

# Zika Virus Public Health Crisis and the Perpetuation of Gender Inequality in Brazil

Raquel Zanatta Coutinho (✉ [quelzanatta@gmail.com](mailto:quelzanatta@gmail.com))

Universidade Federal de Minas Gerais <https://orcid.org/0000-0002-2841-1480>

Aida Villanueva Montalvo

University of Texas at Austin

Abigail Weitzman

University of Texas at Austin

Letícia Marteleto

University of Texas at Austin

---

## Research

**Keywords:** Zika, Public health campaigns, Gender Norms, Gendered Power within Couples, Negotiations of Sex and Contraception, Contraception Management, Unwanted pregnancy

**DOI:** <https://doi.org/10.21203/rs.3.rs-60255/v1>

**License:**   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

---

# Abstract

**Background:** In 2015-2017, the Americas experienced a highly consequential epidemics for pregnancy and childbearing. Mainly transmitted by the mosquito *Aedes aegypti*, but also through sexual intercourse, the Zika virus poses the risk of congenital Zika syndrome to fetus, which includes microcephaly and other child development complications. When a public health crisis taps directly into reproductive health, typically a feminine realm, gender systems may reproduce deeply-rooted gender norms, especially those linked to cultural beliefs and expectations. This paper investigated the role of gender in two relational contexts: public health messaging to prevent Zika infections and women's Zika and pregnancy prevention negotiation with their sexual partners during the Zika outbreak.

**Methods:** We conducted a systematic content analysis of 94 unique pieces, governmental agencies mass-produced public health communication campaigns promoting Zika awareness. Print and online materials were collected for one year (May 2016-May 2017), such as TV ads, Internet Pop-ups, and pamphlets. We also analyzed transcripts from 16 focus groups we conducted with reproductive-aged women (18-40) in Belo Horizonte and Recife, two large cities differently affected by the Zika outbreak. Women answered open-ended questions related to personal knowledge of and experiences with the Zika virus, the related experiences of their friends and acquaintances, their primary information sources, and their perceptions of public health efforts and women's contraceptive use.

**Results:** Campaign pieces handling pregnancy and microcephaly demonstrated robust gendering, drastically targeting women, placing on their shoulders the responsibility for protecting a potential fetus from the disease. Campaigns neglected male's participation on Zika prevention and contraceptive management, and failed to address Brazil's large proportion of unplanned pregnancies. Women were placed in a double bind by being expected to prevent pregnancy and Zika amidst a relationship power dynamic that included unprotected sexual intercourse and gender norms regarding division of labor.

**Conclusion:** Government and individual responses to the epidemics reinforced gender roles, situating pregnant women as responsible for averting mosquito bites and microcephaly, emphasizing prevention of both disease and vector among women while excluding men. Since low-socioeconomic status women possessed fewer resources to preclude infection, we also find that beyond the gender divide, this subgroup faced more pronounced Zika prevention challenges.

## Plain English Summary

This paper investigated the role of gender in two relational contexts: public health messaging and women's Zika and pregnancy prevention negotiation with their partners during a public health shock of international proportions, the Zika outbreak in Brazil. Combining content analysis of public health campaigns with unique focus group data collected amidst the epidemic in two capital cities in Brazil, we find that the government and individual responses to the epidemics reinforced gender roles, emphasizing prevention of both disease and vector among women while excluding men. Traditional gender roles

placed women in a double bind by expecting them to prevent pregnancy and Zika without challenging the normatively gendered power dynamics hindering them from doing so. Public health campaigns perpetuated female vulnerability to infectious diseases and unwanted pregnancy, especially among low socioeconomic status women. Women's understanding of their role in prevention was strongly linked to gender ideology and magnified disadvantages among women of low socioeconomic status.

## Background

In 2015-2017, the Americas experienced a highly consequential epidemics for pregnancy and childbearing. Mainly transmitted by the mosquito *Aedes aegypti*, but also through sexual intercourse, the Zika virus poses the risk of congenital Zika syndrome to fetus, which includes microcephaly and other child development complications (1). In november 2015, when the link between the Zika virus infection and the surge in cases of microcephaly was established, a public emergency announcement was issued by the Brazilian Government, the country most affected by the outbreak (2). The announcement sparked mass media and government campaigns, revealing the potential risks to pregnant women and their babies. Images of microcephalic babies gained the headlines around the world. Brazil's Health Ministry informally recommended that women should avoid pregnancy until the risk had subsided (3–5), an in April 2016 the World Health Organization (WHO) declared Zika a Public Health Emergency of International Concern (6).

3,523 cases of microcephaly were confirmed in Brazil (7), disproportionately affecting poor, black, rural women (8,9). We now know that the Zika epidemic heavily impacted birth rates and fertility (10) and that fertility rates declined more steeply among young and well educated women, showing that the recommendation to delay pregnancy was not followed by the group that appeared to be most affected by microcephaly (11).

As soon as the first cases of microcephaly were discovered, gender scholars suscited a large amount of theoretical discussion regarding how structured inequality may exacerbate the consequences of the epidemics for the most vulnerable women. Recommendations to delay pregnancy assume all women have high levels of self-determination and are able to implement their reproductive plans. However, preventing pregnancy in Brazil is a highly complex matter (4,5), as 55% of pregnancies carried to term are unintended (12). There are several barriers to contraceptive implementation, such as lack of access and high costs (13,14), inconsistent use (15), methods with high failure rate and lack of access to medical care (16). These vulnerabilities add to intimate-partner violence, women's powerlessness to negotiate condom use and other gender norms in partner interaction (17–23), which could prevent both pregnancy and sexual transmission of Zika, especially among the less educated (18,24–26). Women who lack reproductive rights are among the poorest and less educated in the country, and oftentimes, live in the least developed areas of the country. They also lack access to clean water and sanitation, which exposes them even more to the risks of getting infected by mosquito borne diseases. This fatal combination explain why the impact of the Zika virus reproduced existing inequality falling most heavily on the most

disadvantaged members of society, leaving them unassisted to navigate mosquito control, contraception and pregnancy (5,8,9,16,27–33).

When a public health crisis taps directly into reproductive health, typically a feminine realm, gender systems may reproduce traditionally and deeply-rooted gender norms, especially those linked to cultural beliefs and expectations playing out in different relational contexts. Despite its importance, most of the literature regarding the gender consequences of the Zika outbreak is theoretical (5,16,27–35) with a dearth of empirical studies exploring how traditional gender stereotypes increase women's vulnerability and how gender division of labor hinders arbovirus control. Exceptions have been able to explore gendered power and norms during the Zika outbreak in connection with sex and contraceptive use (24,28,36).

This study investigates gender norms in *government-level* and *individual-level* contexts to prevent pregnancy and Zika infection amidst the first year and a half of the epidemic. We examined three research questions: Did public health campaigns reinforce heteronormative gender norms? What role did gender play in shaping how women navigated Zika and pregnancy prevention during the epidemic with their partners? And, did social class differences significantly affect how women negotiated the Zika infection threat?

Our findings suggest that Zika and microcephaly campaigns relying on childcare and motherhood concepts created different expectations for men and women. We argue that health officials drew on a traditionally-gendered *script* largely situating pregnant women as responsible for averting mosquito bites and microcephaly. Zika epitomized a 'pregnant woman's issue,' downplaying notions on how valuable the contributions of non-pregnant women and men could be for the containment of the disease. We found that many Brazilian women confronted Zika emergency fertility decisions from a disadvantaged position with respect to their partners. Gender constituted a persistent system of social practices acting in multiple relational contexts in the Zika epidemics: individually (micro) through interpersonal relationships and governmental-level (macro) through communication campaigns. We argue that both levels sustained stereotypical male and female beliefs fomenting female vulnerability to Zika virus infection. Since low-socioeconomic status (SES) women possessed fewer resources to preclude infection, we also find that beyond the gender divide, low SES women faced more pronounced Zika prevention challenges.

