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Original Article

Epidemiological profile of dengue before and during the Covid-19 pandemic in Mato Grosso

Perfil epidemiológico da dengue antes e durante a pandemia de Covid-19 em Mato Grosso
Perfil epidemiológico del dengue antes y durante la pandemia de Covid-19 en Mato Grosso

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ABSTRACT

Background and Objectives: The magnitude and severity of dengue may have been impacted by the Covid-19 pandemic. This study aimed to compare the incidence rate and the sociodemographic and clinical profile of suspected dengue cases reported in Mato Grosso (MT), Brazil, in the three-year period before and during the pandemic (2017–2022). **Methods:** This was a case series study based on secondary data from notification forms in the Notifiable Diseases Information System (SINAN) in MT 2017-2022. Incidence rates were analyzed across the state's 16 Health Regions, as well as sociodemographic and clinical characteristics. The chi-square test was used to compare the two trienniums, with a significance level of 5%. **Results:** A lower incidence rate was observed in the last triennium in the Baixada Cuiabana and Norte Araguaia regions, and a higher rate in the other regions during the pandemic triennium compared to the previous one — for instance, in Teles Pires, the rate increased from 806.5 to 7,161.7 cases per 100,000 inhabitants. In the 2020–2022 triennium, there was a higher proportion of cases among males, children aged 1 to 9 years, individuals of white race, those with higher education levels, and with laboratory confirmation. The proportion of cured cases was similar in both trienniums, and DENV-1 was the predominant serotype in both periods. **Conclusion:** The data indicate a higher cumulative incidence rate of dengue during the pandemic triennium compared to the previous period, with variations in sociodemographic and clinical profiles, which may have been influenced by the Covid-19 pandemic.

Keywords: *Dengue Virus. Arboviruses. Aedes aegypti. Covid-19. Public Health Surveillance.*

RESUMO

Justificativa e Objetivos: A magnitude e gravidade da dengue pode ter sido impactada pela pandemia de Covid-19. O estudo teve como objetivo comparar a taxa de incidência e o perfil sociodemográfico e clínico dos casos suspeitos de dengue notificados em Mato Grosso (MT) no triênio anterior e durante a pandemia (2017-2022). **Métodos:** Estudo de série de casos realizado a partir de dados de fonte secundária das fichas de notificação do Sistema de Informação de Agravos de Notificação (SINAN) de MT de 2017 a 2022. Foram avaliadas as taxas de incidência nas 16 Regiões de Saúde do estado e as características sociodemográficas e clínicas. Utilizou-se o teste qui-quadrado para comparação entre os triênios, com nível de significância de 5%. **Resultados:** Observou-se menor taxa de incidência no último triênio nas regiões da Baixada Cuiabana e Norte Araguaia, e maior taxa nas demais regiões no triênio da pandemia em comparação com o triênio anterior, Teles Pires, com 806,5 no primeiro para 7161,7 casos por 100.000 habitantes no segundo triênio. Foi maior a proporção de casos do sexo masculino, na faixa etária de 1 a 9 anos, cor branca, maior escolaridade e com confirmação laboratorial no triênio 2020-2022. A proporção de casos curados ocorreu de forma semelhante e DENV-1 foi o sorotipo predominante em ambos os triênios. **Conclusão:** Os dados indicam maior taxa de incidência acumulada de dengue no triênio de pandemia quando comparado ao período anterior, com diversidade no perfil sociodemográfico e clínico, que podem ter ocorrido por influência da pandemia de Covid-19.

Descritores: *Vírus da dengue. Infecções por Arbovirus. Aedes Aegypti. Covid-19. Vigilância em Saúde Pública.*

