



DENGUE: CONTEXT AND TRAJECTORY IN MATO GROSSO DO SUL, BRAZIL

¹Edinéia Ribeiro dos Santos, ¹Sônia Maria Oliveira de Andrade, ¹Rivaldo Venâncio da Cunha,
¹Valdir Aragão do Nascimento, ²Cássia Barbosa Reis
and ³Alessandra Moura da Silva

¹Graduate Program in Health and Development in the Mid-West Region, Federal University of Mato Grosso do Sul, 79070-900, Campo Grande, MS, Brazil

²State University of Mato Grosso do Sul, Nursing Course, Dourados/MS, Brazil.

³Researcher at Federal University of Mato Grosso do Sul, 79070-900, Campo Grande, MS, Brazil

ARTICLE INFO

Article History:

Received 14th November, 2018
Received in revised form
26th December, 2018
Accepted 06th January, 2019
Published online 28th February, 2019

Key Words:

Dengue in Mato Grosso do Sul/Brazil,
Context of Dengue, Trajectory of Dengue.

ABSTRACT

Dengue since its arrival in mid-1986 had a major impact on public health in the capital of Mato Grosso do Sul, Brazil. Impacts occurred mainly in the first months of the year of the period of higher incidence of rainfall and temperature, causing epidemics that become a concern for the sumo-grossensociety. Climatic factors trigger mobilization of health professionals to intensify vector-fighting campaigns and treat the symptoms in those infected. Although there are a number of measures to deal with dengue epidemics, each year this disease appears again, ignoring the authorities' efforts to contain it. Of the various strategies in the field of health, epidemiology produces technical-scientific knowledge that assists in combating the disease vector. On the other hand, the same can not be said about the historical trajectory of dengue in Campo Grande, as a result of which the studies carried out to date favor approaches on symptoms, problems with the vector and treatment. Thus, characterizing the history of dengue is necessary because it is through history that we can observe the past, to think about how to plan the present and the future. History helps us to recognize the nature and limits of social representations. Thus, in light of the foregoing, this manuscript presents a bibliographical review that contextualizes dengue and its trajectory in Mato Grosso do Sul, Brazil.

Copyright © 2019, Edinéia Ribeiro dos Santos et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Edinéia Ribeiro dos Santos, Sônia Maria Oliveira de Andrade, Rivaldo Venâncio da Cunha, Valdir Aragão do Nascimento, Cássia Barbosa Reis and Alessandra Moura da Silva, 2019. "Dengue: context and trajectory in mato grosso do Sul, Brazil", *International Journal of Development Research*, 9, (02), 25997-26001.

INTRODUCTION

Dengue is a public health problem that over the years has caused many deaths and physical and psychological suffering in various parts of the world. Faced with this problem, research has been developed with the aim of understanding the dynamics of the disease such as its vectors, forms of transmission, etiological and structural aspects. Also relevant are the research related to the sociocultural aspects of the disease, such as the economic impacts caused by outbreaks and epidemics in various parts of the world, as well as the social representations of the affected population regarding the

*Corresponding author: Edinéia Ribeiro dos Santos,
Graduate Program in Health and Development in the Mid-West Region, Federal University of Mato Grosso do Sul, 79070-900, Campo Grande, MS, Brazil

performance of the State and its authorities in confronting the problem, and the careful historiographic survey of the emergence of the disease and its consequences. Research related to dengue produced in the field of history is scarce, which demonstrates the low investment of researchers in the production of scientific and academic knowledge on a subject of great importance in the area of public health in Brazil. In view of the above, the manuscript presented is a bibliographical review in which the contribution of several researchers working on the subject of dengue is addressed. Initially, the global aspects of dengue in the world are presented and, in Brazil, specifically addressing its trajectory in Mato Grosso do Sul, in order to build a historical panorama of the disease.

