**Securitizing Zika: The case of Brazil**

***Abstract***

Brazil’s Zika virus crisis (2015-7), following hot on the heels of the Ebola outbreak (2014-5), dominated newsfeeds and high-level discussions amid governments, the UN system and beyond, with emerging fears relating to Congenital Zika Syndrome (CZS), embodied by microcephaly. However, beyond the ensuing panic in Latin America facing a generation of Zika babies, the outbreak demonstrates key developments in our understanding of the interaction between health and security, based on the Copenhagen School’s securitization approach. It suggests that unlike previous diseases which were securitized, it was not the virus which was the cause of the security threat, nor *how many* people were affected, but a combined concern over *where* (in Brazil at a time of domestic political crisis), *when* (immediately post-Ebola), *who* (foetuses and babies), *how* (unknown disease characteristics) and *what* was the existential threat (the vectorised unknown). This paper shows these developments for global health security through empirical analysis of the multiple securitization processes that occurred within Brazil for the Zika virus, at the subnational and federal levels.

**Introduction**

In February 2015, Brazilian health officials began closely monitoring cases of an indeterminate illness defined by a rash (Ministry of Health, 2015). This discovery, later identified as the Zika virus, did not raise immediate concern. The virus was not known to have particularly severe symptoms (Duffy et al, 2009), and like its genetic cousin Dengue, Zika was considered a low priority vector-borne disease, with little additional resources apportioned to response activities. However, by the end of year, the outbreak would dominate the global health agenda due to concerns surrounding Congenital Zika Syndrome (CZS), personified by microcephaly, a neonatal abnormality defined by small head circumference (WHO, 2016). Consequentially, Zika has been framed by many as a global and national security issue (Gostin and Ayala, 2017; Glynn and Boyland, 2016; Flahault et al, 2016; Gostin et al, 2016; Hollande, 2016; Samarasekera and Triunfol, 2016). However, its securitization has notable characteristics which distinguish it from other health security concerns, and deserve greater attention.

We believe this case provides new opportunities for understanding global health security and securitization more broadly. Importantly, we argue that the securitization discourse for Zika was not inspired by how many people were infected, or virus classification, but a combined concern over five overlapping elements: 1) *where* (in Brazil, with a history of failed vector control programmes and during domestic political turmoil), 2) *when* (immediately post-Ebola), 3) *who* was being affected (foetuses/babies)*,* 4) *how* (unknown disease characteristics)*,* and 5) *what* was the existential threat(mosquito vector). We develop this understanding based on the Copenhagen School’s (Buzan et al, 1998) approach to securitization, which is attentive to the securitizing actor, speech act, extraordinary action, referent object and audience. Yet, we argue that contextual elements are key to understand the response to Brazil’s Zika outbreak. This is important as it allows for a development of some gaps in securitization theory, including the Copenhagen School’s focus on the speech act, lack of consideration of other mediums for securitization and the persistence of the state as the referent object which we refute.

To make such claims, this paper embraces some recent critiques and developments of securitization theory, highlighting four positions. Firstly, Balzacq (2005), who suggests that securitization theory is too focused on the speech act and that analyses should go beyond such verbal declaration. From this perspective, security should be conceived as a “strategic (pragmatic) practice that occurs within, and as part of, a configuration of circumstances” (Balzacq, 2005) and that empirical considerations can give a clearer indication that a securitization process has been accepted by an audience (McInnes and Rushton, 2013). As such, the context and audience – the *intersubjectivity* – of the securitization process are just as important, or not more so, than the speech act itself, further evidenced in the “where, when, who, how and what” of the Zika outbreak. Secondly, that the Copenhagen School has failed to consider other mediums for securitization, such as visual images (Hansen, 2011; McDonald, 2008; Senn,2017; Vuori, 2010), and consider images of babies affected by microcephaly as paramount for our analysis. Thirdly, that securitization theory has almost exclusively taken the state or society as the referent object of security, a point which has been contended in multiple fora (Hansen and Nissenbaum, 2009; Watson,2011) and as evidenced by the differing referent objects we narrate. Fourth, we follow in the growing literature that considers health a burgeoning “sector” of securitization theory (whether the language has been applied or not) (Davies, 2008; Elbe 2006; Kamradt-Scott and McInnes, 2012; McInnes and Rushton, 2013). Notably, we consider the challenge to this literature relating to its historical context as championed by Howell (2014) and the medicalization of insecurity (Elbe, 2010), and recognise that this context is vital to understanding vector control in Brazil.

We begin by offering a brief discussion of the securitization and ensuing response that took place in Brazil during the Zika crisis at two levels of governance: sub-national and federal. Awareness of the minutiae of these securitization processes paves the way to our arguments surrounding the importance of the Zika outbreak for developing greater understanding of global health security and securitization theory.

**Securitization Processes of Zika in Brazil:**

Three quasi-simultaneous securitizations processes occurred surrounding Zika in Brazil: one at the subnational, and two separate processes at the federal level[[1]](#footnote-2). Drawing on McInnes and Rushton (2013), and noting the devolved federalised governance structure, it is unsurprising that there were separate, but interlinked securitization processes with different constituent parts: i.e. there were varying actors, referent objects, existential threats and audiences, albeit under the broad umbrella of Zika. This reaffirms Balzacq’s focus on intersubjectivity: the speaker has to tune his/her language to the audience for the pragmatic purpose of achieving the desired result (Balzacq, 2010: 184). In parallel, it concurs with Vuori (2008) that these differences can appear given what the actor seeks to gain by way of extraordinary practices.

***Sub-National Securitization***

Subnational securitization began in Pernambuco state, North-eastern Brazil. In November 2015, the state was facing increasing pressure from its municipalities requesting additional support to respond to the alarming number of babies born with neurological abnormalities. Following investigations into these cases (Ministry of Health, 2015b), Pernambuco’s Health Secretary, Jose Iran Costa Junior, stated: “we are facing a grave moment, which deserves decisive action” (Secretary of Health, Bahia, 2015) and was a protagonist of the public letter (speech act) written by National Council of State Health Secretaries (CONASS) calling for “the stronger involvement of Brazilian [federal] State in facing this national emergency”, and the creation, “of a national emergency fund … to combat arboviruses and control its complications” (CONASS, 2015).

CONASS’ speech act was critical to understand the broader securitization of the outbreak in four ways. First, it connected microcephaly, mosquitoes and Zika, despite a lack of international scientific consensus. Second, it placed the *Aedes* mosquito (vector) as the existential threat of the securitization process. Third, it placed Brazil’s publicly financed national healthcare system, *Sistema Único de Saúde* (SUS) as the referent object of the process, as states feared fiscal repercussions of having to provide support to a growing number of babies with severe neurological abnormalities. Finally, it framed the federal government as the audience of the securitization, complicit of a pragmatic securitization process seeking extraordinary funds to respond to the crisis (Vuori 2008).

In parallel, Pernambuco immediately declared a state of emergency related to the *Aedes* mosquito (Globo, 2015) – a further extraordinary measure. Under Brazilian law, once a state declares an emergency and has it recognised by the federal government, federal financing is ensured for response. Soon after other states declared Zika-related states of emergency, although these varied with a focus on different parts of the crisis. In states where high numbers of babies born with CZS, microcephaly was the threat subject e.g. Sergipe (Globo, 2015b), Rio Grande do Norte (Globo, 2015c), Paraíba (Globo, 2015d). Those with fewer microcephalic babies focused on the mosquitoas thethreat, including Espírito Santo (Globo, 2015e), Goiás (Casa Civil, 2015), and Amazonas (Globo, 2015f). The Zika virus itself was notably absent from these existential threats in all instances.

***Federal Securitization***

In early November 2015, the federal government began the process of Zika-related securitization – albeit not focused on Zika *per se*. This began by the Ministry of Health’s speech act, the declaration of an *Emergência em Saúde Pública de Importância Nacional[[2]](#footnote-3)* (ESPIN) placing the altered pattern in microcephaly cases in the country as the threat subject (Ministry of Health, 2015c). This was the first time the ESPIN had been used since being introduced into legislation (Casa Civil, 2011), clearly representing an extraordinary move beyond normal politics, and thus the start of federal securitization. Two weeks later, an inter-ministerial group in the President’s Executive Office was created to manage response measures and release of funds to combat the existential threat. Similar to the sub-national process, the referent object of the securitization process was the SUS, threatened by the enormous costs of raising a generation of children with complex health needs (Ministry of Health, 2015c). Despite this referent object, the federal extraordinary measures focused on vector control (as discussed below). Moreover, the audience of this ESPIN was the public: the government needed the population to fully understand the severity of the threat faced by Zika and be willing to accept extraordinary response measures and go beyond ‘normal’ civic duties. This included the acceptance of the deployment of armed forces to “combat” the disease and eliminate the vector. The Minister for Health, Marcelo Castro, suggested that involving the military would, “convey to the [Brazilian] population the magnitude and the seriousness of the matter” (CONASS, 2015b), or rather would provide a securitized imaginary to follow the speech act of the ESPIN.

