

Zika and travel in the news: a content analysis of US news stories during the outbreak in 2016–2017

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ABSTRACT

Objectives: This study aimed to understand what information the US media communicated about Zika virus (ZIKV) and travel in 2016 and 2017.

Study design: We conducted a content analysis of news coverage about ZIKV and travel from April 5, 2016 to March 31, 2017.

Methods: We obtained a stratified, random sample of English language, US print newspaper and television news coverage about ZIKV and travel. We developed a coding scheme to assess key messages in the news, including how ZIKV is transmitted, the symptoms and outcomes of ZIKV infection, and recommended prevention behaviors.

Results: Almost all news stories mentioned mosquito-borne transmission (96.8%) and just over half mentioned sexual transmission (55.3%). News stories were more likely to talk about ZIKV outcomes (78.8%) than ZIKV symptoms (40.6%). However, outcomes affecting babies were mentioned more frequently than outcomes affecting adults. Recommendations included a wide array of protective behaviors, such as delaying or avoiding travel (77.6%) and using mosquito repellent (41.0%). However, few studies (10.9%) mentioned barriers to practicing ZIKV prevention behaviors.

Conclusions: Public health organizations and professionals can use these findings to help improve communication about future outbreaks of mosquito-borne illnesses. We also recommend conducting real-time monitoring of news media and frequent content analysis of news stories to ensure coverage provides the information the public needs.

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In 2016, the Zika virus (ZIKV) spread rapidly to more than 30 countries, many of which are popular travel destinations for US residents. Some Americans traveling to these destinations became infected and brought ZIKV into the United States; and in rare cases, transmitted the virus sexually to their partners.¹ Travel abroad became the greatest risk factor for Americans contracting ZIKV.^{1,2}

Despite health guidance communication from US federal agencies and the World Health Organization about the potential risk of this vector-borne and sexually transmitted virus, many Americans did not alter their plans to travel to ZIKV-affected areas.³ It is not clear whether the American public fully understood the risks associated with ZIKV infection and the different modes by which ZIKV can be transmitted, especially the implications of sexual transmission to pregnant women. One 2016 traveler survey found that knowledge of ZIKV was relatively high, but few respondents were aware of Center for Disease Control and Prevention (CDC) warnings to postpone travel, or they were not taking precautions to prevent mosquito bites while traveling to ZIKV-affected areas.⁴

CDC and other international, national, state, and local organizations issued warnings about traveling to ZIKV-affected areas and recommendations on how to prevent ZIKV infection during travel and upon return. Additionally, the news media serve as a critical source of information and shape how the public perceives a health threat.^{5,6} This was no exception for the ZIKV outbreak.

To describe the overall content of US news stories during 2016, researchers⁷ conducted a content analysis of 800 news stories and found that mosquito transmission messages were mentioned twice as often as sexual transmission messages (74% vs 31%) and that 30% of news stories included a risk-elevating message that travel to areas with or the potential for ZIKV transmission is not safe. However, these researchers did not specifically examine the content within news stories that focused on travel and ZIKV.

Consequently, we were interested in examining the content of news stories that focused specifically on ZIKV and travel because in 2016 we surveyed US residents traveling to a destination that had experienced local transmission of ZIKV and found that 85% of respondents knew that ZIKV can be transmitted through the bite of an infected mosquito and 43% knew that ZIKV can be transmitted sexually.⁸ Given these differences, we sought to understand how the news media described the risks of ZIKV to potential US travelers during the 2016 ZIKV outbreak in regard to the modes of transmission and recommended preventive behaviors.

We obtained a stratified, random sample of English language, US print newspaper and television news coverage that focused on ZIKV and travel and covered 12 months—April 5, 2016 to March 31, 2017—using LexisNexis research services. The end date corresponded to the launch of a nationally representative survey of US travelers' knowledge, risk perceptions, and practices regarding ZIKV,⁸ which would allow an assessment of the ZIKV messages the US public received in the prior 12 months.

To assess newspaper coverage, we searched the top 25 highest circulated US newspapers available in LexisNexis using the search terms Zika AND (travel* OR vacation OR

'spring break') AND prevent* and ('United States' OR American). To assess similar coverage in television news stories, we conducted the same search of broadcast news transcripts available in LexisNexis and added proximity parameters to require search terms to be within 50 words of each other because of the varied nature of television news program coverage; for example, multiple topics may be covered in a single program or segment.