RESUMEN

Justificación y Objetivos: La magnitud y gravedad del dengue pueden haber sido impactadas por la pandemia de Covid-19. El estudio tuvo como objetivo comparar la tasa de incidencia y el perfil sociodemográfico y clínico de los casos sospechosos de dengue notificados en Mato Grosso (MT), Brasil, en el trienio anterior y durante la pandemia (2017–2022). **Método:** Se realizó un estudio de serie de casos a partir de datos secundarios provenientes de las fichas de notificación del Sistema de Información de Agravos de Notificación (SINAN) del estado de Mato Grosso, entre los años 2017 y 2022. Se evaluaron las tasas de incidencia en las 16 Regiones de Salud del estado, así como las características sociodemográficas y clínicas de los casos. Para la comparación entre los trienios se utilizó la prueba de chi-cuadrado, con un nivel de significancia del 5%. **Resultados:** Se observó una menor tasa de incidencia en el último trienio en las regiones de Baixada Cuiabana y Norte Araguaia, y una mayor tasa en las demás regiones durante el trienio pandémico en comparación con el anterior. En la región de Teles Pires, por ejemplo, la tasa aumentó de 806,5 a 7.161,7 casos por 100.000 habitantes. En el trienio 2020–2022 se registró una mayor proporción de casos en hombres, en el grupo de edad de 1 a 9 años, personas de raza blanca, con mayor nivel educativo y con confirmación de laboratorio. La proporción de casos curados fue similar en ambos trienios, y el DENV-1 fue el serotipo predominante en ambos períodos. **Conclusión:** Los datos indican una mayor tasa de incidencia acumulada de dengue durante el trienio pandémico en comparación con el período anterior, con variaciones en los perfiles sociodemográfico y clínico, las cuales podrían haber sido influenciadas por la pandemia de Covid-19.

Palabras Clave: *Virus del Dengue. Arbovirus. Aedes aegypti. Covid-19. Vigilancia en Salud.*

INTRODUCTION

Dengue is a growing concern, particularly in tropical regions. In Brazil, dengue epidemiological surveillance involves multiple levels of government, ranging from municipal health departments to the Ministry of Health.[1] Thus, preventing outbreaks relies heavily on surveillance through tracking previously diagnosed cases, as well as monitoring and controlling vectors.[2]

The range of the Aedes aegypti mosquito has expanded into new regions due to urbanization, globalization, human mobility, and climate change. Outbreaks of diseases transmitted by these mosquitoes are increasing in tropical areas and are now affecting subtropical and temperate regions.[2] These data underscore the ongoing importance of epidemiological surveillance and coordinated public health efforts to combat dengue, which remains a significant public health concern in Brazil.[3]

The declaration of a Public Health Emergency of International Concern due to the novel coronavirus (Covid-19) infection posed significant challenges to health systems globally. These challenges affected the diagnosis and management of other infectious diseases, including dengue.[4] During the pandemic, the initial symptoms of both diseases were similar, which posed diagnostic challenges and required adaptations in screening and diagnostic strategies.[5,6]

Another relevant point is that, in the early stages of the pandemic, access to diagnostic testing was limited and many private and university laboratories in Brazil were not equipped to perform large-scale testing. In this context, Central Public Health Laboratories (LACENs) emerged as key pillars in the response to the health crisis, playing a crucial role in early diagnosis and virus monitoring. Their operational capacity and technical expertise were essential for epidemiological surveillance, as evidenced by their contributions to the response to the health crisis. As the pandemic escalated, the LACENs significantly expanded their testing capacity and rapidly adapted their protocols to include diagnosing SARS-CoV-2, playing an essential role in guiding public health policies and control measures.[7]

Due to operational challenges such as reduced field teams and reallocated resources to combat the pandemic, the capacity to respond to dengue may have been affected. This includes the suspension of essential health services and difficulties screening and classifying suspected dengue cases, especially during periods when there is overlap with cases of the pandemic. These factors may indicate the impact of the pandemic on dengue control.[6]

Due to the complexity of the pandemic period, comparing reported cases from 2017–2019 to 2020–2022 may reveal changes in the epidemiological profile due to disparities in access to health services, diagnosis, and dengue transmission. This comparison could contribute to integrating lessons learned during the pandemic into current dengue surveillance practices in Mato Grosso, Brazil. Thus, this study aimed to compare the incidence rate and sociodemographic and clinical profiles of suspected dengue cases reported in Mato Grosso (MT) during the three years prior to and during the pandemic (2017–2022).

METHODS

This ecological, cross-sectional study was reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist. Using secondary data obtained from dengue notification forms in the Information System for Notifiable Diseases (SINAN) from 2017 to 2022, the study compared disease incidence rates and sociodemographic and clinical characteristics across the 16 health regions of Mato Grosso during the triennia 2017–2019 and 2020–2022.

