce the message that each family needs to do their part, independent of the behavior of the neighbors. H. Javi advised that families should be leaders in their community by engaging in model behavior to fight the disease, independently of the behavior of the neighbors (H. Javi, personal communication, January 4, 2018). That distinction between having the awareness of their responsibility and turning it into action was mentioned in all the interviews conducted.

A. Chieppe, Sub-Secretary of Health Surveillance of the State of Rio de Janeiro clarified that there is a general understanding that the government must lead by example with regard to the preventive measures. He thinks that a negative example from the public sector, such as still water in a public building, a public swimming pool without the proper treatment, etc., can cause
a reactive behavior in the population in the form of inaction. Thus, Mr. Chieppe emphasized the need for the government to be exemplary in their preventive efforts—without exception (A. Chieppe, personal communication, October 18, 2017).

Similar logic happens with regard to the behavior of neighbors. Some families understand that their effort will not be enough if the neighbors are not taking the same measures. The idea of shared responsibility is understood but not taken into full effect thus far.

Based on the analysis of the results and the interviews, some accomplishments and challenges could be identified. For example, interviews show that the publics already have an understanding of the essential information about the disease, which can be considered as an accomplishment. This does not mean that elements of explanation in the messages should not be addressed. Rather, the interviewees emphasized that such information should be reinforced to maintain the level of understanding.

Although the publics have the knowledge and understanding of the actions that need to be taken, some cultural barriers sometimes do not allow this knowledge to become real action. For example, many families rely on the health agent who visits the houses during the peak season of the disease. They understand that if someone with a government mandate will enter their homes, they should wait for them to point where they should act, instead of acting themselves in advance.

Two questions were asked at the end of the interviews: What would be the score of the population from 0-100, with 100 being their complete understanding about the risks of these diseases? What would be the score of the population from 0-100, with 100 being their complete engagement on the fight against the diseases?
The first question about the level of understanding had a much higher average score (86.7) than the second, which asked about the level of engagement on the fight against the disease (53.3). However, Turcatto (personal communication, February 14, 2018) made an interesting comment when speaking about the level of engagement. She considers that during the peak of the disease season the level of engagement is much higher, and this happened even more with Zika, due to all the unknown and intimidating new characteristics of this disease. Javi (personal communication, January 4, 2018) stated, “the citizen needs to understand his/her role as an integral part of the health chain and this has to be permanent, not only during peak seasons”.

**Summary**

Through the perceptions of public officials dealing directly with these types of diseases, these interviews provided a general context for the messages distributed to Brazil’s publics during the 2016/2017 Zika campaign. The interviewees agreed that although in some cases instruction has become action, and some improvements, like the reduction of the number of mosquito breeders in residences has happened, there is still room for improvement and communication is a key component of the fight against these diseases.

Furthermore, based on the interviews, we can assume that the inclusion of elements of internalization, explanation and action in the messages was intentional, especially after the link between microcephaly and the Zika virus was proven. The interviewees highlighted the importance of talking about the relevance and danger of the disease (Internalization), the details about the contamination, the vector and its cycle (Explanation) and mainly, what actions can be taken collectively for self-protection (Action).
CHAPTER FIVE
CONCLUSION

This study examined all materials of the 2016/2017 Zika Campaign developed by the Brazilian Ministry of Health. The campaign was developed and launched with the aims of informing and engaging the population in the fight against the disease. The IDEA Model (T. Sellnow & D. Sellnow, 2010; 2011 & 2013) was used as the theoretical grounding for the analysis of the campaign materials. The results give insightful conclusions and contributions to crisis communications practitioners as well as government agencies with regard to engaging the population in managing this type of disease outbreak.

Internalization

The analysis showed the critical impact that the proven link between microcephaly and the Zika virus brought to the tentative engagement of the population. The use of real people and stories in the campaign materials was intentional and sought to create a sense of empathy, making the potential risk message a key element of the content (M. Turcatto, personal communication, February 14, 2018). The use of fear as one of the components of the messages is also perceived as a strategy to move the population from instruction into action. These elements were identified in the campaign materials and coded as Internalization. The materials showed real cases of people facing the tragedy of microcephaly, bringing the sense of urgency through the imminent risk and threat.