Gender Conventions, Zika and pregnancy prevention at the government and individual levels

Brazil declared a state of emergency in November 2015, as the country anxiously confronted the Zika epidemic (3). Headlines and media coverage highlighted the upsurges in microcephaly, reinforced women's protagonism and framed the epidemics as a war against the mosquito (29,30,35,37). Besides the media, two primary relational contexts modelled gendered Zika prevention perceptions. First, the government level, through public health communication campaigns seeking to raise awareness for Zika prevention. Second, individually, the intimate partner union in which partners interact to prevent Zika infection through protected sexual intercourse or exposure to mosquito bites.

## Government Level

According to Charaudeau (38), Public health campaigns differed from advertising campaigns because the audience did not represent a consumer, but a person with a civic and moral duty to modify behaviour in the name of social solidarity. Brazilian public health campaigns historically have centered on two major diseases, HIV-AIDS and dengue. While HIV is sexually transmitted, dengue is acquired only through the bite of the *Aedesaegypti* mosquito. Zika shares both transmitting vectors. In the case of HIV, the Brazilian public health sector's response has been widely celebrated as successful in altering behavior (39–41). In addition to a universal treatment policy and large-scale condom distribution, national TV and print campaigns promoted condom use, seeking prompt treatment, as well as fighting stigma. Scholars described such campaigns as liberal, praising the use of an open language regarding sexual intercourse and targeting gay men and sex workers (42). While successfully containing the disease among high-risk populations (41), this strategy unintentionally alienated other groups, specifically, adult women infected largely through sexual relations in monogamous, stable relationships (43–45). The underlying vulnerability encompassed heteronormative gender dynamics, making it challenging for women to enforce condoms use in monogamic relationships (18,19,21,22). In fact, married women displayed the lowest proportion of condom use compared to other demographic groups (46).

Concerning dengue, its spread has presented a pervasive public health problem in Brazil for decades, resulting in massive public health campaigns since the 1990s to educate Brazilians on preventing breeding its carrier, the *Aedes* mosquito (47). Yet, the dengue public efforts did not effectively reduce both incidence and the proportion of severe cases (29,47). Widely-disseminated materials outlined measures to eliminate mosquito breeding sites, primarily requesting stagnant water sources removal and managing solid waste in households and neighborhoods (48,49).

In the midst of the national Zika threat and microcephaly, the Brazilian Government launched several public campaigns to inform the public on how to eradicate the transferring vector—the *Aedes aegypti* mosquito, unsurprisingly resembling the dengue-eradication initiative. Dengue campaigns are also known for illustrating women watering plants and doing household chores while men performe 'outdoor chores,' like cleaning rain gutters. These gender-reinforced tasks critically help comprehend the persistence of the *Aedes aegypti* mosquito over the years (50,51). For Wenham et al. (5) it is necessary to investigate both the role of gender in arbovirus control and the role of arbovirus control on women, especially the division of labor in the implementation of policies.

Zika campaigns also informed the public that, if pregnant, one should implement measures of prevention to avoid mosquito bites, such as using repellants or long sleeve clothing. Scholars have argued that the images of microcephaly, much used in these kinds of campaigns, have underscored the gendered nature of the epidemics (5), causing an emotive response (52) followed by an immediate feeling of empathy, but that happens to detach maternity/maternal health from women's health/reproductive rights (30). As Davies and Bennett (16) point out, "within this narrow framing, women are seen as either caregivers or

mothers when it comes to healthcare access and rights". These causes two immediate reactions that we discuss in the next paragraphs.

The first is that by focusing extensively on microcephaly, policy-makers charges pregnant women with the responsibility to prevent Zika (35). Men and non-pregnant women may not perceive themselves as campaigns targets and susceptible to the virus, being unaware that they should be taking measures of precautions simply by being sexually active. For example, in Borges et al.'s study (36), with a large representative sample in an area in the Northeast, only 50.2% of the women interviewed knew Zika's sexual transmission and the recommendation for condom use. Only 1 in 10 women were asked about their pregnancy intentions by their health care provider and only 14.4% were advised about condom use to prevent Zika infection. In Diniz et al. (28), none of the young women interviewed knew about sexual transmission. Thus, focusing on pregnant women may be useful for pregnant women at the time of the epidemics, but unhelpful if we think half of all pregnancies are unintended and microcephaly is the only recognized consequence of the epidemics (28).

Besides, the moment women give birth, they stop worrying about Zika at all (24,28), another evidence that pregnant women have been extensively portrayed by the campaigns. Participants in the study of Diniz et al. (28) do not consider Zika an illness that still threatens babies and they "justify their low level of concern by the fact that Zika is no longer broadcast on radio and television, is not part of the conversations in social gatherings, and is not even brought up by health professionals". The interviewees in the study also reveal Zika is no longer discussed during prenatal care, although the risk of getting infected hasn't ceased to exist as a recent epidemiological report shows (7).

The second immediate reaction is that although women are recommended pregnancy postponement and measures of personal care, they are not provided with information about sexual and reproductive health (SRH) services already available, but that may be commonly disrupted in emergency contexts. In addition, scholars argue that campaigns did not embrace the SRH agenda and gender equity policies needed as an outbreak response (5,30,32,33). As in previous health campaigns (16,53), they strongly relied on different roles and expectations for men and women reinforcing preexisting heteronormative gender norms and gender stereotypes. By carrying preexisting gender beliefs into a new epidemic, the public health efforts may have augmented female vulnerability by promoting structural gender inequality (5,34).

There are important invisible intersections that are commonly left behind when designing policies to fight epidemics. Destroying mosquito breeding sites, implementing measures of individual protection, preventing pregnancy or caring for a child with microcephaly is nonetheless more troublesome for those in the low end of the socioeconomic scale (5). By simply recommending pregnant postponement without taking into account the large socioeconomic and self-determination differences of Brazilian women, campaigns not only charged women with the responsibility to avert microcephaly (5,34), but also "transforms a problem that is political, systemic, and structural into a question of individual conduct of poor, marginalized women who do not have power over their life projects" (30).

### *Individual-level*

Other than providing women the toolkit to make informed reproductive health decisions, campaigns fail to address contexts of gender based violence (5,30,34) and women's low power of negotiation to implement their reproductive plans (27,29,32). Failed attempts to alter sexual behavior and the inability to disagree with their sexual partners comprised vital aspects for understanding female sexual behavior, particularly when practices compromised health.

Researchers investigating high-fertility countries have consistently found women in stable relationships frequently unable to initiate a conversation on contraception (54). Passivity, submission, and emotion illustrates the context in which many sexual relationships occur in Latin America, and since condom use was not always discussed in advance, women sometimes had to ask their partner to use condom during intercourse, oftentimes resulting in unprotected sex (17–21,23). Experts have claimed Brazilian women who “would not even try to stop sexual intercourse to ask the partner to put on condoms” or “they would not stop the sexual intercourse in case they changed their minds about having sex” were almost four times more likely not to use condoms compared to women who report being able to pause or stop intercourse (22).

Brazilian ethnographic experts have illuminated, for example, power exerted over low-SES women commonly related to condom negotiations and intimate-partner violence (23). In Brazil, higher educational attainment was associated with lower adolescent and unintended pregnancy (15,55), and more confidence in enforcing condom use (25), resulting in higher condom practice (26,46). As noted, condom practice and pregnancy prevention remained of primary interest when analyzing the Zika epidemic, given the disease sexual transmission. Unwanted pregnancies may have increased fetal microcephaly vulnerability, as women might have taken longer to test for pregnancy, demonstrated less willingness to adopt healthy behavior (56,57) or delayed the start point at which women began actively protecting themselves against mosquito bites (24).

Researchers have also demonstrated how, in some situations, women distrust men regarding contraception responsibility (58,59). Prevalent cultural perception purporting men were not committed to pregnancy prevention explained why women usually were charged with this duty. Essentialist beliefs legitimized traditionally gendered roles (60). Pregnancy aversion during the Zika epidemic expected women to assume the prevention burden, fomenting uneven responsibilities distribution (34).

