ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 08, Issue, 11, pp.24381-24383, November, 2018

ORIGINAL RESEARCH ARTICLE OPEN ACCESS

EPIDEMIOLOGICAL ANALYSIS OF DENGUE, ZIKA AND CHIKUNGUNYA FEVER IN THE MUNICIPALITY OF AUGUSTINÓPOLIS, STATE OF TOCANTINS, BRAZIL

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ARTICLE INFO

Article History:
Received 14th August, 2018
Received in revised form
17th September, 2018
Accepted 20th October, 2018
Published online 30th November, 2018

Key Words:
Arbovirus infections,
Aedes Aegypti,
Disease Notification.

ABSTRACT

This research aims to describe the expansive and epidemiological characteristics of Dengue, Zika and Chikungunya fever in the year 2016 and their relationship with environmental aspects in the municipality of Augustinópolis, State of Tocantins. Descriptive and cross - sectional quantitative research. The sample of this research was composed of all reported cases of Dengue, Zika and Fever Chikungunya, in the year 2016 in the municipality of Augustinópolis, State of Tocantins, made available by the Notification of Invalidity Information System. Have been notified 141 cases of Dengue, 39 cases of Zika Virus and 7 cases of Chikungunya Fever were reported. The incidence rate for notifications of Dengue and Zika was higher in the rainy season. Therefore strategies and measures of prevention and control should always be evaluated and (re) modified, since the vector Aedes aegypti has high power of adaptation and proliferation according to the environmental and seasonal changes.

Citation: Janayna Araújo Viana, Wilian Vaz-Silva, Darlan Tavares Feitosa *et al.*, 2018. "Epidemiological analysis of dengue, zika and chikungunya fever in the municipality of Augustinópolis, state of Tocantins, Brazil", *International Journal of Development Research*, 8, (11), 24381-24383.

INTRODUCTION

Arboviruses are a group of diseases caused by arboviruses (Arthropod Borne Virus), viruses transmitted by arthropods. Arthropods of the genus Aedes, for example, are hematophagous dipterans that propagate virus by means of the bite (Donalisio *et al.,* 2017). Aedes aegypti and Aedes albopictus are insects vectors of the three most important arboviruses for public health. The female mosquito transmits the Dengue virus, the Zika virus and the Chikungunya virus (Donalisio *et al.,* 2017; Maniero *et al.,* 2016). Vector proliferation becomes more favored in regions of hot and humid climate such as Brazil (Lopes *et al.,* 2014). The state of Tocantins, where the research is carried out, is now considered an endemic area with imminent risks of outbreaks and / or epidemics. This worrisome factor is that the State is located in the North of Tocantins and thus forms part of one of the areas covered by the Legal Amazon, in which it is a circulation territory of the vector *Aedes aegypti*, and consequently making the predisposing region the arboviruses Dengue, Zika and Fever Chikungunyia. To describe the expansive and epidemiological characteristics of Dengue, Zika and Chikungunya fever in the year 2016 and its relation with environmental aspects in the municipality of Augustinópolis, State of Tocantins. The information concerning the Dengue, Febre Chikungunyia and Zika notifications data was carried out in the Notification of Injury Information System (SINAN). There was no contact of the investigators in the manipulation and analysis of the medical record, notification form, and the name and address of the affected patients for the abovementioned offenses. It should be emphasized that the research was authorized by the Municipal Health Department for the use of the data. The present research is descriptive and transversal of a quantitative approach. The municipality of Augustinópolis is located in the extreme north of the state of Tocantins, with the predominant tropical climate subhumid and seasonal distribution of rainfall with a well defined dry

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and rainy season (Brazilian Institute of Geography and Statistics, 2017). Data collection was carried out in the first half of 2017. The sample of this research was composed of all reported cases of Dengue, Zika and Fever Chikungunya in the year 2016 in the municipality. The notified cases of Dengue, Zika Virus and Chikungunya came from the following notifying health units: Augustinópolis Regional Hospital (HRAug), Family Health Unit I (USF I), II (USF II), III (USF III), IR (UFS IV) and V (USF V). Dengue and Chikungunya fever data were from SINAN Oline, however, Zika Virus data from SINAN Net. The variables collected were: demographic information and environmental variables about Dengue, Zika Virus and Chikungunya. Demographic information includes: Sex (male and female); Age group (subdivided into <18 years and ≥ 18 years); Regarding the environmental variables, these were searched in the information contained in the IBGE about the Municipality of Augustinópolis and in the Android application Google Earth®. The variables sought were: Seasons of the year (rainy season or dry season); Paving and sewage (total, partial or absent); Proximity with reproductive site (wet area and / or dry area); Proximity to the open dump; Area of location of notifying health units (urban and rural).
Statistical analyzes were performed through the SPSS 23.0 program.

RESULTS

The association of the diseases of Dengue, Zika virus and Chikungunya Fever in the year 2016 showed that the USF I went to the notifying health unit responsible for the highest number of notifications being significant for Dengue (36,2%), Zika Virus (38,5%) and Chikungunya fever (42,9%) when compared to other health facilities (p <0.001) (Table 1).