Javi (personal communication, January 4, 2018) considers that empathy is a key element in this type of campaign: “People need to see themselves. Regular people. Not only specialists.” The emotional appeal of situations that can happen to anyone was considered by the interviewees as a powerful characteristic of this campaign.
Furthermore, the concept of shared responsibility, or a common sense that a joint effort between the government and the population can bring faster and more meaningful results than individual actions, was present in messages inviting the population to act together: “This fight belongs to all of us” was a highlight of one of the printed ads.

Frisby, et al. (2014) considered that instructional communication regarding health-related issues should include information about the threat itself, its relevance to the publics and information on how to avoid or prevent it. This study sees the explanation of threat on a community level where everyone’s efforts are essential. A single failure by home owner or public official could exacerbate mosquito breeding.

**Explanation**

Organizational Learning theory states that organizations or institutions can and should learn from previous crises and this learning is essential for responding to new crises that emerge over time (Argyris, 1982; Veil, 2011; Sellnow & Seeger, 2013). When considering these theoretical assumptions, we can see an interesting trend in the Action recommendations summarized in the results of this study. Specifically, messages about actions were more prevalent than explanations about the disease. Previous research identified a greater emphasis on Explanation than any of the other IDEA model categories (Frisby, et al., 2014). The long-lasting Dengue crisis may have helped the publics understand the characteristics of the disease, which might have influenced this campaign messages to focus more on Action. A. Chieppe (personal communication, October 18, 2017) corroborated this assumption by mentioning that “a significant part of the population already has a knowledge about these diseases, the mosquito and its habits. This does not necessarily translate into action, but I can indicate that the level of
knowledge is high.” Learning from decades of Dengue might have influenced how the messages were crafted for this campaign, as the level of awareness was already higher than the understanding of how each person could help in fighting the mosquito. This observation might explain or justify why Action appeared more frequently among the elements of the IDEA model in the printed materials.

This assumption that the publics in Brazil had a clear understanding of Zika was also confirmed in a qualitative study coordinated by the Ministry of Health and conducted in April 2016. Thirteen focus groups sought to identify the levels of awareness of the population with regard to the various characteristics of the diseases, their understanding of how serious the diseases were, and what would be some of the leverages for action (M. Turcatto, personal communication, February 2, 2018). Almost the totality of the sample in that study showed a very high level of understanding of the aspects of the diseases – transmission, symptoms, treatment, prevention. Furthermore, the results showed comprehension of their role in fighting the mosquito. Nonetheless, the participants admitted they were not taking the appropriate actions. This study served as an important purpose by providing additional understand the role messages focusing on specific actions can play future campaigns.

**Action**

Action was the most prevalent element of the IDEA model in the campaign materials.

Information about how to avoid and prevent risks is a pivotal element of the IDEA model. This campaign focused its messages on specific actions necessary for preventing the disease from spreading (“You can fill this manhole with bleach”, “If you fill these vases with sand, you avoid water accumulation.”). Language and tone used simplicity and proximity to
educate about the necessary actions. A valid assumption is that these messages, combined with the emotional aspects of the campaign (Internalization) and the instructional messages about the disease, its vector, symptoms and treatment (Explanation) can address what Mileti and Sorenson (1990) considered as the crucial elements that prompt the publics to respond and take action: messages that are understandable, believable and personalized. Furthermore, The Zika case expands our knowledge of self-efficacy (Gordon, 2003) to include the broader concept of community or collective efficacy. With collective efficacy, the expected behavior is a collaborative one, where each individual should influence the others to participate and do their parts.

**Practical Applications**

Three final lessons from this study can be adapted into practical applications for crisis communications practitioners and government officials dealing with disease outbreaks.