The military deployment began as a response to states’ emergency declarations, as per the constitutional arrangements. However, this soon developed into a federal strategy, facilitated through applying the *grammar of security* (Buzan et al., 1998: 27), using increasingly bellicose speech acts in the federal government’s actions against the crisis. For example, Rousseff suggested “*“I am going to call it a war* action against the *Aedes aegypti* mosquito, which transmits the Zika virus” (Government of Brazil, 2015) and “Brazil will win the war against the Zika virus…We have to mobilize so that this is a victorious battle.” (Government of Brazil, 2016). Similarly, Defense Minister Rebelo suggested “The enemy is as small as it is sneaky…Under military standards, confronting the mosquito follows the manual of guerrilla combat: suffocate the enemy ... As in any war, this one will be fought with the conviction of victory, for it is the Brazilian population which is under the threat of a cunning enemy” (Rebelo, 2016).

Interestingly, the language used in relation to the military did not focus on the same referent object as the ESPIN (the SUS), but on the threat posed to the state by the vector, suggesting a secondary process of securitization occurred at the federal level. Accordingly, we argue that the secondary audience of the federal securitization process was the military themselves, with a separate process used to justify the means of what the armed forces would be doing; vector control. Rebelo needed to legitimise the military deployment and assure his forces that they were providing a vital service fighting Zika, and that there would be some ‘extraordinary’ changes to their routine activities and a change in power structures from which they were used to, acting on the command of civilian health workers. In this secondary securitization process, the referent object is understood to be the state, epitomised by government slogans such as “Brazil will not be defeated by a mosquito” (Government of Brazil, 2016c), and that this vector control work is directly supporting state security. Drawing on Howell’s (2014) Austininan critique of health securitization, it is important to remember that the Brazilian military are not new to health activity, having a long history of providing health services to isolated communities (Ministry of Defence, 2017; Government of Brazil, 2012), and having been involved in some (albeit unsuccessful) Dengue and Yellow Fever control programmes (Reuters, 2008). However, the immense scale of the military involvement in this instance (over 60% of the national Armed Forces), represented an extraordinary event, beyond normal politics to manage the existential threat of the mosquito (Government of Brazil, 2016).

**Developments to Global Health Securitization**

By analysing these securitization processes, we suggest that the Zika outbreak in Brazil demonstrates a number of developments in our understanding of health and securitization theory. Unlike previous diseases which were securitized, it was not the virus which was the cause of the security threat, nor *how many* people were affected, but a combined concern over *where* (in Brazil at a time of domestic political crisis), *when* (immediately post-Ebola), *who* (foetuses and babies), *how* (unknown disease characteristics) and *what* was the existential threat (the vectorised unknown). Whilst the *when* and *where* have been argued as facilitating conditions for securitizing processes by Balzacq (2005), and the *what* has been extensively covered (Crick, 2012; McDonald, 2008; Williams, 2003), we believe that through this contextual analysis we can offer two developments to securitization theory. Firstly, that the combination of the five factors is vital to understanding Zika’s securitization, but also that this assemblage represents the importance of a multi-faceted pathway, with each node playing an important role in driving securitization. Second, whilst there is substantial literature in securitization theory relating to the referent object (de Wilde 2008; Vuori, 2010; Watson, 2011), the *who* we position demonstrates a discrepancy in between newborns affected and the referent object, which represents a new grouping in the grammar of security.

***Where: Brazil***

Brazil’s 2015/2016 Zika virus emergence intersected with both global and domestic issues. The former, relating to ‘emergencization’ of the global spread of infectious diseases, especially those which were unknown or particularly virulent. The latter, over how to respond to a nascent epidemic in a country undergoing a dramatic a political crisis. Reinforcing the link between these two contexts, the epidemic took place in a country preparing to host the 2016 Olympic Games – the ultimate global performance. This context is vital to understanding the securitized approach to the Zika outbreak, as the political turmoil and global microscope cast upon it due to the Olympics represent facilitating conditions for securitization (Buzan et al., 1998: 79). Actions undertaken by both state and federal governments, such as framing the response as an emergency (Globo, 2015) or a war (Ribeiro et al. 2018), is indicative of tensions in its domestic politics, and thus securitizing an issue which could be visibly tackled, such as vector control, was used by the Rousseff administration for political gain at a time of crisis. Moreover, this political context also accounted for the audience’s willingness to accept the securitizing process (Salter 2008). The federal government had been mired by Operation Car Wash, the largest corruption scandal to have hit Brazil (BBC, 2017)[[3]](#footnote-4). In parallel, the country’s GDP was contracting (falling 3.8% in 2015 alone), and the unemployment rate doubled between 2013 and 2015 (from 4.1% to 8.5%) (Government of Brazil 2017), leaving millions to protest against corruption, economic crisis and/or President Rousseff.

Securitizing the disease and going “to war with the mosquito” provided a convenient policy opportunity for the multiple crises. Decisive federal action represented an opportunity for Rousseff to visibly exhibit leadership to improve her administration’s image. The significant number of uniformed military personnel *visibly* demonstrated to the public the administration’s commitment to dealing with the crisis. Ultimately, it is not clear if the federal government’s actions affected Rousseff’s domestic approval; she was impeached from office in August 2016. However, it reminds us that securitization can be used as political tool, since visible and large-scale actions can be framed as a sign of leadership.

Moreover, Brazil’s federal government needed to demonstrate forceful commitment to fighting Zika ahead of the 2016 Rio de Janeiro Olympic Games wary of the potential impact on its tourism industry. For example, in 2016 the US-CDC issued a travel alert (“Practice Enhanced Precautions”) for people traveling to Rio de Janeiro (CDC, 2016), even though this city was 2,000 kilometres away from the crisis’ epicentre in Pernambuco. Several influential athletes withdrew from participating in the Olympics out of viral fear and over 200 scientists signed an open letter to the World Health Organization (WHO), calling for the Games to be “postponed and/or moved to another location — in the name of public health” (Attaran, 2016, Palazzo, 2016). Whilst this was hotly debated amongst diplomatic, public health and sporting communities, ultimately, among the 500,000 tourists and 10,000 athletes present of the Rio Games, there were zero Zika infections reported (Tavernise, 2016). Statistical odds can easily get superseded by the public perception of risk based on individual accounts, such as a leading athlete withdrawing or the media’s depiction of a mother living with a CZS baby (De Wit, Das and Vet 2008). Given the global community’s construction of Zika as a security concern, it is unsurprising that Brazilian policymaking in locations highly dependent on tourism framed the disease as a combatable “threat” to pander to (wealthy) Western fears.

Beyond the political context, the history of vector control in Brazil is also pertinent. Malaria, Yellow Fever and Dengue became public health issues in the country from early 20th century (Braga & Valle, 2007). Through decisive vector control programmes, Brazil successful eradicated mosquitos numerous times (Killeen et al 2002; Lowy, 2017). In 1958 the WHO officially declared Brazil free of the *Aedes aegypti* mosquito. This success was short lived, re-emerging in 1969, and through further control activity the vector was once more considered eradicated from the country in 1973. *Aedes aegypti* returned to Brazil in 1976, most likely due to failed epidemiological surveillance for vector-borne disease such as Dengue, social and environmental changes originating from rapid urbanization and deforestation, and from failing to consider the structural issues which allowed mosquitoes to survive (Lowy 2017) (Braga & Valle, 2007).