These searches yielded 965 newspaper articles and 95 broadcast transcripts, which we manually screened for relevance to the study topic and the presence of at least one or more CDC-recommended ZIKV prevention behaviors (Table 1). This yielded a pool of 495 newspaper articles and 32 broadcast transcripts. We then stratified the pool of newspaper articles into four chronological quarters, so that we could potentially examine trends at different phases of the outbreak and randomly sampled 25% from each quarter. This yielded a final print sample of 124 newspaper articles for the study period. Because the number of television news sources provided a much smaller volume of news stories, we included all 32 broadcast transcripts in the final sample of 156 news stories (See Fig. 1).

We developed a coding scheme to answer the research questions and assess the presence or absence of each attribute. We then trained two graduate students to code each story. To ensure coding reliability, each story was double-coded. When codes did not agree, a senior researcher on the team arbitrated. Codes were recorded in Microsoft Excel and imported into IBM SPSS Statistics, version 25, for analysis. Frequencies and cross-tabulations were calculated.

Of the 156 stories in the sample, 30% ($n = 47$) focused primarily on ZIKV and travel; whereas, 69.9% ($n = 109$) mentioned or discussed travel, but ZIKV was not the main point of the story. Almost all the news media addressed

Table 1 – Percentage of news stories mentioning Zika virus prevention behaviors.

Behavior	Percentage of news stories ($n = 156$)
Mosquito bite prevention	
Use mosquito repellent	41.0
Wear long-sleeved shirts and pants	26.9
Empty standing water	23.7
General recommendation to prevent mosquito bites	14.1
Stay indoors (in places with air conditioning)	10.3
Install window/door screens	9.6
Sleep under a mosquito bed net	4.5
Treat clothing with permethrin spray	2.6
Travel-related behaviors	
Delay or avoid travel	77.6
Get tested upon return	13.5
Check latest Zika updates before travel	1.3
Use repellent upon return	0.6
Sexual transmission	
Use a condom	15.4
Abstain from sex	10.3
Delay pregnancy	5.1
Stay sober to practice safe sexual practices	0.0
Talk to a doctor	10.3

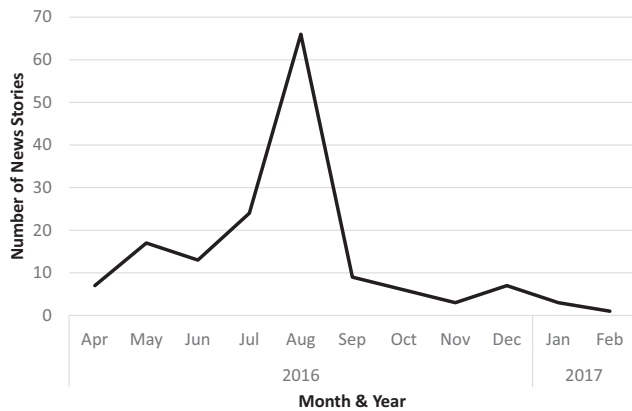


Fig. 1 – Volume of US news stories (n = 156) by month, April 2016–February 2017.

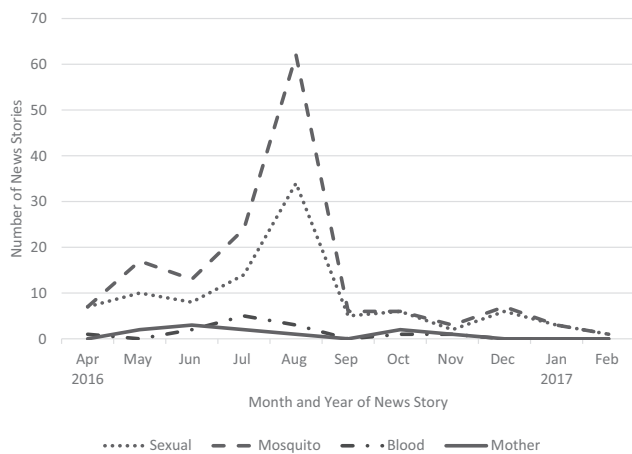


Fig. 2 – Trends in transmission type mentioned in news stories by month (n = 156), April 2016–February 2017.

transmission (96.8%), especially mosquito-borne transmission (95.5%). Sexual transmission was mentioned in only about half the news stories (55.3%). Other modes of ZIKV transmission were mentioned less frequently, such as through the blood supply (8.6%) and via mother to baby (7.2%). Most news stories (78.8%) included at least one possible ZIKV-related health outcome. Severe birth defects were mentioned most frequently (64.7%), followed by microcephaly (46.2%), neurological disorders (10.3%), Guillain-Barré syndrome (9.6%), developmental disabilities (8.3%), and stillbirths or miscarriages (5.1%). In contrast, ZIKV-related symptoms were mentioned in less than half the news stories (40.6%). Delaying or avoiding travel (77.6%) was the most frequently mentioned prevention behavior, followed by using mosquito repellent (41.0%), wearing long-sleeved shirts and pants (26.9%), emptying containers of standing water (23.7%), and using a condom (15.4%) (Table 1). Frequency of transmission type by month is presented in Fig. 2. Barriers to practicing prevention behaviors were acknowledged in 10.9% of news stories and talking to a doctor was suggested in 10.3% of news stories.