Lesson 1: The understanding about what actions need to be taken and how to take them will not necessarily lead to the prescribed behavior. Cultural traits can influence how publics behave, especially when requested to act collectively. This potential cultural gap needs to be considered and addressed when planning a campaign. The idea of collective efficacy can expand the understanding of Action within the IDEA model. Part of this expansion, however, must be to comprehend potential cultural limitation in calling an entire community to action.

Lesson 2: Social mobilization and other engagement strategies should be combined with the campaign materials to trigger true commitment and participation. Events, joint efforts, and other tactics can be used to induce participation.
Lesson 3: Previous learning and awareness about the disease is helpful but, at the same time, potentially problematic. Crisis communication officers must not take for granted previous exposure to similar messages and should always include detailed and easy to understand explanations about the aspects of the disease and the risks involved. Argyris (1982) considers that organizations must be engaged in a process of recognizing and correcting errors that preceded the crisis. Brazil faced a long-lasting Dengue crisis and took advantage of the learning process, however, the exposure of the publics to similar messages may have created a process of desensitization. The potential for desensitization was, to some extent, diminished by the highly emotional message from families whose children suffered from microcephaly. Practitioners can enhance the internalization of their messages through such explanation of how the current threat is a departure from risks that have been addressed in the past. This adds a new element to Organizational Learning theory that should be considered by risk and crisis communication researchers and practitioners.

Limitations and Suggestions for Future Research

This study has some clear limitations. First, it only covered one campaign cycle. Brazil has been launching engagement and awareness campaigns about Dengue and most recently Zika annually. Restricting the study to just one cycle clearly limited the conclusions drawn from the study. Future research could cover more than one cycle, so a comparison and evolution of the communication strategy can be done.

Another limitation is the fact that the thematic analysis that complemented this case study focused on content only. Visual aspects were not considered at this time and could have contributed to the overall investigation.
The presence of the “Other” category was another important component of this study. Pieces of content that could not be coded as Internalization, Explanation or Action were coded as “Other.” These were mainly transitions and content connectors within the texts. Moving forward, a deeper analysis of this category might add value to the whole understanding and application of the IDEA model.

A final limitation is that the real impact and results of the campaign were not fully measured. The focus of the study was to identify the presence of the elements of the IDEA model in the campaign materials and analyze the effectiveness based solely on the perceptions of the persons who implemented the campaign. Applying a different method which could measure message comprehension and actions taken by Brazilian citizens. Adding such a dimension in the future is particularly relevant considering the perceptions of the specialists interviewed for the study. All interviewees agree that some degree of a gap remains between what the publics learn and understand about the actions that need to be taken and the actual implementation of these actions. For example, M. Turcatto (personal communication, February 14, 2018) stated, “They know their responsibility. They know they need to do their part. However, there is still a gap between the understanding of shared responsibility and really turning it into action.”

Besides considering and investigating the impact of the campaign to the overall results of the Ministry of Health with regards to preventing the disease outbreak, future research could also consider Fear Appeals (Janis and Feshbach, 1953) as a theoretical grounding to analyze the messages and visual elements of the campaign. Another opportunity would be considering microcephaly as a Focusing Event (Wood, 2006) for this crisis process and investigate how it influenced the message development and understanding.
The IDEA model provides an insightful framework to support the development of meaningful and effective instructional messages. Due to the importance of the media as a supplemental tool to this campaign, future research could cover how the IDEA model can be considered as a facilitating instrument to connect Government agencies, Advertising providers and the Media, so the messages are cohesive and aiming at reaching shared goals.

Finally, this study extends the existing content and thematic analyses research using the IDEA model as a theoretical framework. So far, most of the studies based on cases in the United States found that the main focus of the messages has been on Explanation (Sellnow, et al. 2017b). The results of this study, showing Action as the element with more presence in the messages bring a new development to the theory with potential international considerations.