By the second half of the 1980s, the *Aedes* mosquito and Dengue had spread across Brazil. In 1996, the Ministry of Health introduced the *Aedes* Eradication Program, but lacklustre implementation was insufficient to stop transmission. In 2001, the government abandoned the goal of national *Aedes* eradication, focusing only on control in the most acutely affected municipalities (Braga & Valle, 2007). Unsurprisingly, the result of inadequate vector control was that between 2001 and 2003, the country experienced its most widespread Dengue epidemic, with over 1.5 million cases, although some estimates suggest this could be as high as 40 million, or 20% of Brazil’s population (Câmara et al, 2007). Since then, several initiatives have been introduced but are short-lived: once the annual peak of infections becomes under control, federal and state funds are diverted elsewhere (Barreto et al, 2011). In 2014, Dengue’s incidence was once again extremely high, with close to 1.5 million cases (Ministry of Health, 2016). Notwithstanding, Dengue nor the vector were treated as a security concern. Control involved traditional awareness campaigns, monitoring for mosquitos in high-risk areas and sometimes fumigation. This is important for our analysis is it offers a baseline for comparison to Zika – i.e. what ‘normal politics’ looks like for other vector-borne disease in Brazil.

***When: Post Ebola***

The Zika epidemic emerged within Brazil’s challenging domestic climate and the prospects of global media attention due to the Olympic Games. But from a global health perspective, it was hot on the heels of the West-African Ebola outbreak (2013-5). As such, Brazil’s securitized response to the disease reflected an environment where global health security was at the top of politicians’ agendas (Youde 2016). In the post 9/11 securitized landscape, which was closely followed by SARS (2003), the global health community had reimagined disease as a security threat. This meant engaging “public health securitization” (Fidler 2016) whenever possible for the pragmatic purpose of increased attention, and resources to battle outbreaks (Davies, Kamradt-Scott and Rushton, 2015; Rushton and Youde, 2014;). This was not just in the academic sphere, but the securitized approach to health became increasingly prominent in policy (GHSA 2018) (WHO, 2016b), and in media (Levina 2015).

Whilst the political attention (and subsequent resources) dedicated to the control of infectious diseases ebbed and flowed over the 12 year between SARS and Zika, Ebola raised global alarm once again, to the potential fast spreading nature of diseases from the Global South to the Global North (despite the dubious post-colonial assumptions within this (Ingram 2009)), and the lack of preparedness for the world to cope with such outbreaks (Lakoff 2017). Fairly or not, Zika was an easy candidate to compare to Ebola as it fit a similar narrative: a terrifying invisible disease with no known cure, emerging from a developing country, capable of dramatic and irreversible human suffering, and even could affect Western children if their parents had travelled to Latin America or the Caribbean.

***Who: Foetuses and Babies***

Unlike most viruses, Zika’s risks do not affect a cross section of society, only raising true concern in a specific vulnerable group: foetuses and babies, affecting gestational development, which could lead to miscarriages, stillbirths, or babies born with irreversible brain damage. For anyone else, the virus is mostly asymptomatic: only about 20% of those infected develop mild flu like symptoms (Heymann et al, 2016). Thus, we suggest that impetus to securitize Zika-related concerns was not a function of the virus’ mortality or morbidity per se, but over *who* it affected directly. This is even more pertinent when considering that these babies were not explicitly positioned as the referent object of the threat in the securitization processes narrated above. In the three securitization processes we identify in Brazil, two of these placed the SUS as the referent object, whereas the military securitization placed the state itself in this position. Yet, this was ignored by the media and the broader government response strategy, focusing on promoting the images of the affected newborns for performative goals. Whilst securitization theory has grappled with this question of the vulnerable referent populations previously (Malkki 1996, Macmillan 2015; Watson 2011;), this is a new consideration for global health securitization. Until Zika, the referent object of global health security threats had been generally the military, (Western) populations at large, or state and its economic infrastructure, regardless of whether these potentialities had ever occurred (Fourie 2007; McInnes & Lee 2012;). Where particular risk profiles emerged for other securitized diseases (e.g. HIV/AIDS), vulnerability for risk groups conflated with patient identity, fuelling homophobic, misogynist and racist stigma (Waldby et al. 1995).

We propose that newborn babies are also a particularly vulnerable group, considering the universal adoption of the Convention of the Rights of the Child (Macmillan 2015), the increasing use of images of suffering children for news stories by the global media (Burman 1994), and the increasing consideration of pregnant women and foetuses as ‘vulnerable groups’ in public health interventions (Stephenson et al 2014). Previous research into children has highlighted the perceived innocence of children and the tension in the public/private divide of family and civic life, which has been argued has helped securitization processes (Brocklehurst 2017; Macmillan 2015; Wagnsson et al 2010,Wyness, Harrison and Buchanan 2004). This can easily be extrapolated to include newborns, considering them as “ultra-securitizing”, being the most vulnerable and innocent of all children.

Further, many have argued the importance of visual images for securitization (Hansen, 2011; McDonald, 2008; Vuori, 2010; Senn, 2016; Williams, 2003) and in the global health context, imagery of hazmat suits and body bags provided urgency to the Ebola outbreak (Cook, 2010). Accordingly, we argue that through extensive media coverage, the visibility of babies with small heads were a powerful catalyst in driving the securitization of Zika at multiple levels of governance. This striking visual of new-borns with small heads offered sensorial immediacy and were able to evoke a particularly emotive response (Crawford, 2000) which was not provided by a text or epidemiological data (Mirzoeff, 2002:15). The visible and irreversible sequelae from Zika generated grave concerns within Brazil and globally creating a threat-urgency modality implying that without emergency measures more babies would suffer (Williams 2003). This reaffirms the assertion that securitization does not only happen through the speech act, but that imagery is vital too. We can only hypothesise how this might have been different had another demographic been affected who were less vulnerable, or if the neurological damage was invisible.

Moreover, the Zika outbreak touched upon issues that we have not seen in the securitization literature before; foetuses, miscarriages, abortion, and stillbirth (Camargo, 2016; Diniz, 2016, Diniz et al, 2017; Valle, 2016), each of which charged with emotion, politics and ethical challenges. This outbreak took place amid a backdrop of fraught abortion politics in Brazil (Boseley 2016; Kale, 2016). By focusing on the image of newborn babies with CZS allowed policymakers to de-politicise the associated health outcomes in a way which all audiences could feel empathy and in doing so accept the securitization (Hansen, 2011; McDonald, 2008; Williams, 2003:527) rather than to be constricted by political tensions around reproductive rights.

Pushing this analysis one step further, the construction of the securitization around this imagery of newborns, but not as the referent object, obscures the complexity of the situation on the ground and in doing so furthered a political goal for the Brazilian government (Brocklehurst 2017). These babies were framed as passive victims of a biological disease which could not be controlled (Watson 2009). Stories of human suffering of the challenges of life with a CZS baby were shared (BBC 2016), and we heard human and ‘de-political’ stories about babies affected by the Zika virus. This technique removes consideration of structural factors or zones of neglect (Nunes & Pimenta, 2016) which lead to increased risk of having a baby born with CZS, such as conditions of poverty, lack of access to running water and sanitation facilities, and regressive reproductive rights. In doing so, the state’s failures in public health provision is deflected from the story and does not feature as part of the response as the state as referent object’s own failures is concealed by images of newborns (Seckinelgin et al, 2010). Accordingly, the government is not questioned when implementing securitized activity to bring about the end of the outbreak, but instead championed for reducing the incidence of a health condition that visibly affects the most vulnerable.

***How: Unknown***

We have argued above that these visceral images of newborns with birth defects were more pivotal to ensuring action than the statistics. But importantly these images stood as a proxy for virological confirmation as these data were missing in the early stage of the outbreak, and there was no scientific consensus over what was causing the spike in microcephaly. Yet, despite this lack of scientific evidence recognising causality, extraordinary securitized measures had begun at multiple governance levels. This allows us to question the role of evidence in health securitization.