As hegemonic gender views remained more prevalent among the working-class (61,62), low SES women assumed men were incompetent for housework and women encountered more obstacles when exerting relationship power (63). In contrast, middle-class women exercised more egalitarian relationships with their partners and accomplished a more egalitarian domestic duty distribution. Although higher educational attainment protected women's bargaining power and sexual health significantly (64,65), the socioeconomic advantage did not completely prevent high-SES women from the conventional gender norms during partner interaction. Scholars exploring gendered patterns in housework allocation exemplified while double-earner, high-SES couples shared more household responsibilities, women still performed more tasks (63,66).

It is plausible to expect drastic class variation in Brazilian women's bargaining power during the Zika outbreak and, more broadly, in their power to negotiate an egalitarian distribution of responsibilities, pertaining to Zika prevention.

## Methods

In this paper, we relied upon two data sources (content analysis of public health campaigns and focus groups) to delve into three research questions on two levels of analysis (government and individual). First, to answer the first question, *Did public health campaigns reinforce heteronormative gender norms?*, we conducted a systematic content analysis of 94 unique pieces, governmental agencies mass-produced communication (67–69). Print and online materials were collected for one year (May 2016-May 2017), comprising the campaigns promoting Zika awareness, such as TV ads, radio jingles, Internet pop-ups, bus placards, pamphlets, and street banners. These ads attempted to reach a broad audience from diverse sociodemographic backgrounds and lifestyles. Since some announcements were more informational or educational about the disease, they sometimes encompassed lengthy text. However, others directed the audience using a single phrase (“Get rid of standing water in your backyard”) without telling them *why* to do it. This advertisement base entailed material publicly available for download and dissemination during the targeted Zika outbreak period. Specifically, the federal government, the Minas Gerais and Pernambuco states, and their respective city capitals Belo Horizonte and Recife also produced campaign pieces. The two municipalities were chosen for examination due to their varying infrastructural development and Zika incidence.

Two research team members scrutinized and coded pieces side-by-side, following deductively and inductively derived categories (70) to identify the presence of key themes, such as perceived intended audience gender, preponderant color scheme, graphic components, illustrated characters, and main topic and text content. For a complete code list, see the Methodological Appendix in the Additional File 1. Coding built on existing dengue public health campaigns (50), gendered Brazilian TV ads (71) and gender advertising (67). Eventually, when an unanticipated code emerged, the new coded was added, and the previous pieces were re-examined.

To answer the second and third questions, *What role did gender play in shaping how women navigated Zika and pregnancy prevention during the epidemic with their partners?* and, *did social class variations significantly affect how women negotiated the Zika infection threat?*, we examined our second qualitative data source: transcripts from 16 focus groups<sup>[1]</sup> with reproductive-aged women (18-40) in Belo Horizonte and Recife. Focus groups were stratified by socioeconomic status and environmental risk [see Additional File 1 for details]. During the focus groups, women answered broad, open-ended questions related to personal knowledge of and experiences with the Zika virus, the related experiences of their friends and acquaintances, their primary information sources, and their perceptions of public health efforts and women's contraceptive use. Gender ideology arose organically during most conversations but did not entail an explicit question included in the focus group protocol.

## Results

### *Did public health campaigns reinforce heteronormative gender norms?*

We examined the campaign items the Brazilian governmental agencies produced in 2016 and 2017, aimed at eradicating the Zika virus spreading. The Federal Ministry of Health generated around 70% (68 of 94) of the analyzed material. Although state and municipal administrations also have their own campaign materials, they more often reproduced the materials made available by the Federal Ministry of Health.

The same communication strategies against dengue and the mosquito *Aedes aegypti* were used amidst the Zika emergency. Seventy-five of 94 pieces (almost 80%) contained information on how to destroy mosquito breeding sites. While most items offered recommendations categorized as housework, a strict gendered responsibility was not explicitly vocalized (6 of 55 pieces on mosquito breeding prevention depicted women as a perceived audience, none contained men). The colors used in these pieces usually remained gender-neutral, typically bright yellow and red conveying urgency. Taken as a whole, campaign pieces using a single phrase to promote mosquito eradication (internet pop-ups, street banners) did not target one specific gender.

[Figure 1 about here]

[Figure 1: Internet/print media pop up. Translation: *Attention! Everything that accumulates water is a focus for mosquito breeding. One mosquito isn't stronger than a whole country.*]

Nevertheless, when it came to the 20 unique pieces employing longer text and information on mosquito bite prevention in addition to information on destroying mosquito breeding sites, 9 of 20 portrayed women as perceived or stated audiences, none contained men.

The fact that Zika can be transmitted from a pregnant woman to her fetus, causing microcephaly, is a vital distinction between the Zika threat and dengue. Television video announcements, folders and pamphlets (more expensive but conveying more information than pop-ups or street banners), dealt exclusively with the primary microcephaly risk or at least highlighted the microcephaly danger.

In that line, we observed that campaign pieces handling pregnancy and microcephaly demonstrated robust gendering, drastically targeting women, placing the responsibility for protecting a potential fetus from the disease on females (7 of 15 ads entailed women as the stated audience, none comprised men) as found in Dengue campaigns analyzed by Campos (50) and gender advertising analyzed in Corrêa (71). Besides content, these pieces typically used pastel colors, a decision further communicating the intended audience: pregnant women.

Figure 2a presents one pamphlet with the headline “Women against Zika.” Other typical headlines read “Pregnant Lady: Protect Yourself” (Figure 3) and “If you are pregnant, protect yourself and go to prenatal care. If you want to get pregnant, talk to your doctor”. Using female pronouns exclusively, the announcements directly referenced women (see Figures 2b and 4b) and intensively focus on pregnancy (5,35). Of 15 items tackling microcephaly, women were portrayed in nine pieces and depicted by themselves in seven. The pamphlets displayed in Figure 4a and Figure 3 portray pregnant women with hands placed on their bellies. Three items show a male figure, but only one male partner or family member is addressed.

[Figures 2a and 2b about here]

[Figure 2a: Front side of the folder prepared by the city of Recife.]

[Figure 2b: Backside of the folder prepared by the city of Recife.]

[Figure 3 about here]

[Figure 3: Folder prepared by the Ministry of Health]

[Figure 4a and 4b about here]

[Figure 4a: Front side of the folder prepared by the Municipal Government in Belo Horizonte.]

[Figure 4b: Backside of the folder prepared by the Municipal Government in Belo Horizonte.]

One Brazilian federal campaign TV ad [See pictures in Additional File 2, Figures 1a-1c], displayed the protagonist— a young pregnant woman— walking around her home explaining the fetal microcephaly risk and how to prevent mosquito breeding within the dwelling, as well as mosquito bites. Her husband carried a bucket in the background. The piece concluded with the protagonist sitting with two male family members, likely her partner and adolescent son, watching TV. Only she (the protagonist) talked to and engaged with the audience, addressing women exclusively. Therefore, the piece clearly charged women with Zika containment and presented females as the family health prevention *expert* while men remained disengaged, even as prevention *subjects*. The item tone resembled women's testimonials in our focus groups, who described their partners as ‘another child to look after.’

We, moreover, uncovered pieces explicitly assigning women the familial protection responsibility (16,30). Thus, the flier portrayed in Figures 4a-4b openly advised a *pregnant woman* to protect her dwelling against the mosquito. The Brazilian communication situated women as *competently* dealing with pregnancy and caring during the Zika epidemics while the male remained detached from caring and parenting responsibilities (60). Across all material studied, we did not discover a single piece *speaking directly to men*.

When men were illustrated doing chores, they were performing typically gendered activities, like physically lifting heavy loads. In a widely broadcasted 2015 TV campaign, gender roles were portrayed separately

when the narrator suggested the audience should “separate part of their Saturday from combatting the mosquito.” While the woman filled the flower vase with sand, her partner stood on the roof (Figures 5a and 5b), so the stereotypical abilities were portraided in the media pieces (5,50,71).

[Figure 5a and 5b about here]

[Figure 5a: woman places sand inside the flower vases.]

[Figure 5b: A man uses a ladder to reach the roof and clean the gutters.]