Conclusion

This study presents an analysis of the 2016/2017 Zika campaign, developed by the Ministry of Health in Brazil. T. Sellnow and D. Sellnow (2010) consider that in crisis situations, effective instructional messages must round the entire learning cycle. This case study gives us a vivid example that shows how internalization, distribution, explanation and action can function to result in personal risk reduction strategies. The concept of collective efficacy and shared responsibility on managing crises that demand a joint effort expands the literature and brings an important new element to the study of risk and crisis communication.
APPENDIX A
CAMPAIGN MATERIALS
All these materials and the video spots previously presented are public and were downloaded from Brazil’s Ministry of Health Website at http://portalms.saude.gov.br/campanhas/26475-mosquito-nao
Elimine os criadouros do mosquito transmissor da dengue, zika e chikungunya.

Um simples mosquito pode marcar uma vida
Um simples gesto pode salvar

Elimine os criadouros do mosquito transmissor da dengue, zika e chikungunya.
Um simples mosquito pode marcar uma vida

Um simples gesto pode salvar
Elimine os criadouros do mosquito transmissor da dengue, zika e chikungunya

Vamos quebrar o ciclo do mosquito

1. O mosquito deseja de 5 a 7 dias antes de desenvolver completamente os estágios de larva e pupa.
2. Quando os mosquitos são adultos, anestesiam e pitem em uma árvore e o Hambúrguer de jardim devido ao vírus da dengue, Zika e Chikungunya.
3. Os principais sintomas são dor de cabeça, febre, vômitos, diarreia, náuseas, mal-estar, fraqueza, cefaleia, dor muscular, dor no corpo e dor no peito.
4. A prevenção é fazer regiões e barras, evitar águas continentais e terceiros e vetores de água.
5. A recomendação é fazer regiões e barras, evitar águas continentais e terceiros e vetores de água.
ELIMINE OS CRIADOUROS DO MOSQUITO
transmissor da dengue, zika e chikungunya.

Proteja a sua família, verifique o seu quintal e peça para os vizinhos colaborarem. Não basta só seu casa estar limpa. Essa luta é de todos nós.

Um simples mosquito pode marcar uma vida. Um simples gesto pode salvar.
Um simples mosquito pode marcar uma vida

Um simples gesto pode salvar

Nunca vimos outro marcar pelo dengue, zika e chikungunya. Não é apenas outro grano que pode ser nosso, e sim a nossa saúde. É uma questão de se proteger e aprender.

Aprenda a quebrar o ciclo do mosquito

- O mosquito demora 3 a 4 dias para se desenvolver inicialmente no óo do larva. Depois, o inseto vira larva para fazer a sua reprodução e transformar-se em adulto, o que se dá em 7 dias.
- Quando o mosquito fica alheio, começa a cavar e a transformar bombas e telas para viver. Isso não é secreto.
- A principal armação são os donos de casa, que não sabem como se livrar dos insetos, explicam os profissionais. Portanto, é uma morte certa e mais mortes devido ao inseto.
- Os insetos são sempre os mais doces. Isso não é segredo.
- Em algumas áreas, os insetos também devem estudar e entenderem os adesivos.
- Os insetos são sempre os mais doces. Isso não é pânico.

Compartilhe histórias de vidas marcadas por essas doenças.

www.saude.gov.br/combateaedes
SEXTA SEM MOSQUITO
Toda sexta é dia do Mutirão Nacional de Combate

ATENÇÃO EMPRESAS PÚBLICAS E PRIVADAS, ESCOLAS, UNIVERSIDADES, ASSOCIAÇÕES E TODA A POPULAÇÃO BRASILEIRA.

Sexta-feira você tem esse encontro marcado. E, se não puder ser na sexta, escolha o melhor dia da semana. No trabalho, reúna os colegas. Em casa, depois das aninhas ou do expediente, chame os vizinhos. Bastam uns poucos minutos para proteger muitas vidas.

PARTICIPE!

Um simples mosquito pode marcar uma vida
Um simples gesto pode salvar

Elimine os criadouros do mosquito transmissor da dengue, zika e chikungunya.

Conheça histórias de vidas marcadas por essas doenças.

www.saude.gov.br/combateaedes
Translations – Printed Materials

1.
Zika can be transmitted through sexual relations. Use condoms.

Now you have one extra reason to use condom, even during your pregnancy: it will protect you against the sexual transmission of Zika which, besides other complications, can cause microcephaly to newborns. Protect life.