Brazil announced an association between microcephaly, the Zika virus and the *Aedes* mosquito in November 2015 (Ministry of Health, 2015d), thereby declaring an ESPIN (Ministry of Health, 2015c). This was furthered by the WHO declaring a Public Health Emergency of International Concern (PHEIC) in February 2016, stating that “a causal relationship between Zika infection during pregnancy and microcephaly is strongly suspected, though not yet scientifically proven” (WHO, 2016c). The timeline is important[[4]](#footnote-5), as scientific consensus linking microcephaly and Zika appeared only four months later, in March 2016 (Mlakar et al, 2016). Thus, the Zika-*related* securitization processes begun prior to substantiated scientific evidence. We know from previous outbreaks that securitization has been as much driven by fear and uncertainty as it has by public health reasoning (Enemark, 2007; Fourie, 2007). Yet, this was taken to the extreme by the WHO Emergency Committee, which considered Zika a PHEIC “not on the basis of what is currently known about the Zika virus…. [but] rather on the basis of what is not known about the clusters of microcephaly” (Heymann et al, 2016). Interestingly, once research began to emerge, demonstrating that Zika would not pose a risk to foetuses in the Global North, the issue was rapidly desecuritized through the removal of the PHEIC (November 2016) and ESPIN (May 2017). Accordingly, it was the uncertainty itself, which caused the securitization, rather than scientific discovery. This reaffirms analysis suggesting the health threats most conducive to securitization are those involving ‘unfamiliarity’ and ‘invisibility’ (Stern, 2002:1202; Enemark: 2007:8).

However, we recognise that whilst initially there was not globally accepted connection between Zika and microcephaly, several scientists and policymakers in Brazil had already suggested this. Diniz (2017) proposes that this delayed consensus was linked to the gender, location and institutional affiliation of the researchers and clinicians who detected the clusters of microcephaly and began to attribute it to Zika related rashes that women had during pregnancy. This raises further questions for securitization about the production of evidence, and who is considered an authority for public health decision-making.

***What: Vector***

Until Zika, global health security discourse has focused on the virus (e.g. Influenza, Ebola and HIV) as the existential threat and candidate for securitization (Enemark 2017; Kamradt-Scott and McInnes, 2012; McInnes and Rushton, 2013;), with response effort targeting the virus through medicalisation (Elbe 2018). More recently, there have been instances where those infected have been the target of securitized interventions, through social distancing for influenza (Glass et al 2006), quarantine (Eba 2014), and airport screening (Mabey, Flasche & Edmunds 2014). Yet, Zika represents a new departure for health securitization, as the grammar of security identified the *mosquito* (vector) as the existential threat, rather than the virus itself or those infected. Whilst animal vectors have been locations of securitization before, such as the culling of bird flocks during avian influenza, or restrictions on food imports during BSE, Zika represents the first instance whereby a vector has been framed as an existential threat.

A vector is a living organism that can transmit infectious diseases between humans and/or animals (WHO 2017). In most instances, common vectors for disease including mosquitoes, ticks, fleas or snails have been conceptualised as “annoying” or an “inconvenient pest” (Patterson, 2016). Yet, recent efforts by the WHO has sought to reconsider these vectors in securitized terminology. For example, a 2014 campaign for vector control entitled “*Small bite, big threat*” (WHO, 2014) draws on securitized language in an effort to profit from the climate of securitized health and the contemporary threat-urgency modality present in infectious disease control. This frame has been exaggerated in the Zika outbreak, to the extent that the vector was the focus of the securitization processes, constructed as the enemy at state and federal levels in Brazil, with campaigns such as “A mosquito is not stronger than an entire country” (Government of Brazil 2016d) and “Brazil will not be defeated by a mosquito” (Ministry of Health, 2016c). Response activities also focused on scaled up vector control (Ministry of Health, 2016b), including launching “[a] war on the mosquito”[[5]](#footnote-6). A cynical consideration of such a policy contends, given Brazil’s historical success at undertaking fumigation, this was a more achievable task than the government committing to short term targets of vaccine or treatment development, not to mention the associated costs of pursuing such path. Furthermore, at a time of uncertainty, being able to see government action through observable fumigation efforts produced a convenient visual, rather than “invisible” scientists in laboratories.

This mass securitized response focused on vector control occurred within the three securitization processes we narrated previously. The government called on all of society to fight the vector, requiring the acceptance of the securitization process by the general public for government forces to visibly fumigate and destroy breeding grounds. The federal fumigation project explicitly included periodic surveillance of *all* of Brazil’s 67 million public (17 million prisons, schools, hospitals etc.) and (50 million) private urban dwellings (Ministry of Health, 2016b). This was carried out between December 2015-2016 aiming to visit, and revisit, all buildings. Whilst there were some limitations to fully achieving this goal, including issues of closed buildings or refused entry (see Table 1), during the most intense phase of this activity, over 1,125,000 visits were made by government forces each day.



*Table 1. Individual urban dwelling visits in 2016 (Ministry of Health, 2016d);*

Visits were coordinated by one ‘epidemiological agent’, supported by two military personnel morphed into ‘endemic control agents’. Instead of providing security or commanding operations, the military supported health workers in educating the population on Zika and other mosquito-transmitted diseases and conducted thorough inspection and destruction of breeding grounds. The presence of military personnel varied in time (3-to-6 months) and number according each municipality’s needs. At least 50,000 members of the Armed Forces participated in team inspections. This assistive role was reinforced by its non-coercive character: military personnel were explicitly prohibited from carrying weapons or using force in the inspections, a point specified by the federal government.

This vector control policy came to a fore on February 13, 2016: “Zika Zero Day”, whereby the government mobilized 220,000 military personnel (60% of the country’s Armed Forces), along with state representatives, ministers and local politicians to undertake detection, fumigation and awareness activities. At the end of the day, almost 3 million residences houses (in 350 municipalities) were inspected for mosquito breeding grounds and 4 million pamphlets with information on Zika were distributed (Government of Brazil, 2016b).

Securitization’s focus on the mosquito, instead of on the virus, furthers the understanding of threat and danger in securitzation more broadly, when considered in relation to the lack of evidence surrounding the virological. Due to the aforementioned uncertainty around the causality between the Zika virus and microcephaly, analogic decision theory tells that in the absence of knowledge, it is best to stick to what is known. In the case of Zika-related microcephaly, all that was known was that the virus is spread by mosquitoes, and that babies are being born with small heads. Given the visceral vulnerability of newborns, and Brazil’s experiences with vector control over the past decade which are well documented (Braga & Valle, 2007; Killeen et al 2002; Lowy, 2017;), it was unsurprising that the focus of the response fell on vector control.

But this vectorised unknown is not without tension; securitizing the vector, rather than the virus leaves room for extraordinary measures to be taken against mosquitoes, irrelevant of whether they are actually infected with the virus or not. Whilst this may not be a problem per se, and recognising that these *Aedes* also carry the Dengue, Yellow Fever and Chikunguyna viruses, and therefore there are public health benefits to reducing their circulation, it does raise questions around perceived threat and actual threat, as vector control programmes destroy both infected mosquitoes and non-infected mosquitoes. Uncertainty plays into this further, and this bundled up in a securitization narrative can allow for more extreme securitized measures to take place, with the fear that this may reflect the more controversial measures for vector control from Brazil’s past, including Oswaldo Cruz’s mosquito control programme to manage an outbreak of Yellow Fever in Rio de Janeiro. Beginning in 1903, ‘sanitation brigades’ were given a mandate to tackle all possible public mosquito breeding grounds, with the legal freedom to enter private dwellings if the owners refused. A significant number of houses and fragile urban dwellings infected with mosquitoes were torn down under the government’s sanitation and urbanization plan for the city, with no compensation to (predominantly poor) owners and residents.

This was, to a certain extent, replicated during the Zika outbreak, with the deployment of the military tasked with supporting the epidemiological agents going door to door to check for mosquito reservoirs and to fumigate civic spaces. Importantly during Zika, these soldiers were not allowed to force entry, performing a supporting role to health workers to minimise the risk of reacting to extreme securitized policies. However, that is not to say that control methods used to manage this vectorised unknown are not without controversy. The focus on destroying the vector led to elimination methods which have moral concerns for some, including the release of Wolbachia infected or genetically modified mosquitoes as a form of bio-control of native species (Yakob & Walker, 2016) and further evidence of the medicalisation of insecurity (Elbe, 2012)

Globally, the securitization of the vector raises a number of future questions: Are we going to see new framing of vector-borne disease, particularly recognising that mosquitos remain the deadliest vector in the world (Gates, 2014)? We know that malaria is one of the biggest killers in Africa: in 2015 it caused 212 million cases and 429,000 deaths (WHO 2018). Will the security discourse move to focus on those diseases which have high mortality and morbidity, but without the “sexiness” of securitized disease (Kamradt-Scott 2015)? Moreover, if climate change continues as predicted, we anticipate that vector-borne diseases will spread to new parts of the globe as new environments become hospitable to mosquitoes (notably Europe and North America). Given this scenario, this designation of the mosquito as an existential threat could have significant implications for how we understand the connection between health security and vector-borne disease, given the assumption that securitization of health issues tend to focus on those health concerns which affect the Global North (Rushton, 2011).