Dengue: Historical Aspects: Dengue cases occur mainly in tropical and subtropical regions such as Asia, Oceania, Africa

and the Americas. The virus is transmitted by the female *Aedes aegypti*, which is adapted to the hot and humid climate (TORRES, 2005). As a result of a favorable scenario for the reproduction of the mosquito, the ease of its proliferation places around 2.5 billion people in a risk zone. The clinical spectrum of the disease is broad and varies from asymptomatic, oligosymptomatic or even more severe forms. There is no defined parameter yet to explain the causes of the most serious infections. In these scenarios, theories point out that the causes of infections can occur due to the re-infection of the host, as well as a greater virulence of the infecting virus strain, characteristics of the host organism or a combination of these possibilities (TAUIL, 2002). Denominated as "dengue" by the Spanish in the nineteenth century, and called "break-bone-fever" or "dandy fever" by the Americans and British settlers; "kadingapepo" by the African slaves; "polka" or "eruptive rheumatic fever" in Brazil; and called "aburunkabah" in Mecca in which the meaning was "father of the knee" and made reference to the pains caused in the articulations by the disease. Besides the variation of names, several were theories about its origin. For example, in the British Isles of the Caribbean, it was called African Fever, because people believed that the disease was native to Africa and would have been brought by the slaves. On the other hand, in India, it was called the Aden fever, believing that it would have arisen in Aden in Saudi Arabia (REGO, 1872; RIGAU-PEREZ, 1998; THOMAS, 1880). The first report of a possible case of dengue was made in China from 265 to 922 AD, and was associated with transmission by insects linked in some way to water. By this association, the disease was called 'water poison'. The record of this occurrence reinforced the hypothesis that the disease originated in Asia. Subsequent to this report, new records were made almost a thousand years later, in 1635 in the French West Indies or the Caribbean (Gubler, 1998; Schneider, 2001). Confirmation that the *Aedes aegypti* mosquito is the transmitter of the disease occurred in 1916 through the surveys of Cleland, Bradley and McDonald (1918). However, studies conducted in 1906 and 1908 had raised the hypotheses that transmission occurred through the *Aedes aegypti* mosquitoes. In this period, tests were performed with *Culex fatigans* and *Stegomyia fasciata*, current *Aedes aegypti* (BANCROFT, 1906; TORRES, 2005).

The emergence of possible cases of dengue in the Americas appeared apparently from 1635, according to information on the registry of people with clinical manifestations compatible with the disease, occurring in Martinique and Guadeloupe (GUBLER, 1987). The first evidence in this same region, with laboratory confirmation, dates back to 1945, when autochthonous cases were diagnosed in the United States. In addition, there is evidence of other records dating back to 1980, when the virus spread through the state of Texas (PAN AMERICAN HEALTH ORGANIZATION, 1981). In Central America, according to the epidemiological reports, the first cases indicate the occurrence of the disease in Belize, El Salvador, Guatemala and Honduras. In Mexico, the records point towards the end of 1978 and 1979-1980 (WOODALL, 1982). In Brazil, the first epidemic occurred in the early 1980s, the first diagnosis of dengue with laboratory bases occurred in 1982 in the city of Boa Vista (Roraima). At that time, the serotypes DEN-1 and DEN-2 were detected and isolated (OSANAI *et al.*, 1983; TRAVASSOS, 1982). After the occurrence in Boa Vista, dengue was only registered again in the summer of 1985-1986 when an important epidemic occurred in Rio de Janeiro. The DEN-1 serotype was identified

(SCHATZMAYR *et al.*, 1986). In other Brazilian regions, dengue epidemics have also been recorded, such as the Southeast (Rio de Janeiro, São Paulo, Minas Gerais) and the Northeast (Alagoas and Ceará). In the following years, several other episodes of the disease were reported, such as those that occurred in the cities of Redenção and Rondon from 1998 to 1999 in the state of Pará, and the event reported in the city of Manaus/Amazonas with a total of 3,423 cases. From 1998 to 2001, many other Brazilian states were affected by the presence of dengue, as in the states of Rondônia, Acre, Amapá and Tocantins (COSTA *et al.*, 2011; SILVA Jr. *et al.*, 2002). Regarding the occurrence of dengue hemorrhagic cases in Brazil, the first episode occurred in 1990 after the introduction of type 2 virus (DENV-2). In the following decade, the number of confirmed cases increased to 893 with 44 deaths. In 2002, there were 150 deaths (SIQUEIRA *et al.*, 2005). As we mentioned earlier, dengue has seasonal characteristics in its occurrence. In Brazil, the highest incidence occurs in the first five months of the year, a period of higher heat and humidity (BRASIL, 2007).

