

## **Zika Virus and Microcephaly in Brazil: Outbreaks that Question the Fundamentals of Brazilian Healthcare Efficiency**

*By Wondia Mireille Yeo, Research Associate  
Council on Hemispheric Affairs*

Brazil is at the center of global attention: it is hosting the 2016 Summer Olympics, and at the same time trying to deal with the vicious Zika virus outbreak purportedly linked to a surge in microcephaly. Making matters much worse, the nation faces political and economic issues challenges including major corruption scandals and significant inflation directly affecting the population. The political crisis intensified on March 13, a Sunday, with record protests (including some half a million people in the streets of the Rio de Janeiro alone) and many demonstrators calling for the impeachment of President Dilma Rousseff.<sup>1</sup> Brazilian officials and the country's Congress are occupied by political scandal while the Zika virus and microcephaly outbreaks need immediate attention. These outbreaks add to current tensions in the country's public health and environmental spheres. Questions are also being raised on abortion laws, inequality, and distribution of contraception. On top of this is the pressing need for improvement in the health care system.

### **Where Did the Microcephaly Outbreak Come From?**

The surge of the Zika virus outbreak in Brazil, which initially appeared in May 2015, is of great concern to pregnant women even though the virus can cause only mild symptoms. Zika virus is suspected to have a connection with microcephaly, a medical disorder limiting brain development in newborn babies and young children, and (less commonly) with Guillain-Barré syndrome (GBS), which can lead to paralysis or death. The number of babies born with congenital malformations has skyrocketed since October 2015 to January 2016, the Brazilian Health Ministry reported 4,180 microcephaly cases while it only was of 150 cases a year.<sup>2</sup>

At the Capitol Hill Symposium on the Zika crisis on March 15, Dr. Daniel Lucey, a senior scholar and adjunct professor of microbiology and immunology at Georgetown University Medical Center and the O'Neill Institute, said Brazil is experiencing a microcephaly epidemic. Ten days before the symposium, the Brazilian Health Ministry published a bulletin on the investigation of microcephaly cases, saying that of 4,231 suspected cases, 745 were confirmed and 1,182 discarded.<sup>3</sup> The bulletin said that of 157 cases of miscarriage or stillbirth being reported, 37 were confirmed with microcephaly and/or alteration of the central nervous system; another 102 cases were still under investigation and 18 were discarded.<sup>4</sup>

While investigations are still on going in order to confirm the connection between Zika virus and microcephaly, the health ministry specified in the report that microcephaly can be caused by various infectious agents beyond Zika such as syphilis, toxoplasmosis, rubella (German measles), cytomegalovirus and herpes viral.<sup>5</sup>

Scientists from Argentina said recently they suspected that the use of the larvicide pyriproxyfen in water might be the cause of microcephaly in Brazil; the Argentinian group Physicians in Crop-Sprayed Towns (PCST) stated in their report that microcephaly cases proliferated in areas of Brazil where the larvicide is used.<sup>6</sup> The report noted that Colombia is the country that is second most affected by the Zika outbreak (after Brazil) but has no record of microcephaly cases comparable to Brazil's; in Colombia, the Zika virus is instead associated with GBS cases. A network of Brazilian independent medics, Abrasco, also said the use of pyroproxyfen could be the reason of the surge in microcephaly.<sup>7</sup> The Brazilian state of Rio Grande Do Sul has already banned pyroproxyfen.<sup>8</sup> On February 13, Brazil's government indicated that the use of pyroproxyfen is certified by the World Health Organization (WHO) and said its association with microcephaly has no scientific basis.<sup>9</sup> Even if doubts persist regarding the origin of the microcephaly outbreak in Brazil, the crisis has opened the door to discussions on the women's reproductive rights, environmental issues, and access to the health care system in general.