Other important aspects were tacitly communicated: pregnancy and contraception management. The pamphlet in Figure 2b includes specific advice directed to females wishing to get pregnant (*Se Deseja Engravidar*) and those who do not (*Se Nao Deseja Engravidar*). For both scenarios, the items advised women to visit a health center accompanied by their partners to discuss their options together, with a health professional. The underlying communication message assumed women bore the responsibility of contraception (16,53), which encompasses informing themselves about the risk Zika imposed on pregnancy, explaining it to their partners and persuading them to discuss Zika-prevention with a healthcare professional.

Despite the limitations of that piece, it is the only one to indicate contraception management within couples. Nevertheless, the ad relied on the perplexing assumption women would be able to implement their fertility decisions, giving ample information on the country’s high rates of unintended pregnancy, as well as the sparse condom use reported by disadvantaged women (46).

Additionally, few Zika campaign pieces stated the virus could be transmitted through sex, as Figure 2b depicts. The third paragraph in the 2<sup>nd</sup> column (pamphlet back) mentioned this possibility and recommended condom use. This content included in the section ‘For those who are Pregnant’ (*Gestante*), neglected women who are not pregnant. The challenges of implementing safe sex, discussed in the next sections, also remained unaddressed.

Men could become infected with Zika by failing to take the measures widely recommended for women (such as wearing long sleeves), or by engaging in sex with someone infected. Besides, a woman could become infected through her partner, even if she diligently followed all recommendations for preventing the disease. Hence, we postulated since the emergency tapped into pregnancy and childrearing, both quintessentially female tasks, *competencies* were assigned to women as predicted by gender scholars (5,16,27–33).

We now turn to the analysis of focus groups in Recife and Belo Horizonte. Unsurprisingly, women overwhelmingly felt targeted by the Zika campaign.

*Participant 1: That’s all that was discussed [Zika campaigns focused more on women] Never it was said: ‘fathers, please, if your wife is...’ That it was never said, in no form of communication. (...) I did not see*

*anything [any campaign piece] that talked about it, 'parents or husbands who intend to have children, be careful not to have Zika, not to transmit to their wives through sex.' This was never said.*

*Participant 2: The [campaign] image, I remember the posters I saw, in institutional environments, even at work, there are two [campaign] images: the mosquito and the woman. You do not see a male figure shown. It's either the mosquito or the woman. [High SES]*

*Participant 3: At least my husband associates Zika with babies. Microcephaly.*

*Participant 5: You would only have heard one thing if you had this session with men. "What there is to talk about Zika? That produces malformations on babies." Done, it's over. Only that. Men do not have that much interest [on the topic of Zika]. They say: "ah, I will not get it; it will not reach me."*

*Participant 10: But then I think it is a matter of information because you hear a lot that it causes microcephaly, so men create a barrier in his mind, that he does not need to protect himself because it affects the baby [not himself]. [Low SES]*

Importantly, most women in the focus groups, regardless of social class, criticized this approach, challenging traditional arrangements charging women with family healthcare and prevention. Interestingly, some participants tied this communicational strategy with the broader public health campaign issue, typically reaching women and not men:

*Participant: I think public health should invest in men. Here in my neighborhood's health clinic, you see they are having focus groups for pregnant women, diabetics, people with hypertension, adolescents...but if you go in the day, they are having focus groups for adolescents when they have family planning, how many of those adolescents are men? [Low SES]*

This finding summarizes the affirmation that the Zika Campaigns profoundly relied on heteronormative gender norms.

***What role did gender play in shaping how women navigated Zika and pregnancy prevention during the epidemic with their partners?***

*"Women suffer more [than men]. Women are born to suffer." [Low SES]*

Answering the second and third research questions involved the individual level via focus groups.

While most women in our focus group expressed frustration at being targeted by the campaigns, they also expressed essentialist views on why women shouldered the burden associated with family health prevention. That is, the same participants who complained about the focus of the campaigns also elaborated on womanhood intrinsically being tied to care work. For several participants, regardless of SES, motherhood informs female identity even *before* bearing a child, and the fact that women (and not men) *can* become pregnant makes them more aware, interested or responsible for dealing with health-

related matters. The participants reflected on why they thought female characters remained more prevalent in the campaigns than men:

*Participant: Because women live the pregnancy more intensely. Because she is carrying, she has to change her diet, and men do not. (...) I think a mother would feel guiltier if she gets bitten and transmits [Zika] to her baby [High SES].*

*Participant 1: They [men] do not even want to know. The woman is the one who gets worried, same in case of illnesses. You seldom see a man concerned with illness. Is the woman who cares. Moderator: Why? Participant 1: Because the one who gets pregnant is the woman. Participant 3: A woman is more concerned more about her health [than a man]. Men do not like going to the doctor. Participant 1: A woman, when she becomes pregnant, she becomes a mother. So, she cares about the baby. Participant 3: When you have a child to raise, you think about yourself. You do your exams regularly. Men do not; if a man goes to the doctor, it's because he's about to die. [Low SES]*

These biological, essentialist perceptions, legitimized traditionally gendered labor in which women were responsible for preventing the Zika virus from spreading because those responsibilities fell into the female realm. As Campo-Engelstein (58) also demonstrated, dominant masculine ideologies have inhibited female trust in males engaging with sexual and reproductive health. This widely-held view presented an ideological consensus between men and women, solidifying the status quo and, likely, averting conflict (63).

Furthermore, we observed gender norms regarding the care and labor division were described as 'cultural' traits instead of due to biological differences. These testimonials were more common among high-SES participants than their lower SES counterparts.

*Moderator: We are going to talk about women and men now. If your [female] friends were not using repellent, would their husbands use it (repellent)?*

*Participant: No.*

*Moderator: Why?*

*Participant: Because of this culture [High SES]*

*Participant 6: It is culturally unfortunate that this is still the case; the responsibility is of the mother. If a father abandons his child, nobody judges him or says anything against him, but if a mother abandons her child, [it is] everyone, Oh My God, everyone is against her. There is no one who would defend her; it is always like this. [High SES]*

Clearly, *culture* was connected to the same female-assigned duties and characteristics—family caring and childcare responsibility. While these women did not describe such differences as biological, they articulated the word *culture* with a similar fatalistic tone.

Males carrying out their desires despite women expressed opposition also emerged subtly through the focus groups. While not prevalent, participants spoke of women discussing an issue in hopes of changing partner behavior. This attempt likely resulted in a conflict, demonstrating women failed in their attempt.

*Participant 4: I think it should be the same [men and women have the same level of responsibility over contraceptives]. But in reality, it is not. The woman is the one who takes more attitudes and more responsibility for herself, sometimes (...) Because if she takes the condom to her husband's hand and he does not want to use it, because since she is married, she will give in. That is, she does her part, but he does not cooperate. So folks, 'we will not be fighting, we won't keep arguing over a condom.' We think it is a silly thing, but in reality, it is not. [Low SES]*

*Moderator: And have you two talked about sexual transmission [of Zika]?*

*Participant 5: Yes*

*Moderator: And did you start using condoms?*

*Participant 5: No*

*Participant 6: I told my partner: 'I am with Zika, you will get it.'*

*Moderator: And what happened?*

*Participant 6: He did so much and got it.*

[Parallel talk, laughter]

[Low SES]

All groups asserted a defeatist tone. Yet, the way women navigated this challenge differed by social class.

***Did social class variations significantly affect how women negotiated the Zika infection threat?***

*'Since they do not have that burden on their side, the woman is the one who has to protect herself.'* [High SES]

*We face everything in silence.* [Low-SES]

Many working-class women expressed how enforcing condom practice with a stable partner had proven challenging. Since men generally disliked condoms, women feared endangering their relationship if they insisted on condom use.

*Moderator: And why does the woman end up giving up? [having sex without using a condom]*

*Participant 1: [Because they] Like the man*

*Participant 2: To please the partner.*

*Participant 3: Because it's that thing: will he get annoyed and just not want you anymore? So he says: Never mind. He gets angry and does not want you. [Low SES]*

Commonly, low-SES women in our focus groups discussed these difficulties sharing their experiences (using the first person) and indicating their partners did not like condoms, so they *as a couple* did not use them despite women expressing opposition, as previously found in the Brazilian literature (17–23). Many females blamed their unintended pregnancies on their partner's inflexibility.