**Conclusion**

Securitizing Zika served a political purpose for the multiple Brazilian governments at different levels of governance, at a time of political turmoil domestically and heightened awareness of global health security. Ultimately, the securitized response offered by Brazil during the Zika crisis ultimately led to a decline in the incidence of the virus, and its vectors (de Magalhaes-Barbosa et al, 2016; Ault et al, 2019). Yet, that is not to say that such a response should be the gold standard of responses to vector-borne disease, as it raises a number of further questions relating to the utility of securitization for disease. We offered an empirical analysis of how these key developments in health securitization played out at subnational and federal governance levels in Brazil, highlighting the range of activity that was being undertaken under this securitization narrative. We have shown that simultaneous processes of securitization at different times, by different actors and for different purposes yet all being connected to the same condition. By promoting the issue beyond normal politics and taking extraordinary measures, the government reassured the population, fearful for their babies being born with microcephaly, that the issue is being tackled through the performance of a security response, notably including the security sector in this. In doing so, we considered the contextual importance of five features of the Zika’s securitization in Brazil; *where -* in Brazil’s at the height of domestic political crisis, and given its history with vector control programmes; *when* – post Ebola with a heightened sense of global health risk; *who* - the focus on foetuses and babies as an affected group in the securitization, ensuring a threat-urgency modality amid the population, despite the fact that this group was not the referent object of the multiple securitization processes we narrate; *how* *-* the question of evidence (or lack thereof) in securitization processes; and *what -* the focus of the securitization on the vectorised unknown rather than the virus itself, and the implications this has for global health security going forward.

# References

Attaran A (2016) Off the podium: why public health concerns for global spread of Zika virus means that Rio de Janeiro’s 2016 Olympic Games must not proceed. *Harvard Public Health Review,* 10. Available at <http://harvardpublichealthreview.org/off-the-podium-why-rios-2016-olympic-games-must-not-proceed/> (accessed 04 February 2017).

Ault S, Bezerra H, Barbiratto S, de Resende M, Castellanos L... & Kleber G (2019) The Decline of Dengue in the Americas in 2017: Discussion of Multiple Hypotheses. *Tropical Medicine & International Health*. Available at <https://doi.org/10.1111/tmi.13200> (accessed 01 March 2019).

Balzacq, T (2005) The three faces of securitization: Political agency, audience and context. European Journal of International Relations 11(2): 171–201.

Balzacq T, ed (2010) *Securitization theory: how security problems emerge and dissolve*. London: Routledge.

Barreto M, Teixeira M, Bastos F, Ximenes R, Barata R, Rodrigues L (2011) Successes and failures in the control of infectious diseases in Brazil: social and environmental context, policies, interventions, and research needs. *The Lancet,* 377(9780):1877-1889.

BBC (2016) Zika virus: the worst day of my life says mother of baby. Available at <https://www.bbc.com/news/av/world-latin-america-35406933/zika-virus-the-worst-day-of-my-life-says-mother-of-baby> (accessed 12 March 2019).

BBC (2017) Brazilian corruption scandals: all you need to know. Available at: <http://www.bbc.co.uk/news/world-latin-america-35810578> (accessed 12 November 2017)

Boseley S (2016) Zika emergency pushes women to challenge Brazil’s abortion law. *The Guardian*, 19 July. Available at <https://www.theguardian.com/global-development/2016/jul/19/Zika-emergency-pushes-women-to-challenge-brazil-abortion-law> (accessed 16 November 2017)

Braga I, Valle D (2007) Aedes aegypti: histórico do controle no Brasil. *Epidemiologia e serviços de saúde*, 16(2):113-118.

Brocklehurst H (2017) *Who's afraid of children?: Children, conflict and international relations*. London: Routledge.

Burman E (1994) Innocents abroad: Western fantasies of childhood and the iconography of emergencies. *Disasters*, 18(3): 238-253.

Buzan B, Wæver O, De Wilde J (1998) *Security: a new framework for analysis*. Boulder (CO): Lynne Rienner Publishers.

Câmara F, Theophilo F, Santos G, Pereira S, Câmara D, Matos R (2007) Estudo retrospectivo (histórico) da Dengue no Brasil: características regionais e dinâmicas. *Revista da Sociedade Brasileira de Medicina Tropical*, 40 (2): 192-196.

Camargo T (2016) O debate sobre aborto e Zika: lições da epidemia de AIDS. *Cadernos de Saúde Pública*, 32: p.e00071516.

Casa Civil (2011) Decreto 7.616/2011. Available at: <http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2011/Decreto/D7616.htm> (accessed 05 December 2017).

Casa Civil (2015) Decretada emergência em Goiás para combate ao Aedes aegypti. Available at: <http://www.casacivil.go.gov.br/post/ver/206660/decretada-emergencia-em-goias-para-combate-ao-aedes-aegypti> (accessed 13 December 2017).

CDC – Center for Disease Control (2016) Zika Travel Information, Available at: [https://wwwnc.cdc.gov/travel/page/Zika-information](https://wwwnc.cdc.gov/travel/page/zika-information) (accessed 02 July 2017)

CONASS, 2015 Saúde em Foco ed. 17, “Propostas do CONASS para o combate às doenças transmitidas pelo Aedes aegypti no país e em especial na Região Nordeste” <http://www.conass.org.br/consensus/propostas-conass-para-o-combate-doencas-transmitidas-pelo-aedes-aegypti-pais-e-em-especial-na-regiao-nordeste/>

CONASS – Conselho Nacional de Secretários de Saúde (2015b) Aumento de casos de microcefalia coloca em alerta a saúde pública brasileira. Available at: <http://www.conass.org.br/consensus/aumento-de-casos-de-microcefalia-coloca-em-alerta-saude-publica-brasileira/> (accessed 25 July 2017)

Cook A (2010) Securitization of Disease in the United States: Globalization, Public Policy, and Pandemics. *Risk, Hazards & Crisis in Public Policy*, 1(1): 11-31.

Crawford N (2000) The passion of world politics: Propositions on emotion and emotional relationships. *International Security*, 24(4):116-156.

Crick E (2012) Drugs as an existential threat: An analysis of the international securitization of drugs. *International Journal of Drug Policy*, *23*(5), 407-414.

Davies S (2008) Securitizing infectious disease. *International Affairs*, 84(2): 295-313.

Davies S, Kamradt-Scott A, Rushton S (2015) *Disease diplomacy: International norms and global health security*. Washington DC: JHU Press.

de Magalhães-Barbosa M, Prata-Barbosa A, Robaina J, Raymundo C, Lima-Setta F, da Cunha A (2016) Trends of the microcephaly and Zika virus outbreak in Brazil, January–July 2016. *Travel medicine and infectious disease*, 14(5):458-463.

de Wilde J (2008) Environmental Security Deconstructed. In: Brauch H.G. et al. (eds) *Globalization and Environmental Challenges.* Hexagon Series on Human and Environmental Security and Peace, vol 3. Springer, Berlin, Heidelberg

De Wit J, Das E, Vet R (2008) What works best: objective statistics or a personal testimonial? An assessment of the persuasive effects of different types of message evidence on risk perception. *Health Psychology*, 27(1):110-115.

Diniz D (2016) Zika virus, women and ethics. *Developing world bioethics,* 16(2):62-63.

Diniz D (2017) *Zika: from the brazilian backlands to global threat*. London: Zed Books.

Diniz D, Gumieri S, Bevilacqua B, Cook R, Dickens B (2017) Zika virus infection in Brazil and human rights obligations. *International Journal of Gynecology & Obstetrics,* 136(1):105-110.

Duffy M, Chen T, Hancock W, Powers A, Kool J, Lanciotti R, Pretrick M, Marfel M, Holzbauer S, Dubray C, Guillaumot L (2009) Zika virus outbreak on Yap Island, federated states of Micronesia. *New England Journal of Medicine*, 360(24):2536-2543.

Eba P (2014) Ebola and human rights in West Africa. *The Lancet*, 384(9960):2091-2093.

Elbe S (2006) Should HIV/AIDS be securitized? The ethical dilemmas of linking HIV/AIDS and Security. *International Studies Quarterly*, 50:119-44.