## **Microcephaly and Reproductive Rights**

Brazil's federal government has cautioned women to delay pregnancy until more is known about Zika virus.<sup>10</sup> This has brought to the fore controversial discussions on the country's abortion laws and on accessibility to contraception. Abortion is illegal in Brazil except in cases of rape or risk for the women's life; in the latter case, law states that abortion should be the last resort to save a pregnant woman's life.<sup>11</sup> The abortion laws are validated by the 11-member Supreme Court, which has a distinctive conservative character.<sup>12</sup> In April 2012, it voted to legalize abortion in cases of malformation or absence of large parts of the brain, known as anencephaly.<sup>13</sup> Anencephaly is more extreme than microcephaly. Abortion is not permitted for microcephaly cases.

On February 16 of this year, however, a bill was proposed in Brazil's Congress that would sentence women and doctors practicing microcephaly-related abortions to four and 15 years of jail, respectively; supporters justified the bill on the grounds that feminist movements are using microcephaly and other opportunities to authorize abortion and push for its legalization.<sup>14</sup> Many Brazilian officials are conservative and are conscientiously driven by religious principles in their decisions. Opponents of criminalizing abortion argue that it violates women's reproductive rights and leads women to pursue unsafe abortions. The Study Group on Abortion reported in 2013 that unsafe abortions were the fifth leading cause of maternal mortality in Brazil, and that 200,000 women were hospitalized as a result of complications from terminations.<sup>15</sup> Hospitals where the women become patients after unsafe abortions usually report them to the police.

## Public Health Services in Brazil

The Zika virus and the microcephaly outbreaks have raised concerns regarding the Brazilian public health sector's ability to successfully address the crisis. Brazil does have a public health care system that provides health services at little or no cost, and the *Sistema Único de Saúde* (SUS) is the main program of public health that is freely available to every Brazilian.<sup>16</sup> However, the country's public health care system still faces important difficulties: little is known about the causes of microcephaly, and little is known about Zika virus, which make it particularly difficult for scientists to gather evidence to explain where the microcephaly surge comes from or how to deal with Zika virus. Zika virus is relatively new to the country compared to the Chikungunya and Yellow Fever; the first case of Zika was identified in May 2015 in Brazil. Microcephaly problems began surging in late 2015 and the health care reaction was slow in coming.

Another dimension of the problem is that rural areas lack sufficient health personnel and logistics as well as adequate infrastructures, especially in the Nordeste and in the Amazons. These areas have fewer doctors than the urban areas, yet rural areas are most affected by Zika virus. A 2013 study by the Federal Council of Medicine on the maldistribution of professionals included statistics on the geographical distribution of doctors. It said that between 1980 and 2009, 36.8 percent of 107,114 doctors who graduated in a city different from where they were born returned to their homeland, and that the cities of Rio de Janeiro and Sao Paulo "are responsible for" about a third of these professionals.<sup>17</sup> Most doctors choose to work in urban areas. In Brazil's federal system health care is decentralized and implemented by local health officials, which increases inequality in healthcare implementation. All of this leads to unequal distribution of contraception and birth planning. Regions where the population is predominantly impoverished suffer the most. It is these regions that are most affected by microcephaly, often cannot afford contraceptive methods, and can count on extremely limited access to family planning and health care in general. International organizations such as DKT International have stepped in as a result of Brazil's response to the surge in microcephaly and distributed half a million condoms during the Carnival period.<sup>18</sup>

Severe shortcomings in logistical resources are a factor in poor management of the health crisis. In January, health officials provided inexact numbers of microcephaly cases due to differences in diagnosis methods and lack of efficient data records.<sup>19</sup> To adequately face the Zika virus outbreak and the microcephaly surge, the country should work to provide further assistance to affected pregnant women and to babies born with neurological and congenital defects. As the crisis continues, large numbers of parents of children with microcephaly will further demand assistance from the health services.