In contrast, high-SES women often elaborated extensively on their empowerment. While typically advantaged women referenced profound gender inequalities across all Brazilian society, these women also described themselves as financially independent, controlling their sexuality and negotiating condom practice successfully. Among high-SES women, experiences of low empowerment were articulated subtly, in the third person, referring to friends or family experiences. Advantaged women did not reveal complications associated with contraception management. Nevertheless, some participants acknowledged men did not like condoms, so women had resort to other methods (5,30,34,58–60,63):

*Participant 6: [If asked about Zika, some men] might say, 'my girlfriend protects herself.' Done. I have nothing to do with it; she protects herself. Mainly because many men hate to use condoms, it is a very common thing among them [men], the use of condoms, they detest, then compel the woman to use contraceptives, they practically oblige [women] because they hate to use condoms. I've seen a lot of this, I have a lot of male friends, and they always say that: 'I hate using condoms. (...) If she gets pregnant, it's not my fault; she is the one who got pregnant.' [High SES]*

Crucially, the unbalanced dynamic 'compelled' women to use the pill or another contraception method. Pregnancy presented the foremost Zika threat, so high-SES women successfully prevented pregnancy through other methods.

When partner sexual fidelity was brought up, most low-SES women supposed their partners could be unfaithful. Although the result of such negotiations remained unclear, some women even discussed sexual infidelity with their partners asking them to impose condoms habits in the extra-marital relationship. Often, women described those conversations with their partners using light-hearted or playful language.

*Participant 1: So, for me, whatever is fine [wearing a condom or not]. I think so...for women, whatever. ... as people say here, when they [men] use condoms they feel like chewing gum with the plastic wrap, my husband says that. Then I do not know.*

*Moderator: And do you think condoms are bad for women?*

*Participant 1: So, we do not know what partners are doing on the streets, do you understand? They can pick up other women who have diseases and pass them on to people at home. So, with a condom, if they [men] accepted, it would be pretty safe. For people at home, for example. For instance, in my case, because I do not trust mine [my partner].*

*Moderator: Got it. Do you trust yours?*

*Participant 4: No.*

*Participant 7: I trust with suspicion.*

*Moderator: So, in connection to the fact that you 'trust distrusting?' Do you change your behavior?*

*Participant 7: No [Low SES]*

Women in our focus groups expressed discontent with their partners' prone to sexual infidelity, yet, some remained unable to negotiate or contest their behavior (27,29,32). Consequently, these testimonials suggested men did not openly face conflict with their partners due to sexual unfaithfulness. Besides, women voiced they would like to use condoms, but they refrained from asking since they already knew their partners' answers. Therefore, according to these females, the Zika emergency did not threaten masculine privilege, including condom negotiations.

## **Discussion**

This paper explored how gender conventions shaped government communication campaigns during the Zika epidemic and how women navigated this public health emergency tapping directly into gender-based power dynamics within sexual relationships. We set out with three interests: examine whether, at the government-level, public health campaigns reinforced heteronormative gender roles; investigate how at the individual level, women navigated sexual health and fertility regulation with their partners in the face of Zika crisis and explore ways in which, at the individual level, women's views and responses to the epidemic varied across social class. The Zika virus outbreak provided a particularly relevant setting to investigate these research questions because a public health emergency centered on pregnancy represented an opportunity to increase reproductive health and rights by re-addressing personal responsibilities in Zika prevention and reducing obstacles to contraceptive implementation.

It is important to point out that in this diversity, we also found exceptions to the noted patterns. Some women, from high and low SES, in our focus groups, did declare their partners actively participated in contraceptive habits and household tasks, remaining concerned about the Zika epidemics. These examples led us to believe the Brazilian communicational campaigns also missed the opportunity to support and promote non-conformative gender representations of masculinity among men.

Although at the international level, the emergency posed by the Zika virus raised issues regarding the sexual and reproductive rights of women in Latin America, those recommendations were not enough to

address barriers to SSR implementation using a human rights based and gender equity based approach. Making recommendations without disrupting the existing conditions of structural gender inequality are not enough. In contexts of health emergencies, it is mandatory to anticipate constraints on women's right to exercise their sexual and reproductive rights (16). These lessons are important when dealing with all public health crisis; but more important than ever when handling the COVID-19 pandemic.

Finally, this study presents several avenues for future research.

Contrasting the progressive democratic renaissance prevalent when the anti-HIV strategy was implemented, Zika emerged during a conservative resurgence. Strongly-conservative evangelical groups recently gaining hold in Brazilian politics generally oppose sexual and reproductive rights (72). There are reports of abortion pills confiscation (27), and requests to increasing sentence minimums for women who get abortions and anyone who performs unauthorized abortion of a fetus with microcephaly (73). The possible impact of this ideological shift on public health communicational strategies should be investigated more in-depth as Zika campaigns promoting condom habits could conflict with traditional family values, consequently, unleashing political backlash.

A second and necessary avenue for future study is to study the possible long term impacts of the Zika epidemics in the life course. Our focus groups were conducted in 2016. It is possible that the Zika epidemics has created important changes in sexual behavior, in gender relations and in reproductive target reconsideration.

Lastly, focus groups might compromise obtaining sensitive information. Yet, Brazilian women discussed extensively sensitive issues such as their partner infidelity and male contraceptive habit disengagement, leading us to conclude the group organization seemed to have fostered female participant willingness to share personal experiences. Future studies should address male's perception of campaigns and of their own role in reproductive behavior. Despite these considerations, , our study advances the gender and public health intersection literature which may be more useful in case the Zika virus return or new epidemics emerge.

## Conclusion

Capitalizing on content analysis of broad media and qualitative data from 16 focus groups, there are three main contributions of this paper:

The first contribution of this paper is to provide evidence that Brazilian public health campaigns on Zika heavily relied on conventional gender norms. The content analysis shows that communicating Zika fetal development risks overwhelmingly embraced those representations, targeting women with the use of female characters and pronouns, pastel colors, and gendered messages appealing to the female role as family health custodians. Campaigns also disproportionally emphasized pregnant women as the population at risk, ignoring non-pregnant females and males, and focused on mosquito bite prevention. By downplaying sexual and other family members' transmission, campaigns failed to engage men,

ignoring a significant element in the disease containment. Importantly, anyone sharing a household with pregnant women or women at risk for pregnancy should have taken the same personal protection measures against mosquito bites.

Health campaigns also failed to provide a 'toolkit' for handling sexual interactions within stable unions. Power differentials influenced women's ability to negotiate condom use, critical to female sexual protection (17,23). This focus overlooked the substantial proportion of unplanned pregnancies in Brazil and the fact that reproductive-aged women who were not pregnant also did not feel susceptible to the risk of Zika.

The second contribution of this paper is to suggest that the Zika outbreak did not challenge gendered-based power dynamics governing sexual protection and contraception in Brazil. Instead, the Brazilian government's communicational approach to fight Zika reinforced oppressively gendered obligations. In line with the content analysis, our focus group findings suggest that overwhelmingly, and across social classes, women consistently claimed men held little interest in the disease, associating Zika with pregnancy and situating the disease in the feminine realm. In this vein, women assumed their responsibility for Zika prevention as extending their customary roles as "contraceptive experts" (59), the primary party responsible for home cleanliness and protecting their bodies. As a result, the Zika battle missed an opportunity to improve women's status, increase egalitarian care division and reduce female vulnerability by engaging men in public health efforts related to sexual and reproductive outcomes.