A simple mosquito can change a life. A simple gesture can save it.

2.
#NOtothemosquito

Eliminate the breeders of the mosquito that causes Dengue, Zika and Chicungunya.

3.
#NOtothemosquito

A simple mosquito can change a life. A simple gesture can save it.

Eliminate the breeders of the mosquito that can transmit Dengue, Zika and Chicungunya.

Let's break the mosquito cycle.

1. The mosquito takes 7 to 10 days to develop in still water. Therefore, the best moment to interrupt its complete development is before the 7th day.

2. When the mosquitoes become adults, they start to bite and transmit very dangerous diseases, such as, Dengue, Zika and/or chikungunya.

3. The main symptoms are: headache, fever, itching - more intense with Zika - joints, muscles and eyes' pain, red spots and red eyes. If you have any of these symptoms, immediately find a health center.
4. The recommendation is to rest, drink plenty of fluids, specially this homemade solution: 1 liter of filtered water, 1 teaspoon of salt and 1 tablespoon of sugar.

5. To avoid these diseases to spread, don't let water to accumulate, eliminate the mosquito breeders. Moreover, use condoms because Zika can also be transmitted person to person through sexual relations.

4.

#NOtothemosquito

A simple mosquito can change a life.

A simple gesture can save it.

Eliminate the breeders of the mosquito that can transmit Dengue, Zika and Chicungunya.

5.

Eliminate the breeders of the mosquito that can transmit Dengue, Zika and Chicungunya.

#NOtothemosquito

Keep the water barrels shut.

Clean the water containers weekly, using brush and soap inside and outside.

Keep the water container well shut. Block the overflow pipe.

Remove leaves, sticks and everything that can block the water flow through the rain gutter.

Don't allow water to accumulate over your roof.

Put sand in all plant vases' plates.

Another option to the plant vases' plates is to wash them weekly.
Replace the water of the aquatic plants' vases and clean them with brush, water and soap one a week.

Put the trash in sealed trash bags and keep the trash can well shut.

Keep bottles upside down, avoiding water to accumulate.

The pool maintenance must be done using the appropriate chemical products.

If your drain cannot be sealed, use a drain screen to avoid the mosquito to access the water.

Put sand inside any piece of glass that can accumulate water.

Don't let water to accumulate on dry leaves and bottle caps.

Non-used toilets must be shut and verified once a week.

Always clean the air conditioning tray to avoid water accumulation.

Plastic sheets used to cover construction materials must be stretched to avoid water to accumulate.

Protect your family, check your backyard and ask your neighbors to collaborate. Cleaning your house is not enough. This fight belongs to all of us.

A simple mosquito can change a life. A simple gesture can save it.

6.

#NOtothemosquito

A simple mosquito can change a life. A simple gesture can save it.

Many lives are being changed by Dengue, Zika and Chicungunya. These are very dangerous diseases that can lead to death. There are simple ways to be protected:

Know how to break the mosquito cycle
The mosquito takes 7 to 10 days to develop in still water. Therefore, the best moment to interrupt its complete development is before the 7th day.

When the mosquitos grow and become adults, they start to bite and transmit the diseases.

When the mosquitoes become adults, they start to bite and transmit very dangerous diseases, such as, Dengue, Zika and/or chikungunya.

The main symptoms are: headache, fever, itching, pain in the joints, muscles and eyes, red spots and red eyes.

If you have any of these symptoms, please see a healthcare provider.

You should rest, drink plenty of fluids, specially this homemade solution: 1 liter of filtered water, 1 teaspoon of salt and 1 tablespoon of sugar.

To avoid these diseases to spread, there is only one way: avoid water accumulation. Eliminate the mosquito breeders.

Protect your family, check your backyard, as your neighbors to collaborate. Cleaning your own house is not enough. This fight belongs to all of us.

Eliminate the breeders of the mosquito that can transmit Dengue, Zika and Chikungunya.

Learn about lives that have been changed because of these diseases.

7.