As discussed above, Brazil has faced several problems since the beginning of the 1980s in relation to the control of infections caused by human contact with the dengue virus. Despite the efforts made to combat the dengue epidemic in Brazil, and the large resources allocated for this purpose in order to eliminate and control *Aedes aegypti* - the vector par excellence of the dengue virus in the Americas, the results are still unsatisfactory (TEIXEIRA *et al.*, 2002). *Aedes aegypti* is a mosquito easily found in several parts of the world where the hot and humid climate predominates. Mosquitoes predominantly inhabit urbanized spaces and act at any time of the day, which makes clear their extremely efficient ability to transmit the virus (TAKAHASHI, 2004). In terms of dispersion, virus serotypes have spread vertically throughout the Brazilian territory since it has been found in several regions and sub-regions of the country's urban centers, causing a high production of epidemics. These epidemics have become more serious due to the increased incidence of Dengue Hemorrhagic Fever (TEIXEIRA *et al.*, 2005). According to Teixeira *et al.* (2002), the development of the epidemiological context associated with the results obtained in the impact assessments, in order to obtain the levels of success of the actions developed by the Brazilian dengue control program, showed that the efforts performed had low effectiveness. The finding that the efforts of the Brazilian State in the attempt to control dengue also evidences the insufficiency of the scientific knowledge produced - with regard to prevention - to combat this virus. In addition to the fragility of the measures adopted against the spread of the disease, the Brazilian State also fails when it is already installed in several regions, because it does not adequately provide specific medicines to the populations affected by dengue (TEIXEIRA, 2008).

Disease control must be multidirectional, that is, procedures must be developed that take into account the promotion of health education, prior diagnosis, the mobilization of therapeutic resources appropriate to each situation and the adoption of preventive measures that avoid or minimize the spread of the virus. In the process of coping with the disease, the assistance of the population is essential, recognizing that, without its effective involvement in the dynamics of preventive care for vector dissemination, dengue will continue to make victims in the state of Mato Grosso do Sul and in other region of the country (REIS, 2012). Early identification

of dengue cases is one of the most relevant measures to be taken to control the disease. Identification allows a better approach in the elaboration of mechanisms of action that aid in the decision-making process, aiming in the first place the control of the disease. In this sense, it is necessary to structure and organize the health services, both in the areas of surveillance and in the sectors that deal with the promotion of assistance to address the mortality caused mainly by the severe forms of the disease (MAHMOUD, 2012).

Dengue in Mato Grosso do Sul/MS: In the state of Mato Grosso do Sul/Brazil, the occurrence of dengue cases has gradually increased at rates above those recorded in the rest of the country. It is considered to be of high incidence. However, the authorities have been careful with the control of the dengue vector in Campo Grande, with a decrease in the number of records of dengue cases reported in Mato Grosso do Sul. According to the epidemiological bulletin produced by the Ministry of Health of Mato Grosso do Sul, up to December 29, 2017, 6,201 notifications of the disease were cataloged. With regard to this amount, a significant number can be considered when compared to that recorded in 2016, in which 59,874 notifications were collected (GONÇALVES, 2018). In Brazil for each group of 100 thousand inhabitants, in 1997 the records indicated 253.74 cases, increasing to 404.96 cases in 1999 and 517.61 in 2001 (BRASIL, 2004). The 2006-2007 years were marked by large outbreaks of dengue in the country. In the Central-West region, 827 cases were reported for each group of 100,000 inhabitants, with the highest number of occurrences in Brazil, with the highest index State of Mato Grosso do Sul with 74,902 cases; or corresponding to 3,213 cases referring to each group of 100 thousand inhabitants (BRAZIL, 2007).