Elbe S (2010) *Security and global health*. Cambridge: Polity Press.

Elbe S (2012). Bodies as battlefields: toward the medicalization of insecurity. *International Political Sociology*, *6*(3), 320-322.

Elbe S (2018) *Pandemics, pills, and politics: governing global health security*. Washington DC: JHU Press.

Enemark C (2007) *Disease and security: natural plagues and biological weapons in East Asia*. London: Routledge.

Enemark C (2017) Ebola, Disease-Control, and the Security Council: From Securitization to Securing Circulation. *Journal of Global Security Studies*, 2(2):137-149.

Fidler D (2016) A pathology of public health securitism: Approaching pandemics as security threats. In: Clinton C, Sridhar D (eds.), *Governing Global Health*. London: Routledge, 57-80.

Flahault A, Wernli D, Zylberman P, Tanner M (2016) From global health security to global health solidarity, security and sustainability. *Bulletin of the World Health Organization*, 94(12):863.

Fourie P (2007) The relationship between the AIDS pandemic and state fragility. *Global Change, Peace & Security*, 19(3):281-300.

FGV – Fundação Getúlio Vargas (2016) Índice de Confiança na Justiça Brasileira – ICJBrasil. Available at: <http://portal.fgv.br/temas-dos-periodicos/estado-direito>

Gates B (2014) The Deadliest Animal in the World. Available at: <https://www.gatesnotes.com/Health/Most-Lethal-Animal-Mosquito-Week> (accessed 15 November 2017)

Glass R, Glass L, Beyeler W, Min H (2006) Targeted social distancing design for pandemic influenza. *Emerging infectious diseases*, 12(11):1671-1681.

Globo (2015) Recife e PE decretam estado de emergência devido ao Aedes aegypti. Available at: <http://g1.globo.com/pernambuco/noticia/2015/11/recife-e-pe-decretam-estado-de-emergencia-devido-ao-aedes-aegypt.html> (accessed 13 December 2017).

Globo (2015b) Governo de Sergipe decreta emergência devido a microcefalia. Available at: <http://g1.globo.com/se/sergipe/noticia/2015/12/governo-de-sergipe-decreta-emergencia-devido-microcefalia.html> (accessed 13 December 2017).

Globo (2015c) Governo do RN decreta emergência após alta em casos de microcefalia. Available at: <http://g1.globo.com/rn/rio-grande-do-norte/noticia/2015/12/governo-do-rn-decreta-emergencia-apos-alta-em-casos-de-microcefalia.html> (accessed 13 December 2017).

Globo (2015d) Governo da PB decreta emergência após alta em casos de microcefalia. Available at: <http://g1.globo.com/pb/paraiba/noticia/2015/12/governo-da-pb-decreta-emergencia-apos-alta-em-casos-de-microcefalia.html> (accessed 13 December 2017).

Globo (2015e) Zika vírus faz governo do ES decretar situação de emergência. Available at: [http://g1.globo.com/espirito-santo/noticia/2015/12/Zika-virus-faz-governo-do-es-decretar-situacao-de-emergencia.html](http://g1.globo.com/espirito-santo/noticia/2015/12/zika-virus-faz-governo-do-es-decretar-situacao-de-emergencia.html) (accessed 13 December 2017).

Globo (2015f) Mosquito Aedes aegypti faz Manaus decretar situação de emergência. Available at: <http://g1.globo.com/am/amazonas/noticia/2015/12/mosquito-aedes-aegypti-faz-manaus-decretar-situacao-de-emergencia.html> (accessed 13 December 2017).

Gostin L, Mundaca-Shah C, Kelley P (2016) Neglected Dimensions of Global Security: The Global Health Risk Framework Commission. *JAMA*, 315(14):1451-1452.

Gostin L, Ayala A (2017) Global Health Security in an Era of Explosive Pandemic Potential. *Journal of National Security Law & Policy*, 9(1):53-80.

Glynn R, Boland M (2016) Ebola, Zika and the International Health Regulations–implications for Port Health Preparedness. *Globalization and health*, 12(1), p.74.

Government of Brazil (2012) Militares prestam apoio médico em áreas isoladas da Amazônia. Available at: <http://www.brasil.gov.br/defesa-e-seguranca/2012/11/militares-prestam-apoio-medico-em-areas-isoladas-da-amazonia> (accessed 8 December 2017).

Government of Brazil (2015) Entrevista coletiva concedida pela Presidenta da República, Dilma Rousseff, após reunião sobre as Ações de Enfrentamento de Doenças Transmitidas pelo Aedes Aegypti (Dengue, Chikungunya e Zika) - Recife/PE. Available at: [http://www2.planalto.gov.br/acompanhe-o-planalto/entrevistas/entrevistas/entrevista-coletiva-concedida-pela-presidenta-da-republica-dilma-rousseff-apos-reuniao-sobre-as-acoes-de-enfrentamento-de-doencas-transmitidas-pelo-aedes-aegypti-dengue-chikungunya-e-Zika-recife-pe](http://www2.planalto.gov.br/acompanhe-o-planalto/entrevistas/entrevistas/entrevista-coletiva-concedida-pela-presidenta-da-republica-dilma-rousseff-apos-reuniao-sobre-as-acoes-de-enfrentamento-de-doencas-transmitidas-pelo-aedes-aegypti-dengue-chikungunya-e-zika-recife-pe) (accessed 02 August 2017)

Government of Brazil (2016) Pronunciamento da Presidenta da República, Dilma Rousseff, em cadeia nacional de rádio e televisão, sobre o vírus Zika. Available at: [http://www2.planalto.gov.br/acompanhe-o-planalto/discursos/discursos-da-presidenta/pronunciamento-da-presidenta-da-republica-dilma-rousseff-em-cadeia-nacional-de-radio-e-televisao-sobre-o-virus-Zika](http://www2.planalto.gov.br/acompanhe-o-planalto/discursos/discursos-da-presidenta/pronunciamento-da-presidenta-da-republica-dilma-rousseff-em-cadeia-nacional-de-radio-e-televisao-sobre-o-virus-zika) (accessed 02 August 2017).

Government of Brazil (2016b) Brasil vive hoje Dia Nacional de Mobilização Zika Zero; saiba como participar. Available at: [http://www.brasil.gov.br/saude/2016/02/brasil-vive-hoje-dia-nacional-de-mobilizacao-Zika-zero-saiba-como-participar](http://www.brasil.gov.br/saude/2016/02/brasil-vive-hoje-dia-nacional-de-mobilizacao-zika-zero-saiba-como-participar) (accessed 17 September 2017).

Government of Brazil (2016c) Brasil vai vencer a Guerra contra o Zika, diz Dilma. Available at: [http://www.brasil.gov.br/governo/2016/02/brasil-vai-vencer-a-guerra-contra-o-Zika-diz-dilma](http://www.brasil.gov.br/governo/2016/02/brasil-vai-vencer-a-guerra-contra-o-zika-diz-dilma) (accessed 07 October 2017)

Government of Brazil (2016d) Um mosquito não e mais forte que um pais inteiro. Available at: <https://www.defesa.gov.br/arquivos/pdf/Panfleto%20Zika_Defesa_165x220.pdf> (accessed 7 October 2017).

Government of Brazil (2017), Instituto Brasileiro de Geografia e Estatística, Available at: [www.ibge.gov.br](http://www.ibge.gov.br) (accessed 01 December 2017).

Enemark C (2007) *Disease and security: natural plagues and biological weapons in East Asia*. London: Routledge.

Hansen L, Nissenbaum H (2009) Digital disaster, cyber security and the Copenhagen School. *International Studies Quarterly,* 53(4):1155 -1175

Hansen L (2011) Theorizing the image for security studies: Visual securitization and the Muhammad cartoon crisis. *European Journal of International Relations*, 17(1):51-74.

Heymann D, Hodgson A, Freedman D, Staples J,... & Menon K (2016). Zika virus and microcephaly: why is this situation a PHEIC?. *The Lancet*, 387(10020):719-721.

Hollande F (2016). Towards a global agenda on health security. *The Lancet*, 387(10034):2173.

Howell A (2014) The Global Politics of Medicine: Beyond Global Health, Against Securitization Theory. *Review of International Studies*, 40(5):961-987.

Ingram A (2009) The geopolitics of disease. *Geography Compass*, 3(6):2084-2097.