## Environmental Impact

The Zika virus outbreak also points to the need to improve human living conditions, much as the yellow fever and the Dengue outbreaks in the distant past. Some of Brazil's rural

areas, like Recife in the state of Pernambuco, are known for their lack of fresh water and treated sewage, which has led to the use of pyroproxyfen to rid water of mosquitos' larvae. Stagnant water can be constantly found there in generous amounts as people store water in containers to compensate for its scarcity. The fight against the Zika virus has mainly focused on controlling the vector, the *aedes aegypti* mosquito, which breeds in stagnant water in tropical climates. Ideal mosquito breeding grounds are discarded tires, uncollected waste, flower pots and water containers. On February 13, the government deployed more than 200,000 soldiers to raise awareness of Zika virus and clean up stagnant water through pesticides and fumigation, even knowing that some of those same pesticides could be at the origin of the surge in microcephaly.<sup>20</sup> This campaign reached nearly 3 million families per day and educated the public on preventive measures in 350 cities.<sup>21</sup> Unless the country deals with its poor sanitation system and decisively improves on the healthcare system in the poorest regions, however, mosquito-borne diseases will remain part of the pathology of Brazilians' daily lives. Dealing with environmental problems and outbreaks of disease will require considerable financial resources.

## **Financial Resources to Address Zika**

The country is facing a severe economic crisis. In 2015 inflation amounted to 10 percent of the Consumer Price Index (CPI) for 2015.<sup>22</sup> Transportation costs have increased. So have numbers of the unemployed. This all adds to Brazil's difficulty in trying to beat down the epidemic of microcephaly ahead of hosting a gigantic international sporting event. Brazil is benefiting from the logistical and personnel support of the World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC), and its own non-profit organizations. The government will invest \$1.9 million in research for a Zika vaccine. On February 11, Dr. Marcelo Castro, the country's Health Minister, signed an agreement with the University of Texas Medical Branch in Galveston to jointly develop a vaccine against Zika with the Evandro Chagas Institute in Belem, Brazil.<sup>23</sup> Early in February, the Pan American Health Organization met with Latin American health officials and announced that \$800,000 already had been spent on the Zika outbreak in the region, with an estimated \$8.5 million needed to continue the fight.<sup>24</sup> In addition, on February 23, WHO general director Margaret Chan met with President Dilma Rousseff to discuss implementation of a comprehensive emergency plan against Zika virus.<sup>25</sup> The strategy focuses on "mobilizing and coordinating experts and resources, and providing fast-track research and development of vaccines, diagnostics and therapeutics."<sup>26</sup> The WHO has announced that \$56 million will be required in order to implement the plan.<sup>27</sup> The World Bank estimated the short-term economic impacts of Zika in Latin America and the Caribbean region; calculating that Brazil will have foregone income of \$310 million and 0.1 percent of Gross Domestic Product (GDP) in 2016.<sup>28</sup> In addition, income from tourism, on which Brazil relies heavily, will be greatly impacted.

## **Conclusion**

The Zika virus and the microcephaly outbreaks should be seen as logical outgrowths of Brazil's other problems. Although investigations of the connection between Zika virus and

microcephaly are still under way, the crisis raises important questions regarding healthcare access and family planning, abortion, as well as environmental awareness and stewardship, and presents an opportunity for Brazil to work on improving its healthcare system and reducing the inequalities that characterize daily life for millions. Already in economic turmoil and led by an administration now distracted by fears of retribution for habitual rampant corruption, South America's largest country did not need these two plagues visited upon it by tiny mosquitoes just doing what comes naturally. In the long run the whole mess may turn out to be an incentive because of the combination of resourcefulness, sacrifice, hard work, forbearance, and other factors that will be required if the Brazil of humans is to emerge from it a better place. But like people everywhere, everyday Brazilians live in the short term and may be in for perhaps the toughest of times. At a time when they needed more than the usual flow of income from tourists attracted by this year's summer Olympics, they may well have to do with less because of a virulent virus and the spread of a medical disorder that is related in some way. Where will the needed money come from to provide a solution for the sanitary crisis? And who will be in the uppermost seats of governmental power a year or two or three from now to see Brazil through? Will public health ever get the attention and resources it deserves? Will key laws be enacted by a scrambling multiparty national legislature and who knows what chief executive? As COHA so often correctly notes, these things remain to be seen.