The first epidemic recorded in Mato Grosso do Sul dates back to 1990. However, according to Quintanilha (2010) it was in 1987 that the state faced an outbreak of the disease, which should have served as a warning to the authorities about the relevance of the problem to the population. During the 1990 epidemic, Campo Grande (the capital of the state of Mato Grosso do Sul) registered 9,757 incidents, totaling approximately 1470 cases for each group of 100,000 inhabitants (CUNHA, 1997; PEREIRA, 2003). The epidemic drew the attention of health authorities to the need to think about strategies that would make it possible to control the disease or even eradicate it in the state of Mato Grosso do Sul. A second dengue epidemic in Mato Grosso do Sul occurred in 1996, after the introduction of DENV-2 (CUNHA, 1997). This episode had a high incidence of cases reported in MS and in its environment, affecting regions close to the geographic limits of the territory of Mato Grosso do Sul. We can cite the example of the occurrence in Andradina subregions in the state of São Paulo (CHIARAVALOTTI NETO, 1999); After a few years, the DENV-2 serotype resurfaced in Mato Grosso do Sul in 2002, further aggravating the state's epidemiological situation due to the circulation of another virus serotype, DENV-3. Thus, the association of the two viruses culminated with the appearance of the third dengue epidemic in the region, which at that time recorded 1,920 cases/100 thousand inhabitants (Quintanilla, 2010). During the third epidemic, 1920 cases were registered in the capital for every 100 thousand inhabitants (MINISTÉRIO DA SAÚDE, 2002). Dengue has occurred in Campo Grande since 1986, when the DEN 1 serotype was isolated. On the other hand, the serotype DEN 2 was isolated in 1996, and the presence of DEN 3 was

registered in 2005, which caused an epidemic that began in 2006 and was aggravated in 2007. During this period, the Central-West Region was the most affected in the entire Brazilian territory, accounting for a total of 827 cases per 100,000 inhabitants. The state of Mato Grosso do Sul was the one that most presented cases of the disease, which registered 74,902 occurrences in the region, reaching 3,213 cases / 100,000 inhabitants (BRASIL, 2007; QUINTANILHA, 2010). In 2008, the number of cases in the state of Mato Grosso do Sul was within the projected percentage, with 1,743 cases being notified and 220 confirmations, which represented a continued increase in 2009, resulting in the emergence of a new epidemic in 2010, reaching 41,402 notifications and 29,536 confirmed cases. Of the notified cases, 130 were diagnosed with hemorrhagic fever and 22 patients died. In 2011, there were 6,268 suspected cases with 14 cases of hemorrhagic fever and 3 deaths. In 2012, 8,087 cases were recorded, of which 2,365 were confirmed as dengue, 24 of which were hemorrhagic fever and 4 deaths (CAMPO GRANDE, 2013; POMPEO, 2016; MUNICIPAL DE SAÚDE DE CAMPO GRANDE, 2010).