Table 1. Reports of arboviruses Dengue, Zika and Fever Chikungunya compared with demographic and environmental data in the year 2016

	AGGREGATE			*p**
	Dengue	Zika virus	Fever Chikungunya	
Sex				
Female	84 (59,6)b	32 (82,1)a	5 (71,4)a,b	0,03
Male	57 (40,4)b	7 (17,9)a	2 (28,6)a,b	
Age group				
< 18 anos	41 (29,1)	14 (35,9)	1 (14,3)	0,46
≥ 18 anos	100 (70,9)	25 (64,1)	6 (85,7)	
Station				
Rainy	104 (73,8)	21 (53,8)	4 (57,1)	0,05
Dry	37 (26,2)	18 (46,2)	3 (42,9)	
Sewer				
Absent	35 (24,8)	15 (38,5)	1 (14,3)	0,17
Parcial	106 (75,2)	24 (61,5)	6 (85,7)	
Near to reproductive site				
Not	21 (14,9)	1 (2,6)	1 (14,3)	0,06
Yes	120 (85,1)	38 (97,4)	6 (85,7)	
Proximity of the dump				
Not	35 (24,8)	15 (38,5)	1 (14,3)	0,17
Yes	106 (75,2)	24 (61,5)	6 (85,7)	
Zone				
Rural	2 (1,4)	0 (0,0)	0 (0,0)	0,72
Urban	139 (98,6)	39 (100,0)	7 (100,0)	
Health Unit				
HRAug	26 (18,4)b	0 (0,0)a	0 (0,0)a	<0,001
USF I	51 (36,2)a	15 (38,5)a	3 (42,9)a	
USF II	29 (20,6)a	9 (23,1)a	3 (42,9)a	
USF III	12 (8,5)b	14 (35,9)a	0 (0,0)b	
USF IV	21 (14,9)a	1 (2,6)a	1 (14,3)a	
USF V	2 (1,4)a	0 (0,0)a	0 (0,0)a	

*Qui-square *Posthoc;* Different letters indicate significant differences in the proportions between the columns.

DISCUSSION

Considering the relation of arboviruses studied in the year 2016, the number of notifications of Zika virus for females was significantly higher in relation to males. This analysis brings a concern to the female public, since it is more vulnerable and susceptible to Zika virus infection, especially the pregnant group, since Zika virus infection may be associated with microcephaly. Thus, investments and strategies for women's health from family planning to the birth of the child become appropriate. Through this, the gestation will be planned after the periods of greatest incidence throughout the year, and for those already in the gestational period should be advised and follow the continuous use of repellent, long-sleeved clothes, mosquito nets and screens in homes mainly doors and windows. The female sex was also predominant in relation to the male sex in other studies that deal with the epidemiological behavior of Dengue (Fantinati *et al.,* 2013; Silva *et al.,* 2014). Although, some authors did not find significant differences between the sexes. The highest number of infections among the female subjects is related to the permanence of the woman in the inner or peridomicile. Another important factor is the fact that women are more assiduous in the search for public health services and even the private health network than men, since their behavioral habits in the search for health services are more disinterested or difficult. In relation to the Notifying Health Units, it was significant that the Regional Hospital of Augustinópolis had the highest number of Dengue notifications (18,4%) and the Family Health Unit III had the highest number of Zika cases (35,9%) when compared to the other health units reported. It is believed that patients with Dengue are more commonly reported in hospital settings because they seek to establish the disease in terms of severity and the risk of serious bleeding complications. The similarity of the symptoms of the infections and because they are diseases transmitted by the same vector to the circulation of infection by the Dengue, Chikungunya and Zika virus in Brazil makes complex the control and treatment of the disease, so the laboratory diagnosis is still limited. In the case of reinfection by different serotypes of Dengue virus, the interaction of arboviruses (Dengue serotypes 1-4, Chikungunya and Zika) could theoretically result in more intense viremia (Donalisio *et al.,* 2017).

Conclusion

This study provided a description of the epidemiological profile of the arboviruses studied. In addition, it is an unpublished research for the Municipality of Augustinópolis about the epidemiological behavior associated with the environmental aspects of the arboviruses caused by Aedes aegypti, being: Dengue, Zika virus and Chikungunya fever and their relation with environmental aspects. Therefore, the adoption of strategies and measures of prevention and control should always be evaluated and (re)modified, since the vector Aedes aegypti has high power of adaptation and proliferation according to the environmental and seasonal changes

REFERENCES

Brazilian Institute of Geography and Statistics. History, Augustinópolis - TO [Internet]. 2017 [quoted 2017 set. 06]. Available at: https://cidades.ibge.gov.br/painel/historico.php?codmun=170255

Donalisio MR, Freitas ARR, Zuben APBV. 2017. Arboviruses emerging in Brazil: challenges for clinic and implications for public health. *Rev Saúde Pública,* 51 (30): 1-6. Doi: http://dx.doi.org/10.1590/s1518-8787.2017051006889

Fantinati AMM, Santos ACA, Inumaru SS, Valério VTD, Fantinati MS. 2013. Epidemiological and demographic profile of dengue cases in the central region of Goiânia - Goiás: from 2008 to March 2013. *Tempus [Internet],* [quoted 2017 Aug. 14]; 7 (2): 107-19 Available at: http://www.tempusactas.unb.br/index.php/tempus/article/view/1347/1150

Lopes N, Nozawa C, Linhares REC. 2014. General characteristics and epidemiology of the emergent arboviruses in Brazil. *Rev Pan-Amazon Health,* 5 (3): 55-64. Page 221

Maniero VC, Santos MO, Ribeiro RL, Oliveira PAC, Silva TB, Moleri AB, et al. 2016. Dengue, chikungunya and zika virus in Brazil: epidemiological situation, clinical aspects and preventive measures. *Multidisciplinary research almanac [Internet],* [quoted 2017 May 22]; 1 (1) 118-45. Available at: http://publicacoes.unigranrio.edu.br/index.php/amp/article/view/3409/2110

Silva GM, Andrade AMSS, 2014. Evaluation of the epidemiological profile of dengue in the city of Paripiranga, Bahia, Brazil. Scientia Plena [Internet]. [quoted 2016 nov. 19]; 10 (9), 67-79. Available at: https://www.scientiaplena.org.br/sp/article/view/1894/1036

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