The third contribution of this paper is to show socio-economic differences in these gendered imbalances during the epidemic. Our focus group analysis suggests that both low- and high-SES women were discontent with male disengagement with parenthood, contraception, and healthcare. Yet, women agreed these responsibilities were better-performed by themselves; that is, motherhood was women's natural proclivity. Although the responsibility for protecting couples' health dissatisfied most women, they also resorted to a language of inevitability. Yet, the way power unbalances appeared varied across social class. Some low-SES women feared to destabilize their relationship or losing their partners if they insisted on condoms use. Given men dislike condoms, these women decided to avoid raising the issue. Heteronormative gender dynamics revealed a pattern of behavior where women prioritized their partners' pleasure despite their preferences. A number of low-SES women contended their husbands refused their requests to wear condoms, arguing they interfered with sexual pleasure, or faithful and monogamy eliminated the precautionary measure. Frequently, women admitted conceding to their partners despite knowing it would likely result in disease transmission or unplanned pregnancy. Relatedly, low-SES women remained ambivalent towards fertility preferences— unplanned pregnancies— but never negatively described it. Although further study of Brazil is needed, testimonies of these women shed further light on the complexity of low-SES sexual and fertility decisions.

High-status women frequently described themselves as empowered, enforcing condom use when confronted with male refusal. High-SES women also took the pill or resorted to another contraception form with high efficacy. Nevertheless, the same high-status women who acknowledged gendered-power

unbalance, explain the uneven distribution of care work in their families and expressed discontent with these “cultural” arrangements. When high-SES women articulated the word “culture” to explain male privilege, they described an inherent order women do not fight. This invisible *inequality* perpetuated gender inequality among the upper class.

## Abbreviations

World Health Organization (WHO)

Socioeconomic Status (SES)

Human Immunodeficiency Virus (HIV)

Acquired Immunodeficiency Syndrome (AIDS)

Sexual and Reproductive Health (SRH)

## Declarations

### Ethics approval and consent to participate

The project was authorized by The University of Texas’ Research Ethics Committee. IRB Protocol Number: 2016-06-0038

### Consent for publication

All public campaign materials were publicly available for download.

All participants of focus groups signed Informed Consent Forms.

### Availability of data and materials

All public campaign materials are publicly available. The dataset analysed during the current study are available from the corresponding author on reasonable request.

Focus groups transcripts are not publicly available due research ethics protocol agreement, but are available from the corresponding author on reasonable request.

### Competing interests

The authors declare that they have no competing interests.

### Funding

This research was funded by the Population Health Initiative, the Population Research Center, and by grant R24HD042849 awarded to L.J. Marteleto by The Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD). NICHD has partially funded LJM time to write and revise the manuscript under grant R01HD091257, Reproductive Responses to the Zika Virus Epidemic in Brazil, awarded to PI L. J. Marteleto. This research was also supported by grant P2CHD042849, Population Research Center, awarded to the PRC at The University of Texas at Austin by the NICHD.

### **Authors' contributions**

LJM and AW secured funding for FG data collection. RZC collected campaign data. RZC and AVM coded and analyzed campaign data. RZC conducted focus groups. LJM assisted in conducting focus groups. RZC and LJM coded focus groups data. RZC, AVM, AW, and LJM analyzed and interpreted campaigns and focus groups data. RZC, AVM, AW, and LJM contributed to writing the manuscript. All authors read and approved the final manuscript.

### **Acknowledgements**

Raquel Z. Coutinho gratefully acknowledges technical support from the Universidade Federal de Minas Gerais (Edital 11/2017 - ADRC - Programa Institucional de Auxílio à Pesquisa de Docentes Recém-Contratados ou Recém-Doutorados da UFMG).

## **References**

1. Moore CA, Staples JE, Dobyns WB, Pessoa A, Ventura CV, Fonseca EB da, et al. Characterizing the Pattern of Anomalies in Congenital Zika Syndrome for Pediatric Clinicians. *JAMA Pediatr*. 2017 01;171(3):288–95.
2. Brasil. Portaria N° 1.813, de 11 de Novembro de 2015. Declara Emergência em Saúde Pública de importância Nacional (ESPIN) por alteração do padrão de ocorrência de microcefalias no Brasil [Declaration N° 1.813, of November 11th 2015. Declaration of Public Health Emergency of National Concern (PHENC) due to alterations in the pattern of occurrence of microcephaly in Brazil] [Internet]. Brasília, Brazil: Ministério da Saúde, Governo Federal.; 2015 Nov. Available from: [http://bvsms.saude.gov.br/bvs/saudelegis/gm/2015/prt1813\\_11\\_11\\_2015.html](http://bvsms.saude.gov.br/bvs/saudelegis/gm/2015/prt1813_11_11_2015.html).
3. Samarasekera U, Triunfol M. Concern over Zika virus grips the world. *Lancet Lond Engl*. 2016 Feb 6;387(10018):521–4.
4. Schuck-Paim C, López D, Simonsen L, Alonso W. Unintended Pregnancies in Brazil - A Challenge for the Recommendation to Delay Pregnancy Due to Zika. *PLoS Curr* [Internet]. 2016 Mar 16 [cited 2019 Apr 23];8. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4866532/>.
5. Wenham C, Nunes J, Correa Matta G, de Oliveira Nogueira C, Aparecida Valente P, Pimenta DN. Gender mainstreaming as a pathway for sustainable arbovirus control in Latin America. *PLoS Negl Trop Dis*. 2020 Feb 27;14(2):e0007954.

6. PAHO/WHO C. PAHO/WHO | WHO announces a Public Health Emergency of International Concern [Internet]. Pan American Health Organization / World Health Organization. 2016 [cited 2020 Jul 24]. Available from: [https://www.paho.org/hq/index.php?option=com\\_content&view=article&id=11640:2016-who-statement-on-1st-meeting-ihr-2005-emergency-committee-on-zika-virus&Itemid=135&lang=en](https://www.paho.org/hq/index.php?option=com_content&view=article&id=11640:2016-who-statement-on-1st-meeting-ihr-2005-emergency-committee-on-zika-virus&Itemid=135&lang=en).
7. Ministério da Saúde. Boletim  
Ministério da Saúde. Boletim. Epidemiológico, Secretaria de Vigilância em Saúde | Ministério da Saúde. Volume 51. Nº 12. Mar. 2020. Situação epidemiológica da síndrome congênita associada à infecção pelo vírus Zika em 2020: até a SE 10 (page 30) [Internet]. Coordenação-Geral de Informações e Análises Epidemiológicas (CGIAE/DASNT/SVS); Departamento de Ações Programáticas Estratégicas (DAPES/SAPS); Secretaria de Atenção Especializada à Saúde (SAES).; 2020. Available from: <https://www.saude.gov.br/images/pdf/2020/May/04/Boletim-epidemiologico-SVS-18.pdf>.
8. Diniz D. Zika. Do Sertão nordestino à ameaça global: Do Sertão nordestino à ameaça global. Edição: 1. Rio de Janeiro: Civilização Brasileira; 2016.
9. Diniz D. Vírus Zika e mulheres. Cad Saúde Pública [Internet]. 2016 [cited 2020 Jun 30];32(5). Available from: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102-311X2016000500601&lng=pt&tlng=pt](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2016000500601&lng=pt&tlng=pt).
10. Castro MC, Han QC, Carvalho LR, Victora CG, França GVA. Implications of Zika virus and congenital Zika syndrome for the number of live births in Brazil. Proc Natl Acad Sci U S A. 2018;12(24):6177–82. 115(.
11. 10.1007/s13524-020-00871-x  
Marteleto LJ, Guedes G, Coutinho RZ, Weitzman A. Live Births and Fertility Amid the Zika Epidemic in Brazil. Demography [Internet]. 2020 May 12 [cited 2020 Jun 30]; Available from: <https://doi.org/10.1007/s13524-020-00871-x>.
12. Theme-Filha MM, Baldisserotto ML, Fraga ACSA, Ayers S, da Gama SGN. Leal M do C. Factors associated with unintended pregnancy in Brazil: cross-sectional results from the Birth in Brazil National Survey, 2011/2012. Reprod Health. 2016 Oct;17(Suppl 3):118. 13(.
13. Chandra-Mouli V, McCarraher DR, Phillips SJ, Williamson NE, Hainsworth G. Contraception for adolescents in low and middle income countries: needs, barriers, and access. Reprod Health. 2014 Jan 2;11:1.
14. Heilborn ML, Portella AP, Brandão ER, Cabral C da S. Assistência em contracepção e planejamento reprodutivo na perspectiva de usuárias de três unidades do Sistema Único de Saúde no Estado do Rio de Janeiro, Brasil. Cad Saúde Pública. 2009;25:s269–78.
15. Costa GPO, Costa GPO, Farias M, de P, Araújo ACPF de. Contraception Knowledge, Attitudes and Practices of Adolescents at Risk of Pregnancy in Northeastern Brazil. Open J Obstet Gynecol. 2014 Apr;15(6):720–6. 4(.