#Notothemosquito

Friday against the mosquito.

Every Friday is the National Joint Effort Day against the mosquito.

Attention public and private companies, schools, universities, associations and the whole population.
Friday you have this commitment. If you cannot make it on Friday, choose another day of the week. At work, join your colleagues. At home, after school or work, call your neighbors. Just a few minutes are enough to protect many lives.

Be Part!

A simple mosquito can change a life. A simple gesture can save it.

Learn about lives that have be

**Translations – Radio Spots**

1.

Hi guys, here is your healthcare agent. I ask you to pay attention to the main symptoms of Dengue, Zika and Chicungunya: fever, red spots all over your body, headache, pain in the joints, muscles and eyes. Specially with Zika, a very intense itching. If you have any of these symptoms, please see your healthcare provider.

A simple mosquito can change a life. A simple gesture can save it.

2.

Hello, here is your healthcare agent. I’m the one who helps fight the mosquito that transmits Dengue, Zika and Chicungunya. Guys, there is only one way my job can be done: with your participation. You are the best person to eliminate the mosquito breeders at your home and to protect your family.

A simple mosquito can change a life. A simple gesture can save it.

Therefore, be part, call your neighbors. This fight belongs to all of us.
Translations - Films

1. If a mosquito shows up, we should be alerted.

It can mark not only your skin, but it can also change a life and a simple gesture can save it.

Eliminate the breeders of the mosquito that causes Dengue, Zika and Chicungunya. Protect life.

2. At that time, nobody was talking about Zika. Then we had the confirmation that it was microcephaly. I teared apart, and my husband said:

- Love, be calm. Now he needs us.

Today I know that William is my life, my love.

A simple mosquito can change a life. A simple gesture can save it.

Eliminate the breeders of the mosquito that causes Dengue, Zika and Chicungunya. Protect life.

3.

1st Day

Still water with eggs

2nd Day

Still water and the development of larvae

3rd, 4th and 5th Days

Still water and larvae

6th Day

Still water and pupae

7th to 10th Day

Still water and mosquitoes
Let's break the mosquito cycle. Mobilize your family, friends and co-workers. Be part of this fight.

Eliminate the breeders of the mosquito that causes Dengue, Zika and Chicungunya.

#NOtothemosquito

Protect life

4. Good morning, how are you?

My name is Thiago, I am a health agent.

I would like to talk to you about the mosquito that transmits Zika, Dengue and Chicungunya.

Ah, ok. My name is Aurea. You can come in, please.

Let’s go inside, Elisa.

I see that you have some plants here…

If you fill these vases with sand, you avoid water to accumulate which can become a mosquito breeder.

This manhole cover, you can fill with bleach.

These bottles you store here in the backyard, I’d recommend letting them with the caps on or upside down.

Make sure the trash bags are well sealed, put them in a container that can be closed.

It is very important that you be always watchful at each place of your home

To avoid water to accumulate, which can create a mosquito breeder.

OK. Then, now am I protected?

Protection is a matter of consciousness. That is why I brought here with me, Elisa.

She will tell you a little bit of her story.
Well, Mrs. Aurea, I had Dengue twice and also Chicungunya 8 months ago.

I found out last week that I am suffering of post-Chicungunya rheumatism.

The pain is very intense, distressing.

I don’t find a position to fall asleep.

There was a day I laid down in my room, with my body stretched on the floor…

My husband came and asked:

Why don’t you sit straight?

I couldn’t. The pain was very intense…

And that was the only position I could tolerate.

I cannot stay up for a long time, I cannot sit for a long time.

And the cause of my situation is this mosquito.

Take preventive measures, take care, because this is very serious.

Chikungunya is very serious.

We host the agent, think we are protected and don’t need to do anything else.

But listening to your story, I realized we need to be very alert.

So that these diseases don’t enter our homes.

That’s it, Mrs. Aurea. Everyone needs to learn that this fight belongs to all of us.

And mainly, that a tiny mosquito can make so much harm to a person’s life.

It is like our campaign says:

A simple mosquito can change a life

And a simple gesture can save it.