Although other content analyses of the news coverage about the 2016 ZIKV outbreak reported the frequency that the

risk of travel and Zika was mentioned in news stories and that travel to areas with the potential for ZIKV transmission is not safe,⁷ our study is unique in that we examined messages within news stories that focused on ZIKV, travel, and prevention, which allowed us to look more specifically at prevention messages directed at travelers. These study findings also provide context for the results from a nationally representative survey of US residents who planned to travel to ZIKV-affected destinations in 2016 that found much higher knowledge about mosquito-borne transmission compared with sexual transmission.⁸ The findings from our study show that the proportion of news stories reporting that ZIKV was transmitted by infected mosquitoes was much higher than the proportion that reported that ZIKV could be sexually transmitted (95.5% vs 55.3%, respectively). Our results mirrored those found in similar analyses of all news coverage about Zika in 2016.^{7,9}

Only about 10% of articles mentioned specific health outcomes that could affect people infected after birth, such as neurological disorders or Guillain-Barré syndrome, with most articles describing outcomes related to birth defects. This finding is consistent with other research.⁷ Three quarters of the stories recommended delaying or avoiding travel. Beyond travel avoidance, most recommendations focused on mosquito bite prevention compared with preventing sexual transmission. Few stories acknowledged barriers people face in practicing these behaviors.

Our study had some limitations, including only focusing on travelers from the United States and only using English language US news sources. Consequently, we cannot generalize our findings to media outside the United States or to non-English language US news sources. We also do not know if the news stories in our sample were published online.

Several implications from our findings may help improve communication about future outbreaks. Public health organizations and professionals should develop a real-time media monitoring plan for public health emergencies that includes frequent (e.g. biweekly) analysis of news stories. The results can be used to determine if news stories are including critical information about transmission and prevention or if they are emphasizing some messages over others. Being able to more quickly note such trends will allow communicators to adjust messaging and work with the media to ensure that the most important information the public needs to stay safe is included in news stories.⁹ Careful monitoring can also identify downward trends in news coverage volume, which can inform when messages need to be amplified to maintain public awareness of the threat over time. Finally, public health organizations and journalists should acknowledge barriers people face in practicing prevention behaviors and suggest ways they can overcome them.

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Ethical approval

This study was considered not human subjects research by the Institutional Review Board at RTI International.

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Competing interests

None declared.

REFERENCES

1. Maron DF. Travels with zika. *Sci Am* 2016;**314**:84.
2. Centers for Disease Control and Prevention. 2016 case counts in the US. Atlanta, GA: Centers for Disease Control and Prevention; 2017 [updated May 10; cited 2017 November 13]; Available from: <https://www.cdc.gov/zika/reporting/2016-case-counts.html>.
3. Travel Agent. *American travelers largely unfazed by Zika*. New York, NY: Travel Agent Magazine Digital; 2016 [cited 2018 October 30].
4. Widmar NJO, Dominick SR, Ruple A, Tyner WE. The influence of health concern on travel plans with focus on the Zika virus in 2016. *Prev Med Rep* 2017;**6**:162–70.
5. McCombs ME, Shaw DL. The agenda-setting function of mass media. *Public Opin Q* 1972;**36**.
6. Coleman R, Banning S. Network TV news' affective framing of the presidential candidates: evidence for a second-level agenda-setting effect through visual framing. *J Mass Commun Q* 2006;**83**:313–28.
7. Sell TK, Watson C, Meyer D, Kronk M, Ravi S, Pechta LE, et al. Frequency of risk-related news media messages in 2016 coverage of zika virus. *Risk Anal* 2018;**38**:2514–24.
8. Squiers L, Herrington J, Kelly B, Bann C, Becker-Dreps S, Stamm L, Johnson M, McCormack L. Zika virus prevention: US travelers' knowledge, risk perceptions, and behavioral intentions—a national survey. *Am J Trop Med Hyg* 2018;**98**:1837–47.
9. Ophir Y, Jamieson KH. The effects of zika virus risk coverage on familiarity, knowledge and behavior in the U.S. – a time series analysis combining content analysis and a nationally representative survey. *Health Commun* 2018:1–11.