***By Wondia Mireille Yeo, Research Associate at the Council on Hemispheric Affairs***

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- <sup>1</sup> ABC, "Brazil protesters call for President Dilma Rousseff's impeachment". 13 March 2016. Available at: <http://www.abc.net.au/news/2016-03-14/rio-riots-as-protesters-call-for-dilma-rousseff-impeachment/7244582>. Last accessed 15 March 2016.
- <sup>2</sup> Brazil Health Ministry, "Ministério da Saúde investiga 3.448 casos suspeitos de microcefalia". 29 Jan. 2016. Available at: <http://combateaedes.saude.gov.br/noticias/244-ministerio-da-saude-investiga-3-448-casos-suspeitos-de-microcefalia>. Last accessed 15 March 2016.
- <sup>3</sup> Brazil Health Ministry, "Saúde investiga 4.231 casos de microcefalia no país". 5 March 2016. Available at: <http://combateaedes.saude.gov.br/noticias/399-ministerio-da-saude-investiga-4-231-casos-de-microcefalia-no-pais>. Last accessed 15 March 2016.
- <sup>4</sup> Ibid
- <sup>5</sup> Ibid
- <sup>6</sup> Science alert, "Report says pesticide is to blame for microcephaly outbreak - not Zika". 16 Feb. 2016 Available at: <http://www.sciencealert.com/argentinian-report-says-monsanto-linked-pesticide-is-to-blame-for-microcephaly-outbreak-not-zika>. Last accessed 15 March 2016.
- <sup>7</sup> Abrasco, "Nota técnica sobre microcefalia e doenças vetoriais relacionadas ao Aedes aegypti: os perigos das abordagens com larvicidas e nebulizações químicas – fumacê". 2 Feb. 2016. Available at: <https://www.abrasco.org.br/site/2016/02/nota-tecnica-sobre-microcefalia-e-doencas-vetoriais-relacionadas-ao-aedes-aegypti-os-perigos-das-abordagens-com-larvicidas-e-nebulizacoes-quimicas-fumace/>. Last accessed March 16 2016.
- <sup>8</sup> FoxNews, "Brazilian state suspends larvicide used to combat Zika virus". 4 Feb. 2016. Available at: <http://latino.foxnews.com/latino/news/2016/02/14/brazilian-state-suspends-larvicide-used-to-combat-zika-virus/>. Last accessed 16 March 2016.
- <sup>9</sup> Brazilian Health Ministry, "Esclarecimento sobre o uso do larvicida pyriproxifen". 15 Feb. 2016. Available at: <http://combateaedes.saude.gov.br/noticias/327-esclarecimento-sobre-o-uso-do-larvicida-pyriproxifen>. Last accessed 18 Feb. 2016.
- <sup>10</sup> Aljazeera, "Zika virus: Women told to delay pregnancy for two years". 22 Jan. 2016. Available at: <http://www.aljazeera.com/news/2016/01/zika-virus-women-told-delay-pregnancies-years-160122040824263.html>. Last accessed 8 March 2016.