In 2012, there were 7,752 reports identified at the time as a serotype DENV 1. In the state of Mato Grosso do Sul, the DENV-1 virus was identified and isolated in 1987, and the first manifestations of the disease were notified to the National Health Foundation (FUNASA); more specifically in January 1990, when the state counted 9,757 dengue occurrences (UEHARA *et al.*, 2006). In the case of dengue hemorrhagic episodes (UEHARA *et al.*, 2006), the first case was recorded in 1995 in the city of Campo Grande, capital of the state of Mato Grosso do Sul. The year 1995 is emblematic for the history of dengue in the state, given that at the time there was one of the most severe epidemics caused by the serotype DENV-1. Hemorrhagic dengue again devastated the Midwest region in April 2008, when they recorded 20,936 dengue occurrences, which had already reached the region in the previous year, but with a smaller number of cases. In 2008, 38 cases of Dengue Hemorrhagic Fever (CDI) were confirmed by laboratory tests, with three deaths and eight cases of dengue with complications reported, with five cases resulting in death. At the time, the state of Mato Grosso do Sul recorded 2,520 cases, with a greater emphasis on the cities of Campo Grande - 854 (33.9%), Coxim - 278 (11%), Corumbá - 226 (9%) and Naviraí 176 (7%). After this period, the cases of the disease in the state of Mato Grosso do Sul intensified frighteningly, the increase in the number of notifications resulted in a great epidemic in 2013, a year in which 102,026 cases were computed all over the state, with the municipality of Field Large / MS reported 46,654 cases (POMPEO, 2016). Since the epidemic occurred in 2013, due to the alarming number of registered cases, there was interest and care of the public administration and its representatives, who were forced to declare a state of emergency due to the seriousness of the situation due to the presence of dengue in the region. Thus, health professionals from the most diverse areas were mobilized to help prevent the uncontrolled expansion of the disease, as well as providing the population with care consistent with the magnitude of the current epidemic (POMPEO, 2016). In the list of measures adopted to combat the disease were included strategies for the reception and classification of risk of patients, a procedure that was associated with patient referral, respecting the peculiarities of each case (CAMPO GRANDE, 2013). In addition to the measures taken to overcome the epidemic, there was an

extension of the hours of operation of the basic health units (BHU), as well as the increase of available beds for hospitalization. There was the availability of 24-hour care at the Center for Infectious-Parasitic Diseases contracting - at Hospital São Julião - of 12 beds for cases that presented greater severity and required urgent hospitalization. Another measure was the intensification of larval and vector control, previously adopted procedures, but that in the face of the very high level of risk, it had to be increased in all its aspects (POMPEO, 2016).

In the city of Dourados, the second largest municipality in the Mato Grosso do Sul state, there was a dengue epidemic in 2013, out of a total of 3916.5 / 100 thousand inhabitants, only 8226 corresponded to the notifications, 507 were hospitalizations and 9 resulted in death (MACHADO, 2013). The author in question observes that, despite the fact that dengue is considered a public health problem of extreme gravity, there is no published research that has as its scope the verification of the direct and indirect economic impact of the various and diverse forms of presentation of the disease in Mato Grosso do Sul. In 2015, according to the Ministry of Health, there were 1,649,008 occurrences that manifested the classic characteristics of dengue, numerical quantitative much more significant than those registered in 2013, in which 1,452,489 cases were recorded. The Southeast region, during the year 2015, was the one that registered the most notifications, more precisely 1,026,226 cases; 62.2% in relation to the overall figure of the Country. The other regions recorded the following numbers: Northeast 311,519 cases; 18.9%, Central West, 220,966 cases; 13.4%, South, 56,187 cases; 3.4% and North, 34,110 cases; 2.1% (BRAZIL, 2016). In the years 2014 to 2018 many episodes of dengue in Brazil were reported. This demonstrates that the disease is far from being eradicated in the Country due to the delays of the public power to deal with the issue. The Brazilian public power only acts when the problem is already installed and the possibilities of control become increasingly difficult. This would also be a bias to be researched by Brazilian researchers, that is, the authorities' disregard for developing effective public policies to address the problems caused by dengue in the state

Final considerations

Studies highlighting the history of dengue in Mato Grosso do Sul, from the historiographical point of view, has not been a concern of researchers in the human sciences areas of the state. In fact, our bibliographical survey confirmed that there is little, if any, production of knowledge about the subject from the theoretical corpus that characterizes the human and social sciences. Except for one or another work in the areas of communication (FRANÇA, 2011) and economics (MACHADO, 2013), there were no studies in the areas of History and other related areas. Studies on dengue, whatever the academic bias, are relevant to help eradicate the disease in the state of Mato Grosso do Sul and in the country as a whole.