16. Davies SE, Bennett B. A gendered human rights analysis of Ebola and Zika: locating gender in global health emergencies. *Int Aff*. 2016;92(5):1041–60.
17. Chacham AS, Maia MB, Camargo MB. Autonomia, gênero e gravidez na adolescência: uma análise comparativa da experiência de adolescentes e mulheres jovens provenientes de camadas médias e populares em Belo Horizonte. *Rev Bras Estud Popul*. 2012 Dec;29(2):389–407.
18. Garcia S, Berquó E, Lopes F, Lima LP de, Souza FM de. Práticas sexuais e vulnerabilidades ao HIV/aids no contexto brasileiro: considerações sobre as desigualdades de gênero, raça e geração no enfrentamento da epidemia. E-Book. 2015 Sep 11;2(0):417–47.
19. Ribeiro K. Querer é Poder? A Ausência do Uso de Preservativo nos Relatos de Mulheres Jovens. *J Bras Doenças Sex Transm*. 2011;23(2):84–9.
20. Sampaio J, Santos RC dos, Callou JLL, Souza BBC. Ele não quer com camisinha e eu quero me prevenir: exposição de adolescentes do sexo feminino às DST/aids no semi-árido nordestino. *Saúde E Soc*. 2011;20:171–81.
21. Taquette S, Meirelles Z. Convenções de gênero e sexualidade na vulnerabilidade às DSTs/AIDS de adolescentes femininas. *Adolesc Saude*. 2012;9(3):56–64.
22. Souza CF, Miranda-Ribeiro P, Machado C, Fonseca M do C. Nem tentariam? O poder de negociação das mulheres enquanto fator associado ao não uso de camisinha masculina em Belo Horizonte e Recife. *Cad Espaço Fem UFU*. 2008;20.
23. Chacham AS, Jayme JG. Violência de gênero, desigualdade social e sexualidade: As experiências de mulheres jovens em Belo Horizonte. *Civ - Rev Ciênc Sociais [Internet]*. 2016 Mar [cited 2020 Jul 24];16(1). Available from: [http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S1519-60892016000100008&lng=en&nrm=iso&tlng=pt](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S1519-60892016000100008&lng=en&nrm=iso&tlng=pt).
24. Marteleto LJ, Weitzman A, Coutinho RZ, Alves SV. Women's Reproductive Intentions and Behaviors during the Zika Epidemic in Brazil. *Popul Dev Rev*. 2017;43(2):199–227.
25. Miranda-Ribeiro P, Simão AB, Lacerda MA, Torres ME de A e. “É igual chupar bala com papel”: a vulnerabilidade feminina ao HIV/Aids e o uso de camisinha em Belo Horizonte e Recife. E-Book. 2015 Sep 11;2(0):391–416.
26. Silveira MF da, Santos IS dos, Béria JU, Horta BL, Tomasi E, Victora CG. Factors associated with condom use in women from an urban area in southern Brazil. *Cad Saúde Pública*. 2005;21:1557–64.
27. Harris LH, Silverman NS, Marshall MF. The Paradigm of the Paradox: Women, Pregnant Women, and the Unequal Burdens of the Zika Virus Pandemic. *Am J Bioeth AJOB*. 2016;16(5):1–4.
28. Diniz D, Ali M, Ambroggi I, Brito L. Understanding sexual and reproductive health needs of young women living in Zika affected regions: a qualitative study in northeastern Brazil. *Reprod Health*. 2020 Feb 6;17(1):22.
29. Nunes J, Pimenta DN. The Zika Epidemics and the Limits of Global Health. *Lua Nova Rev Cult E Política*. 2016 Aug;(98):21–46.
30. Johnson C. Pregnant woman versus mosquito: A feminist epidemiology of Zika virus. *J Int Polit Theory*. 2017 Jun;1(2):233–50. 13(.

31. Stern AM. Zika and reproductive justice. *Cad Saúde Pública* [Internet]. 2016 [cited 2020 Jun 30];32(5). Available from: [http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S0102-311X2016000500607&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S0102-311X2016000500607&lng=en&nrm=iso&tlng=en).
32. Baum P, Fiastro A, Kunselman S, Vega C, Ricardo C, Galli B, et al. Ensuring a rights-based health sector response to women affected by Zika. *Cad Saúde Pública* [Internet]. 2016 [cited 2020 Jun 30];32(5). Available from: [http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S0102-311X2016000500605&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S0102-311X2016000500605&lng=en&nrm=iso&tlng=en).
33. Pitanguy J. Os direitos reprodutivos das mulheres e a epidemia do Zika vírus. *Cad Saúde Pública* [Internet]. 2016 [cited 2020 Jun 30];32(5). Available from: [http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S0102-311X2016000500603&lng=en&nrm=iso&tlng=pt](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S0102-311X2016000500603&lng=en&nrm=iso&tlng=pt).
34. Wenham C, Arevalo A, Coast E, Corrêa S, Cuellar K, Leone T, et al. Zika, abortion and health emergencies: a review of contemporary debates. *Glob Health*. 2019 Jul 24;15(1):49.
35. Wenham C, Farias DB. Securitizing Zika: The case of Brazil. *Secur Dialogue*. 2019 Jul 10;50(5):398–415.
36. Borges ALV, Moreau C, Burke A, Santos OA dos, Chofakian CB. Women’s reproductive health knowledge, attitudes and practices in relation to the Zika virus outbreak in northeast Brazil. *PLOS ONE*. 2018 Jan;3(1):e0190024. 13(.
37. Ribeiro B, Hartley S, Nerlich B, Jaspal R. Media coverage of the Zika crisis in Brazil: The construction of a ‘war’ frame that masked social and gender inequalities. *Soc Sci Med*. 2018 Mar;1:200:137–44.
38. Charaudeau P. O discurso propagandista: uma tipologia - Patrick Charaudeau [Internet]. Machado, Ida Lucia & Mello, Renato, *Análises do Discurso Hoje*, vol. 3. Rio de Janeiro : Nova Fronteira (Lucerna) 2010, p. 57–78, 2010., 2010; 2010 [cited 2020 Jul 21]. Available from: <http://www.patrick-charaudeau.com/O-discurso-propagandista-uma.html>.
39. Abadía-Barrero CE, Castro A. Experiences of stigma and access to HAART in children and adolescents living with HIV/AIDS in Brazil. *Soc Sci Med*. 2006 Mar;62(5)(1):1219–28.
40. Luo J, Oliveira MA, Ramos MB, Maia A, Osorio-de-Castro CG. Antiretroviral drug expenditure, pricing and judicial demand: an analysis of federal procurement data in Brazil from 2004–2011. *BMC Public Health*. 2014 Apr 16;14(1):367.
41. Nunn AS, da Fonseca EM, Bastos FI, Gruskin S. AIDS treatment in Brazil: impacts and challenges. *Health Aff Proj Hope*. 2009;28(4):1103–13.
42. Okie S. Fighting HIV — Lessons from Brazil. *N Engl J Med*. 2006 May;11(19):1977–81. 354(.
43. Garcia S, Berquó E, Lopes F, Lima LP de, Souza FM de. Práticas sexuais e vulnerabilidades ao HIV/aids no contexto brasileiro: considerações sobre as desigualdades de gênero, raça e geração no enfrentamento da epidemia. E-Book. 2015 Sep 11;2(0):417–47.
44. Fonseca MGP, Bastos FI. Twenty-five years of the AIDS epidemic in Brazil: principal epidemiological findings, 1980–2005. *Cad Saúde Pública*. 2007;23:S333–43.
45. Praça N, de S, Gualda. DMR. Risco de infecção pelo HIV: como mulheres moradoras em uma favela se percebem na cadeia de transmissão do vírus. *Rev Lat Am Enfermagem*. 2003;11:14–20.