- <sup>11</sup> Women on waves, “Brazil abortion law”. Available at: <https://www.womenonwaves.org/en/page/4938/brazil-abortion-law>. Last accessed 17 March 2016.
- <sup>12</sup> They are appointed by the President of the Republic and approved by the Senators. There are no term limits for serving at the Supreme Court but there is a mandatory retirement when the justice reaches 70 years old.
- <sup>13</sup> Brazil Lifts Ban on Abortion of Anencephalic Fetuses. *Reproductive Health Matters*. 20, no. 39: 226. April 2012. Last accessed 17 March 2016.
- <sup>14</sup> Camara dos Deputados. « Projeto de lei » Feb. 2016. Available at: [http://www.camara.gov.br/proposicoesWeb/prop\\_mostrarintegra;jsessionid=F31F443D9DBB257FBDA2FBEDB2ACC46B.proposicoesWeb2?codteor=1433470&filename=Tramitacao-PL+4396/2016](http://www.camara.gov.br/proposicoesWeb/prop_mostrarintegra;jsessionid=F31F443D9DBB257FBDA2FBEDB2ACC46B.proposicoesWeb2?codteor=1433470&filename=Tramitacao-PL+4396/2016). Last accessed 8 March 2016.
- <sup>15</sup> The Study Group on Abortion “Especialistas promovem encontro com a imprensa para debater o aborto”. 25 March 2015. Available at: <http://www.geasite.com/wp/tag/sao-paulo/>. Last accessed 16 March 2016.
- <sup>16</sup> Rio on Watch, “Analyzing Public Health in Brazil”. 14 Sept. 2013. Available at <http://www.rioonwatch.org/?p=9941>. Last accessed 9 March 2016
- <sup>17</sup> Isaude, “Inequality still brand access to health care in Brazil, says CFM” Feb. 2013. Available at: <http://www.isaude.net/en/noticia/33720/health-profession/inequality-still-brand-access-to-health-care-in-brazil-says-cfm>. Last accessed 9 March 2016.
- <sup>18</sup> DKT International website
- <sup>19</sup> Will Carless, “The sketchy numbers behind Brazil’s Zika crisis”, in *Global Post*, January 29, 2016. Consulted on <http://www.globalpost.com/article/6726672/2016/01/29/brazil-zika-microcephaly-connection>, February 3, 2016.
- <sup>20</sup> The Washington Post, “Brazil deploys military to battle mosquito that carries Zika”. 13 Feb. 2016. Available at: [https://www.washingtonpost.com/world/the\\_americas/brazil-deploys-military-to-battle-mosquito-that-carries-zika/2016/02/13/bbe97d5a-d1a6-11e5-90d3-34c2c42653ac\\_story.html](https://www.washingtonpost.com/world/the_americas/brazil-deploys-military-to-battle-mosquito-that-carries-zika/2016/02/13/bbe97d5a-d1a6-11e5-90d3-34c2c42653ac_story.html). Last accessed 10 March 2016.
- <sup>21</sup> Ibid
- <sup>22</sup> Inflation Worldwide Inflation Data, “Historic Inflation Brazil”, in CPI inflation. Consulted on <http://www.inflation.eu/inflation-rates/brazil/historic-inflation/cpi-inflation-brazil.aspx>, February 2, 2016.
- <sup>23</sup> Marco Caceres, “Brazil at Odds With WHO and CDC on Zika-Microcephaly Link” in the *Vaccine Reaction*. 18 Feb. 2016. Available at: <https://www.thevaccinereaction.org/2016/02/brazil-at-odds-with-who-and-cdc-on-zika-microcephaly-link/>. Last accessed 16 March 2016.
- <sup>24</sup> CNN, “Brazil President on Zika: Victory depends on our determination”. Available at: <http://www.cnn.com/2016/02/03/health/brazil-president-zika/>. 3 Feb. 2016. Last accessed 10 March 2016.
- <sup>25</sup> World Health Organization, “Zika response accelerates as WHO Director-General visits Brazil” Feb. 2016. Available at: <http://www.who.int/features/2016/zika-brazil/en/>. Last accessed on 8 March 2016.
- <sup>26</sup> World Health Organization, “Zika outbreak: WHO’s Global emergency response plan”. 16 Feb. 2016. Available at: <http://www.who.int/emergencies/zika-virus/response/en/>. Last accessed 18 Feb. 2016.
- <sup>27</sup> Ibid
- <sup>28</sup> The World Bank Group, “The short-term economic costs of Zika in Latin America and the Caribbean (LCR)”. 18 Feb. 2016. Available at: <http://pubdocs.worldbank.org/pubdocs/publicdoc/2016/2/410321455758564708/The-short-term-economic-costs-of-Zika-in-LCR-final-doc-autores-feb-18.pdf>. Last accessed 10 March 2016.