REFERENCES

- BANCROFT, T. L. On the etiology of dengue fever. Australian medical gazette, Melbourne, v. 25, n. 1, p. 17-18, jan. 1906.
- BRAZIL. Secretaria de Gestão Participativa do Mato Grosso do Sul. Cadernos Metropolitanos: a sociedade e a construção do SUS, Mato Grosso do Sul - vol. I. Brasília: Ministério da Saúde, 2004.
- BRAZIL. Ministério da saúde. Secretaria de Vigilância em Saúde. Informe Epidemiológico da Dengue, Janeiro a Dezembro de 2007. Disponível em: <http://portal.saude.gov.br/portal/arquivos/pdf/boletim_dengue_010208.pdf> Acesso em 15/12/2016.
- BRAZIL. Ministério da saúde. Secretaria de Vigilância em Saúde. Informe Epidemiológico da Dengue, Janeiro a Dezembro de 2007b. Disponível em: http://portal.saude.gov.br/portal/arquivos/pdf/boletim_dengue_010208.pdf Acesso em 22 jan. 2019.
- BRAZIL. Secretaria de Vigilância em Saúde – Ministério da Saúde. Boletim Epidemiológico. V. 47, n 3, 2016. Disponível em: <http://portal.arquivos2.saude.gov.br/images/pdf/2016/janeiro/15/svs2016-be003-dengue-se52.pdf> Acesso em: 7 out. 2018.
- CAMPO GRANDE (Município). Secretaria Municipal de Administração. Diário Oficial de Campo Grande, n. 3,687, parte I, p. 1-7, de 21 de janeiro de 2013. Disponível em: <http://portal.capital.ms.gov.br/diogrande/> Acesso em: 15 jan. 2019.
- CHIARAVALOTTI NETO, F. Epidemiologia da dengue nas regiões de São José do Rio Preto e Araçatuba, São Paulo, 1990 a 1996. 155 f. Tese (Doutorado em Epidemiologia) – Faculdade de Saúde Pública da Universidade de São Paulo/USP, São Paulo/SP, 1999.
- CLELAND, B. J., BRADLEY, B., MCDONALD, W. Dengue Fever in Australia. Its History and Clinical Course, Its Experimental Transmission by Stegomyia fasciata, and the Results of Inoculation and Other Experiments. The Journal of Hygiene Vol. 16, No. 4 (Jan., 1918), p. 317-418. Disponível em: <https://www.jstor.org/stable/3859014> Acesso: 11 jan. 2019.
- COSTA, R. G.; SILVA, N. V. da.; AZEVEDO, P. S. de.; MEDEIROS, A. N. de.; CARVALHO, F. R. de.; QUEIROGA, C. R. do E. ; MEDEIROS, G. R. de, 2011. Meat quality of lambs fed with alfalfa and lucerne (Calotropis procera SW) in the diet. Rev. Bras. Zootec., 40 (6): 1266-1271.
- CUNHA, R. V. Aspectos clínicos e epidemiológicos da Infecção pelos vírus dengue em áreas endêmicas do Brasil. Tese apresentada para obtenção grau de doutor em medicina. Instituto Oswaldo Cruz, Rio de Janeiro, 1997.
- CUNHA, R. V. da. Dengue: Aspectos Históricos. PNCD Programa Nacional de Controle de Dengue SVS/MS. Secretaria e Estado de Saúde do RS. Secretarias Municipais de Saúde. Agosto de 2007.
- FRANÇA, G. M. A Cobertura da Mídia Impressa da Dengue em Mato Grosso do Sul. Intercom – Sociedade Brasileira de Estudos Interdisciplinares da Comunicação XXXIV Congresso Brasileiro de Ciências da Comunicação – Recife, PE – 2 a 6 de setembro de 2011. Disponível em: <http://www.intercom.org.br/papers/nacionais/2011/resumos/R6-0702-1.pdf> Acesso em: 21 nov. 2018.
- GONÇALVES, J. MS reforça ações no combate ao Aedes e registra o menor índice de notificações de dengue. Secretaria de Estado de Mato Grosso do Sul. Notícias. Disponível em: <http://www.saude.ms.gov.br/2018/01/04/ms-reforca-acoes-no-combate-ao-aedes-aegypti-e-registra-menos-indice-de-notificacoes-de-dengue/> Acesso em: 22 jan. 2019.
- GUBLER, D. J. Dengue and dengue hemorrhagic fever: its history and resurgence as a global public health problem. In: GUBLER, D. J.; KUNO, G. (Ed.). Dengue and dengue hemorrhagic fever. New York: CAB International, 19987.