Kale S (2016) Brazil takes historic first step towards Decriminalizing Abortion. Available at [https://www.theguardian.com/global-development/2016/jul/19/Zika-emergency-pushes-women-to-challenge-brazil-abortion-law](https://www.theguardian.com/global-development/2016/jul/19/zika-emergency-pushes-women-to-challenge-brazil-abortion-law) (accessed 14 April 2017).

Kamradt-Scott A, McInnes C (2012) The securitisation of pandemic influenza: Framing, security and public policy. *Global Public Health*, 7(sup2):S95-S110.

Kamradt-Scott A (2015) *Managing global health security: The world health organization and disease outbreak control*. NY: Palgrave.

Killeen GF, Fillinger U, Kiche I, Gouagna LC, Knols BG (2002) Eradication of Anopheles gambiae from Brazil: lessons for malaria control in Africa? *The Lancet infectious diseases*, 2(10):618-627.

Lakoff A (2017) *Unprepared: Global health in a time of emergency*. Oakland (CA):University of California Press.

Levina M (2015) *Pandemics and the Media (Global Crises and the Media).* New York: Peter Lang Publishing.

Löwy I (2017) Leaking Containers: Success and Failure in Controlling the Mosquito Aedes aegypti in Brazil. *American Journal of Public Health*, 107(4):517-524.

Mabey D, Flasche S, Edmunds W (2014) Airport Screening for Ebola. *BMJ,* 349:g6202.

Macmillan L (2015) Children, civilianhood, and humanitarian securitization. *Critical Studies on Security*, 3(1)62-76.

Malkki L (1996) Speechless emissaries: Refugees, humanitarianism, and dehistoricization. *Cultural anthropology*, 11(3):377-404.

McDonald M (2008) Securitization and the Construction of Security. *European Journal of International Relations*, 14(4):563-587.

McInnes C, Lee K (2012) *Global health and international relations*. Cambridge: Polity Press.

McInnes C, Rushton S (2013) HIV/AIDS and securitization theory. *European Journal of International Relations*, 19(1):115-138.

Ministry of Defence – Brazil (2017) Marinha Do Brasil. Available at: <http://www.mar.mil.br/asshop/pergunta.htm> (accessed 08 December 2017)

Ministry of Health – Brazil (2015) Confirmação do Zika Vírus no Brasil. Available at: [http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/secretarias/svs/noticias-svs/17702-confirmacao-do-Zika-virus-no-brasil](http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/secretarias/svs/noticias-svs/17702-confirmacao-do-zika-virus-no-brasil) (accessed 17 July 2017).

Ministry of Health – Brazil (2015b) Boletim Epidemiológico. Available at: <http://portalarquivos.saude.gov.br/images/pdf/2015/novembro/19/Microcefalia-bol-final.pdf> (accessed 03 November 2017).

Ministry of Health – Brazil (2015c) Portaria No 1.813/2015. Available at: <http://bvsms.saude.gov.br/bvs/saudelegis/gm/2015/prt1813_11_11_2015.html> (accessed 12 August 2017).

Ministry of Health – Brazil (2015d) Ministério da Saúde confirma relação entre vírus Zika e microcefalia. Available at: [http://portalsaude.saude.gov.br/index.php/cidadao/principal/agencia-saude/21014-ministerio-da-saude-confirma-relacao-entre-virus-Zika-e-microcefalia](http://portalsaude.saude.gov.br/index.php/cidadao/principal/agencia-saude/21014-ministerio-da-saude-confirma-relacao-entre-virus-zika-e-microcefalia) (accessed 06 December 2017).

Ministry of Health – Brazil (2016) Boletim Epidemiológico. Available at: <http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/secretarias/svs/boletim-epidemiologico> (accessed 02 November 2017).

Ministry of Health – Brazil (2016b) Combate ao Aedes: 40% dos imóveis já foram vistoriados. Available at: <http://combateaedes.saude.gov.br/pt/noticias/370-combate-ao-aedes-40-dos-imoveis-ja-foram-vistoriados> (accessed 02 December 2017).

Ministry of Health – Brazil (2016c) O Brasil não será derrotado por um mosquito. Available at: <https://twitter.com/minsaude/status/804679967296655360> (accessed 02 December 2017).

Ministry of Health – Brazil (2016d), Preventing and combating Dengue, Chikunguyna e Zika. Available at: <http://combateaedes.saude.gov.br/en/epidemiological-situation#epidemiological-reports> (accessed 02 December 2017).

Mirzoeff N (ed) (2002) *The visual culture reader*. London: Psychology Press.

Mlakar J, Korva M, Tul N, Popović M, Poljšak-Prijatelj M, Mraz J, Kolenc M, Resman Rus K, Vesnaver Vipotnik T, Fabjan Vodušek V, Vizjak A. (2016) Zika virus associated with microcephaly. *New England Journal of Medicine,* 374(10):951-958.

Nunes J, Pimenta D (2016) A Epidemia de Zika e os limites da saúde global. *Lua Nova: Revista de Cultura e Política*, 21-46.

Palazzo C (2016) Rio Olympics: which athletes have withdrawn over Zika fears? *The Telegraph.* Available at: [http://www.telegraph.co.uk/sport/0/rio-olympics-which-athletes-have-withdrawn-over-Zika-fears/](http://www.telegraph.co.uk/sport/0/rio-olympics-which-athletes-have-withdrawn-over-zika-fears/) (accessed 08 August 2016).

Patterson G (2016) Looking Backward, Looking Forward: The long, torturous struggle with mosquitoes, *Insects,* 7(4):56.

Rebelo A (2016) Defesa da saúde. Available at: <http://www.defesa.gov.br/component/content/article/171-menu-superior/area-de-imprensa/artigos-e-entrevistas-do-ministro/18125-defesa-da-saude> (accessed 06 October 2017).

Reuters (2008) Brazil military will combat Dengue outbreak in Rio. Available at: <https://www.reuters.com/article/us-brazil-dengue/brazil-military-will-combat-dengue-outbreak-in-rio-idUSN2329478120080323> (accessed 08 December 2017).

Ribeiro B, Hartley S, Nerlich B, Jaspal R (2018) Media coverage of the Zika crisis in Brazil: The construction of a ‘war’ frame that masked social and gender inequalities. *Social Science & Medicine*, 200:137-144.

Rushton S (2011) Global health security: security for whom? Security from what? *Political Studies*, 59(4):779-796.

Rushton S, Youde J (eds.) (2014) *Routledge Handbook of Global Health Security*. London: Routledge.

Salter M (2008) Securitization and desecuritization: a dramaturgical analysis of the Canadian Air Transport Security Authority. *Journal of International Relations and Development*, 11(4):321-349.

Samarasekera U, Triunfol M (2016) Concern over Zika virus grips the world. *The Lancet*, 387(10018):521.

Seckinelgin H, Bigirumwami J, Morris J (2010) Securitization of HIV/AIDS in context: gendered vulnerability in Burundi. *Security dialogue*, 41(5):515-535.

Secretary of Health – Bahia (2015) Mosquito Aedes Aegypti e a principal ameaça à saúde pública do Brasil. Available at: <http://www.saude.ba.gov.br/2015/11/20/mosquito-aedes-aegypti-e-a-principal-ameaca-a-saude-publica-do-brasil/> (accessed 09 November 2016).

Senn M (2017) The art of constructing (in) security: probing rhetorical strategies of securitisation. *Journal of International Relations and Development*, 20(3):605-630.

Stephenson N, Davis M, Flowers P, MacGregor C, Waller E (2014) Mobilising “vulnerability” in the public health response to pandemic influenza. *Social Science & Medicine*, 102:10-17.

Stern J (2002) Dreaded risks and the control of biological weapons. *International Security*, 27(3):89-123.

Tavernise S (2016) No Zika cases reported during Rio Olympics, WHO says. *New York Times*. Available at: [https://www.nytimes.com/2016/09/03/health/Zika-rio-olympics.html](https://www.nytimes.com/2016/09/03/health/zika-rio-olympics.html) (accessed 08 December 2017).

Valle D (2016) Sem bala mágica: cidadania e participação social no controle de *Aedes aegypti*. *Epidemiologia e Serviços de Saúde,* 25:629-632.