What is this gesture? Let’s say it together:
Eliminate the breeders of the mosquito that transmits Dengue, Zika and Chicungunya.

Protect life.

Thank you so much, Mrs. Aurea.

You’re welcome.

Good bye. Thanks
Coders should use the following color scheme as the standard for this coding process. They should determine the presence of absence of each of the components below considering each sentence as a unit to be measured.

- Internalization – Green
- *Distribution - Will not be present in the sentences. The Distribution of the messages was described in the Data Set section of this Thesis.
- Explanation – Blue
- Action – Red

1. Internalization

Goal: To get attention and to aid retention.

Question: Can I (or those I care about) be affected and how?

a. Compassion (People don’t care how much you know, until they know how much you care.)

- Does the message say something to this effect? (e.g., empathetic messages about consequences of the disease and how the infected people suffer).

b. Personal Relevance / Shared Responsibility

- How likely am I (or those I care about) to be affected?

- What and how severe might the consequences be?

- Do I or does my family have a role on preventing the risk?

c. Proximity

- Where is the event occurring and how close is that to me and/or those I care
about?

d. Timeliness
   - Sense of urgency

e. Emotion
   - This can happen with my family or loved ones.

2. Explanation

   Goal: Provide accurate information about what is happening and being done about the event.

   Question: What is happening and why?

   a. Source credibility
   b. Accurate science, accurate information
   c. Intelligible translation for target audience

3. Action

   Goal: To empower people to take appropriate actions to save lives.

   Question: What should I (and those I care about) do (or NOT do) for self-protection?

   a. Specific preparation action steps
   b. Specific response steps
   c. Collectiveness
APPENDIX C
IRB APPROVAL LETTER
Approval of Exempt Human Research

From: UCF Institutional Review Board #1
FWA00000351, IRB00001138

To: Rodrigo Augusto Mauricio Soares

Date: October 09, 2017

Dear Researcher,

On 10/09/2017, the IRB approved the following activity as human participant research that is exempt from regulation:

Type of Review: Exempt Determination
Project Title: The Evolution of Shared Responsibility and Instructional Risk Communication in Brazil’s Campaign Against Dengue and Zika
Investigator: Rodrigo Augusto Mauricio Soares
IRB Number: 6EE-17-13337
Grant Title: 
Research ID: n/a

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these changes affect the exempt status of the human research, please contact the IRB. When you have completed your research, please submit a Study Closure request in IRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziugisiewicz, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

[Signature]
APPENDIX D
IDEA MODEL GRAPHIC - COPYRIGHT PERMISSION LETTER
March 28, 2018

RODRIGO AUGUSTO MAURICIO SOARES – UNIVERSITY OF CENTRAL FLORIDA

Contact: rodrigo.soares@ucf.edu

Dear Dr. Timothy Sellnow and Dr. Deanna Sellnow:

I am requesting permission to reprint the visual representation of the IDEA Model (T. Sellnow & D. Sellnow, 2013).

My study’s title is “The Evolution of Shared Responsibility and Instructional Risk Communication in Brazil’s fight against the Zika Virus”. It is a thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Communication, in the Nicholson School of Communication, in the College of Sciences, at the University of Central Florida. The graphic will be used on Chapter 2, page 11.

I believe that you are currently the holders of the copyright, because the original work states that copyright is held in your name. Your consent confirms that you hold the right to grant this permission.

This request is for a non-exclusive, irrevocable, and royalty-free permission, and it is not intended to interfere with other uses of the same work by you. I hope that you will support our study by granting this permission. I would be pleased to include a full citation to the work and other acknowledgement as you might request.

Please sign the letter where indicated below.

Sincerely,

RODRIGO A. M. SOARES

Permission is hereby granted:

Signature: ____________________________
Name & Title: Deanna D. Sellnow, Professor of Strategic Comm.

Signature: ____________________________
Name & Title: Timothy L. Sellnow, Professor of Strategic Communication

Company/Affiliation: University of Central Florida
Date: 6/10/18
REFERENCES


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