- p. 1-22. Disponível em: <https://apps.who.int/iris/bitstream/handle/10665/148527/dbv21p1.pdf?sequence=1&isAllowed=y> Acesso em: 12 nov. 2018.
- MACHADO, A. A. V. O impacto econômico da dengue na cidade de Dourados-MS. 2013. 85 f. Dissertação (Mestrado em Ciências da Saúde) – Universidade Federal da Grande Dourados/UFGD, Dourados/MS, 2013.
- MAHMOUD, F.F. Inquérito soropidemiológico sobre dengue em área urbana de Ponta Porã/MS, município de fronteira Brasil, Paraguai. 2012. 41 f. Dissertação (Mestrado Profissional em Saúde da Família) – Escola Nacional de Saúde Pública Sérgio Arouca, Rio de Janeiro, 2012.
- OSANAI, C.H. *et al.* Surto de dengue em Boa Vista, Roraima. Nota Prévia. Revista do Instituto de Medicina Tropical de São Paulo, 25(1):53-54, 1983.
- PAN AMERICAN HEALTH ORGANIZATION - PAHO Dengue in the Americas. Epidemiol Bull, 2(4):1-4, 1981.
- PEREIRA, G. Dengue clássico e dengue hemorrágico como problemas atuais de saúde coletiva no Mato Grosso do Sul, Brasil. 2003. 143 f. Dissertação (Mestrado em Saúde Coletiva) - Universidade Federal de Mato Grosso do Sul/UFMS, Campo Grande/MS, 2003.
- POMPEO, C. M. Dengue: caracterização clínica e variáveis associadas ao agravamento. 2016. 72 f. Dissertação (Mestrado em Enfermagem) – Universidade Federal de Mato Grosso do Sul/UFMS, Campo Grande/MS, 2016. Disponível em: <https://posgraduacao.ufms.br/porta/trabalho-arquivos/download/2517>] Acesso em: 14 nov. 2018.
- PONTES, R. J. S.; RUFFINO-NETTO, A. Dengue em localidade urbana da região sudeste do Brasil: aspectos epidemiológicos. Rev. Saúde Pública, São Paulo, v. 28, n. 3, jun. 1994.
- QUINTANILHA, A. C. F. Caracterização Clínica e Epidemiológica de casos de Dengue Internados em Hospitais Públicos de campo Grande – MS. Dissertação de mestrado. Programa de Pós-graduação em Saúde e desenvolvimento da Região Centro Oeste, Faculdade de medicina.
- REGO, J. P. esboço histórico das epidemias que tem grassado na cidade do Rio de Janeiro desde 1830 a 1870. Diário oficial do Império do Brasil. *Rio de Janeiro*, p. 44-51. 1872.
- REIS, C. B. Representações sociais de profissionais e usuários da estratégia de saúde da família sobre dengue na microrregião de Dourados/MS. 2012. 99 f. Tese (Doutorado em Doenças Infecciosas e Parasitárias) – Universidade Federal de Mato Grosso do Sul/UFMS, Campo Grande/MS, 2012. Disponível em: <http://repositorio.cbc.ufms.br:8080/jspui/bitstream/123456789/1851/1/C%3%81SSIA%20BARBOSA%20REIS.pdf> Acesso em: 14 nov. 2018.
- RIGAU-PEREZ, J. G. The early use of break-bonefever (quebranta huesos, 1771) e dengue (1801) em espanhol. American Journal of Tropical Medicine and Hygiene. Illinois, v. 59, n.2, p 272-274, Aug. 1998.
- SCHATZMAYR, H, G, NOGUEIRA, R, M, R, ROSA, A, P, A, T. An outbreak of dengue virus at Rio de Janeiro. Mem. Inst. Oswaldo Cruz, v. 81, n. 2, p. 245-246, 1986.