Vuori J (2008). Illocutionary logic and strands of securitization: Applying the theory of securitization to the study of non-democratic political orders. *European Journal of International Relations*, 14(1):65-99.

Vuori J (2010) A timely prophet? The doomsday clock as a visualization of securitization moves with a global referent object. *Security Dialogue*, 41(3):255-277.

Wagnsson C, Hellman M, Holmberg A (2010) The centrality of non-traditional groups for security in the globalized era: the case of children. *International Political Sociology*, 4(1):1-14.

Waldby C, Kippax S, Crawford J (1995) Epidemiological knowledge and discriminatory practice: AIDS and the social relations of biomedicine. *The Australian and New Zealand Journal of Sociology*, 31(1):1-14.

Watson S D (2009) *The securitization of humanitarian migration: Digging moats and sinking boats*. London: Routledge.

Watson S (2011) The ‘human’ as referent object? Humanitarianism as securitization. *Security Dialogue*, 42(1):3-20.

Williams M (2003) Words, images, enemies: Securitization and international politics. *International Studies Quarterly*, 47(4):511-531.

World Health Organization (2005) International Health Regulations. Available at: <http://www.who.int/ihr/9789241596664/en/> (accessed 02 April 2016).

World Health Organization (2014) WHO Global Health Days, Small bite, big threat. Available at: <https://www.who.int/campaigns/world-health-day/2014/en/> (accessed 02 April 2016).

World Health Organization (2016) Zika Factsheet. Available at: <http://www.who.int/mediacentre/factsheets/microcephaly/en/> (accessed 29 July 2017)

World Health Organisation (2016b) Advancing global health security from commitments to actions. Available at: <http://www.who.int/ihr/publications/WHO_HSE_GCR_2016_15/en/> (accessed 02 April 2016).

World Health Organisation (2016c) WHO director general summarises the outcome of the emergency committee regarding clusters of microcephaly and Guillain-Barre syndrome. Available at: <http://www.who.int/en/news-room/detail/01-02-2016-who-director-general-summarizes-the-outcome-of-the-emergency-committee-regarding-clusters-of-microcephaly-and-guillain-barr%C3%A9-syndrome> (accessed 29 July 2017).

World Health Organization (2017) Vector-borne diseases. Available at: <https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases> (accessed 21 December 2017).

World Health Organization (2018) Malaria Factfile. Available at: <http://www.who.int/features/factfiles/malaria/en/> (accessed 21 December 2017).

Wyness M, Harrison L, Buchanan I (2004) Childhood, politics and ambiguity: Towards an agenda for children’s political inclusion. *Sociology*, 38(1):81-99.

Yakob L, Walker T (2016) Zika virus outbreak in the Americas: the need for novel mosquito control methods. *The Lancet Global Health*, 4(3):e148-e149.

Youde J (2016) High Politics, Low Politics, and Global Health. *Journal of Global Security Studies*, 1(2):157-170.

Table 2: A Timeline of Zika

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Microcephaly** | **Zika** | ***Aedes aegypti* mosquito** | **Brazilian Politics** |
| **Mid-2014-early 2015** | Jan-Jun: average 17 cases/month (within historical average) | Unknown disease reported in many states | Ongoing “traditional” initiatives to fight mosquito breeding grounds (mainly concerns over dengue) | (Jan 01, 2015) – Rousseff sworn in as President for second term  Operation Car Wash emerges investigating the largest state corruption scandal involving Petrobrás and several leading politicians. |
| **Feb 2015** | M. of Health’s Office of Health Vigilance began to monitor cases of “indeterminate acute exanthematous illness” |  |
| **Mar 2015** | Brazilian Supreme Court rules that prosecutors can investigate members of the Workers Party and the link between Petrobrás and funding political campaigns, corruption and money laundering. |
| **Apr 2015** | 1st lab. confirmed case of Zika |  |
| **May 2015** | (May 15) M of Health officially confirms presence of Zika in Brazil  Gov.: combating Zika will fall under existing measures towards *Aedes* | |  |
| **Jun 2015** | Proposed bill in Fed Lower House: “National Plan for tackling Dengue, Chikungunya virus, Zika virus” (PL 1861/2015) | |  |
| **Jul 2015** | Jul-Sep/Oct: only continuation of pre-existing policies (winter months & ‘dry’ season, reduced mosquito populations) | |  |
| **Aug 2015** | August: 70 new cases (23 in NE)  States in NE reporting increased number of cases | (Aug 16) Protests across Brazil |
| **Sep 2015** |  |
| **Oct 2015** | October: 198 new cases (172 in NE)  (Oct 23) Pernambuco launches task-force to instigate cause of microcephaly |  |  |  |
| **Nov 2015** | November: 563 new cases (444 in NE)  (Nov 11) M. Health declares “Public Health Emergency of National Importance” due to increased cases of microcephaly; establishes Operation Centre for Public Health Emergencies  (Nov 12) Pregnancy in high-risk areas: controversy |  |  |  |
| (Mid-Nov) M of Health & media begins to signal possible link between Zika and microcephaly | | |  |
| (Nov 23) Pres. Rousseff determines creation of inter-ministerial group to deal with microcephaly | (Nov 20) National Council of State Heath Secretaries (CONASS) issue public letter to Minister of Health, calling for strong action on *Aedes* and its diseases | |  |
| (Nov 24) New national large-scale campaign against *Aedes* | |  |
| **(Nov 28) M of Health confirms link between Zika virus and microcephaly**  (Nov 29) Pernambuco declares “situation of emergency” related to the *Aedis aegypti* mosquito  (Nov 30) Federal gov. authorizes use of Armed Forces in Pernambuco to combat mosquito | | |  |
| **Dec 2015** | December: 662 new cases (464 in NE) |  |  | (Dec 02) petition for Rousseff’s impeachment begins |
| Several states declare “situation of emergency” related to microcephaly, zika and/or *Aedis* | | | (Dec 13) protests across Brazil |
| (Dec 05). National Plan to tackle Microcephaly |  |  |  |
| (Dec 21)Creation of National Office of Coordination & Control for tackling Dengue, Chikungunya, Zika virus and microcephaly | | |  |
| **Jan 2016** | Ongoing actions to assist children born with microcephaly (and their families), awareness campaigns for pregnant women and couples planning a pregnancy | M of Health announces mobilization of 220,000 officers (Army, Navy, Air Force) to assist with tackling the *Aedis aegypti* mosquito (& Zika) | |  |
| **Feb 2016** | (Feb 01) Federal Provisional Measure authorizes federal agents’ forced entry in abandoned public & private properties, and when known owner is not present to allow entry | |  |
| (Feb 01) WHO declares Zika & microcephaly Public H. Emergency of International Concern | |  |  |
| **March 2016** | (March 10th), NEJM article confirming link between Zika and microcephaly published | |  | Former president Lula da Silva involved in scandal; questions raised about Rousseff’s involvement in quashing investigation. Rousseff appoints Lula as Chief of Staff  (Mar 13) Protests across Brazil calling for arrest of Lula da Silva – in 337 municipalities  16th March Protests across Brazil |
| **April 2016** |  |  | | President of House of Representatives suspended for obstruction of investigations  (Apr 17) Protests across Brazil believing Rousseff knew about corruption and calling for her impeachment. House of Representatives votes to impeach Rousseff |
| **May 2016** |  |  | | (May 12) Senate votes to start impeachment of Rousseff |
| **Jul 2016** |  | Federal Law establishes rules allowing forced entry in households when owner refuses visit from mosquito-fighting teams | | (July 31) protests cross Brazil |
| **August 2016** |  | |  | (Aug 5-21) Rio Olympic Games  (Aug 9) Senate votes to indict Rousseff  (Aug 31) Senate votes to impeach Rousseff and she is removed from office permanently |
| **September 2016** |  | |  | (Sep 01) Michel Temer sworn in as President |
| **Nov 2016** | (Nov 18) WHO declares end to Public Health Emergency of International Concern Zika & microcephaly | |  |  |
| **May 2017** | **(May 11) MoH: Emergency situation for microcephaly and Zika is declared over** | |  |  |

1. See Table 2 for chronology [↑](#footnote-ref-2)
2. Public Health Emergency of National Importance [↑](#footnote-ref-3)
3. See Table 2 for chronology [↑](#footnote-ref-4)
4. See Table 2 for chronology [↑](#footnote-ref-5)
5. War on the mosquito [↑](#footnote-ref-6)