46. Brazil CEBRAP. Pesquisa nacional de demografia e saúde da criança e da mulher: PNDS 2006, dimensões do processo reprodutivo e da saúde da criança. Brasília, DF: Ministério da Saúde: Centro Brasileiro de Análise e Planejamento; 2009.
47. Barreto ML, Teixeira MG, Bastos FI, Ximenes RAA, Barata RB, Rodrigues LC. Sucessos e fracassos no controle de doenças infecciosas no Brasil: o contexto social e ambiental, políticas, intervenções e necessidades de pesquisa. 2011;14.
48. Dégallier N, Teixeira JMS, Vilarinhos P, de TR, Pinto SCF, Pereira RD. First isolation of dengue 1 virus from *Aedes aegypti* in Federal District, Brazil. *Rev Soc Bras Med Trop*. 2000 Feb;33(1):95–6.
49. Fares RCG, Souza KPR, Añez G, Rios M. Epidemiological Scenario of Dengue in Brazil. *BioMed Res Int*. 2015;2015:321873.
50. Campos VTN. Acabar com a dengue é uma guerra de todos?: a presença do discurso mobilizador nas campanhas publicitárias de prevenção à dengue da Secretaria de Estado de Saúde de Minas Gerais [Internet]. 2016 [cited 2019 Apr 23]. Available from: <http://www.bibliotecadigital.ufmg.br/dspace/handle/1843/BUBD-AAFG82>.
51. Corrêa LG. Mães Cuidam, pais brincam: metodologia, bastidores e resultados de uma pesquisa sobre publicidade e gênero. *Rev Contracampo* [Internet]. 2013;28(3). Available from: <https://periodicos.uff.br/contracampo/article/viewFile/17512/11138>.
52. Crawford NC. The Passion of World Politics: Propositions on Emotion and Emotional Relationships. *Int Secur*. 2000;24(4):116–56.
53. Rose S. Going Too Far? Sex, Sin and Social Policy. *Soc Forces*. 2005 Dec 1;84:1207–32.
54. Koster W, Bruinderink MG, Janssens W. Empowering Women or Pleasing Men? Analyzing Male Views on Female Condom Use In Zimbabwe, Nigeria and Cameroon. *Int Perspect Sex Reprod Health*. 2015;41(3):126–35.
55. Jorge Rodríguez-Vignoli. Cavenaghi S. Adolescent and youth fertility and social inequality in Latin America and the Caribbean: what role has education played? *Genus*. 2014;70(1):1–25.
56. Altfeld S, Handler A, Burton D, Berman L. Wantedness of Pregnancy and Prenatal Health Behaviors. *Women Health*. 1998 Jan 30;26(4):29–43.
57. Kost K, Lindberg L. Pregnancy, Intentions, Maternal Behaviors, and Infant Health: Investigating Relationships With New Measures and Propensity Score Analysis. *Demography*. 2015 Feb 1;52(1):83–111.
58. Campo-Engelstein L. Raging hormones, domestic incompetence, and contraceptive indifference: narratives contributing to the perception that women do not trust men to use contraception. *Cult Health Sex*. 2012;15(3):283–95.
59. Fennell JL. Men Bring Condoms, Women Take Pills: Men's and Women's Roles in Contraceptive Decision Making. *Gend Soc*. 2011 Aug 1;25(4):496–521.
60. Fefferman AM, Upadhyay UD. Hybrid Masculinity and Young Men's Circumscribed Engagement in Contraceptive Management. *Gend Soc*. 2018 Apr 2;32(3):371–94.

61. Legerski EM, Cornwall M. Working-Class Job Loss, Gender, and the Negotiation of Household Labor. *Gend Soc.* 2010 Aug 1;24(4):447–74.
62. SHOWS C, FATHERING GERSTELN, CLASS, AND GENDER: A Comparison of Physicians and Emergency Medical Technicians. *Gend Soc.* 2009;23(2):161–87.
63. Miller AJ, Carlson DL. Great Expectations? Working- and Middle-Class Cohabitors' Expected and Actual Divisions of Housework. *J Marriage Fam.* 2015;78(2):346–63.
64. Doss C. Intrahousehold Bargaining and Resource Allocation in Developing Countries [Internet]. 2013 [cited 2020 Jul 21]. Available from: <https://openknowledge.worldbank.org/handle/10986/9145>.
65. Duflo E. Women's Empowerment and Economic Development [Internet]. National Bureau of Economic Research; 2011 Dec [cited 2020 Jul 21]. (Working Paper Series). Report No.: 17702. Available from: <http://www.nber.org/papers/w17702>.
66. Hooff JH van. Rationalising inequality: heterosexual couples' explanations and justifications for the division of housework along traditionally gendered lines. *J Gend Stud.* 2011 Mar;20(1)(1):19–30.
67. Calasanti T. Bodacious, Berry, Potency Wood and the Aging Monster: Gender and Age Relations in Anti-Aging Ads. *Soc Forces.* 2007 Sep 1;86(1):335–55.
68. Krippendorff K. *Content Analysis: An Introduction to Its Methodology*. SAGE; 2004. 442 p.
69. Neuendorf KA. *The Content Analysis Guidebook* [Internet]. SAGE Publications Inc. 2020 [cited 2020 Jul 21]. Available from: <https://us.sagepub.com/en-us/nam/the-content-analysis-guidebook/book234078>.
70. Saldaña J. *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage Publications Ltd; 2009. xi, 223 p. (The coding manual for qualitative researchers.).
71. Correa LG. Mães cuidam, pais brincam: normas, valores e papéis na publicidade de homenagem [Internet]. 2011 [cited 2019 Apr 23]. Available from: <http://www.bibliotecadigital.ufmg.br/dspace/handle/1843/FAFI-8U4JXZ>.
72. Alves JED, Cavenaghi S. Igreja Católica, direitos reprodutivos e direitos ambientais. *Horiz - Rev Estud Teol E Ciênc Religião.* 2017;736–69.
73. Galli B, Deslandes S. Ameaças de retrocesso nas políticas de saúde sexual e reprodutiva no Brasil em tempos de epidemia de Zika. *Cad Saúde Pública.* 2016;32.

## Figures



Figure 1

Internet/print media pop up. Translation: Attention! Everything that accumulates water is a focus for mosquito breeding. One mosquito isn't stronger than a whole country.



Figure 2

Front side of the folder prepared by the city of Recife. Backside of the folder prepared by the city of Recife.



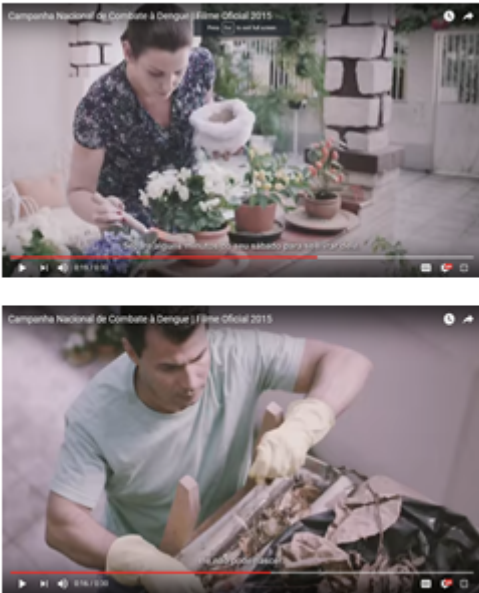
Figure 3

Folder prepared by the Ministry of Health



Figure 4

Front side of the folder prepared by the Municipal Government in Belo Horizonte Backside of the folder prepared by the Municipal Government in Belo Horizonte.



**Figure 5**

woman places sand inside the flower vases. A man uses a ladder to reach the roof and clean the gutters.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [completedSRQRchecklist.docx](#)
- [AdditionalFile2.docx](#)
- [AdditionalFile1.docx](#)