- SCHNEIDER, J.; DROLL, D. A. Timeline for dengue in the Americas to December 31, 2000 and noted first occurrences. Pan American Health Organization. Division of Disease Prevention and Control, June 2001.
- SECRETARIA DE ESTADO DE SAÚDE DE MATO GROSSO DO SUL. Boletim Epidemiológico Dengue. Serviço de Vigilância Epidemiológica, Ano 2010, n. 52, 1 a 52ª semanas epidemiológicas, Jan./Dez., 2010. Disponível em: Acesso em: 19 nov. 2018.
- SECRETARIA MUNICIPAL DE SAÚDE PÚBLICA DE CAMPO GRANDE. Informe Técnico da Dengue, Coordenadoria de Vigilância epidemiológica, Ano 2010, n. 5, 1 a 51ª semanas epidemiológicas. Jan./Dez. 2010. Disponível em: http://www.campogrande.ms.gov.br/sesau/canaisTexto?id_can=3414 Acesso em 22 nov. 2018.
- SILVA Jr, J. B.; SIQUEIRA Jr, J. B.; COELHO, G. E.; VILHARINHOS, P. T.; PIMENTA Jr, F. G. Dengue in Brazil: correm situation and control activities. Epidemiological Bulletin, v. 23, n.1. p. 3-6, Mar. 2002.
- SIQUEIRA, J.B.; MARTELLI, C.M.T.; COELHO, G.E.; SIMPLÍCIO, A.C.R; HATCH, D.L. Dengue and Dengue Hemorrhagic Fever, Brazil, 1981–2002. Emerging Infectious Diseases, v. 11, n. 1, p. 1-6, Jan. 2005.
- TAKAHASHI, L. T. Modelos matemáticos de epidemiologia com vetores: simulação da propagação urbana e geográfica da dengue. 2004. 125 f. Tese (Doutorado em Matemática Aplicada) – Universidade Estadual de Campinas/IMECC/UNICAMP, Campinas/SP, 2004.
- TAUIL, P. L. Aspectos críticos do controle do dengue no Brasil. Cad. Saúde Pública, Rio de Janeiro, v. 18, n. 3, June 2002.
- TEIXEIRA, M, da G. *et al.* Avaliação de impacto de ações de combate ao *Aedes aegypti* na cidade de Salvador, Bahia. Revista Brasileira de Epidemiologia Vol. 5, p. 108-115, 2002.
- TEIXEIRA, M. G.; COSTA, M. C. N.; BARRETO, M. L.; MOTA, E. Dengue and dengue hemorrhagic fever epidemics in Brazil: what research is needed based on trends, surveillance, and control experiences? Cadernos de Saúde Pública, v.21, n.5, p.1307-15, Sept.-Oct. 2005.
- TEIXEIRA, M.aria Glória. Controle do dengue: importância da articulação de conhecimentos transdisciplinares. Interface (Botucatu), Botucatu, v. 12, n. 25, p. 442-444, June 2008. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-32832008000200019 Acesso em: 14 jan. 2019.
- THOMAS, J. G. Dengue. Public health papers and reports. Boston, v. 6, p. 136-153, Dec. 1880.
- TORRES, E. M. Dengue. 20. Ed. Rio de Janeiro: Fundação Oswaldo Cruz. Editora Fiocruz, 2005.
- UEHARA, P. M. *et al.* Envolvimento hepático em pacientes com dengue hemorrágico: manifestação rara? Revista da Sociedade Brasileira de Medicina Tropical 39(6): 544-547, nov-dez, 2006.
- WOODALL, J.P. The dengue type 1 pandemic in the Western Hemisphere, 1977-1979. In: International Symposium on Tropical Arboviruses and Haemorrhagic Fevers, (ed) Pinheiro, F.P., Academia Brasileira de Ciências, Rio de Janeiro, Brasil, 481 pp., 1982.