The study population comprised residents of the state of Mato Grosso, which is located in Brazil's Central-West region and has a population of 3,658,649.[8] The territory is organized into six health macroregions—North, Central-North, East, West, South, and Central-Northwest—which are subdivided into 16 health regions, as established by Resolution CIB/SES No. 57 of July 26, 2018 (Figure 1).[9]

Suspected dengue cases reported in Mato Grosso between 2017 and 2022 were analyzed according to sociodemographic and clinical profiles, with no exclusions.

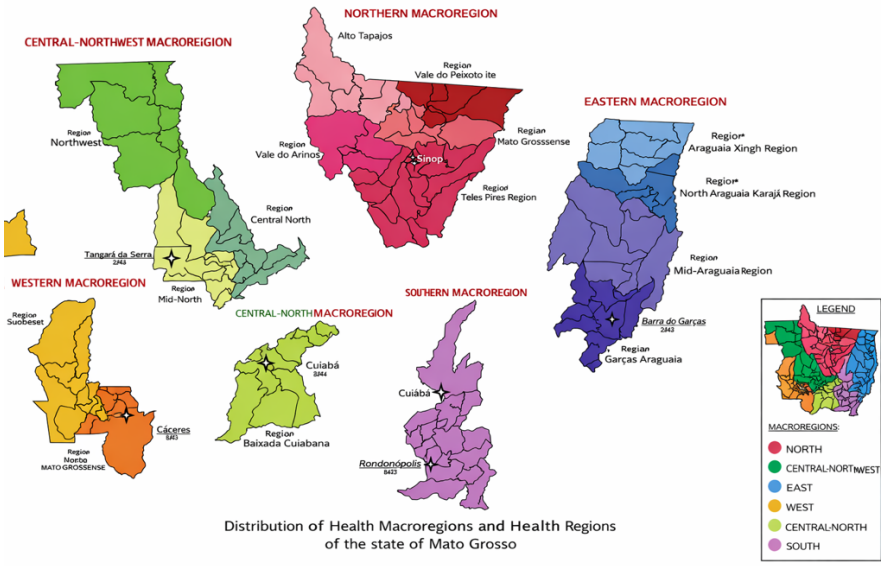

Figure 1. Distribution of Health Macroregions and Health Regions in the State of Mato Grosso.

The sociodemographic variables analyzed were the following: health region of residence, sex (male or female), age group (1–9 years, 10–19 years, 20–59 years, or 60 years and older), race/skin color (white, black, yellow, brown, indigenous, or unknown), and educational level (illiterate, incomplete or complete elementary education, incomplete or complete secondary education, or incomplete or complete higher education).

The clinical variables included reported serotype (DENV-1, DENV-2, DENV-3, or DENV-4); serological test result (IgM positive, negative, inconclusive, or unknown); diagnostic criterion (laboratory, clinical-epidemiological, or unknown); PCR testing performance (performed or not performed); and case outcome (recovery, death due to dengue, or death due to other causes).

To calculate the incidence rates for 2017–2019, we considered the total number of reported cases during that period and the estimated resident population for 2017 by the Brazilian Institute of Geography and Statistics (IBGE), multiplied by 100,000 inhabitants. To calculate the incidence rates for 2020–2022, we used the IBGE's estimated population for 2020 and the cumulative number of cases during that period, multiplied by 100,000 inhabitants.

The data were imported and analyzed using Stata software. Descriptive statistical analyses were performed, including measures of central tendency and dispersion, as well as the absolute and relative frequencies of the reported suspected cases. The chi-square test was used to compare analyzed sociodemographic and diagnostic-related variables between the 2017–2019 and 2020–2022 periods, adopting a 5% significance level.

The Research Ethics Committee of the State University of Mato Grosso (UNEMAT) approved this study, which was conducted using publicly available data (CAEE: 65072322.3.0000.5166; Opinion No. 5,823,767).

RESULTS

Between 2017 and 2022, a total of 120,816 suspected dengue cases were reported in Mato Grosso, 27,860 of which occurred in the pre-pandemic triennium and 92,956 of which occurred during the pandemic triennium. The Teles Pires health region had an incidence rate of 7,161.7 cases per 100,000 people from 2020 to 2022, compared to an incidence rate of 806.5 cases per 100,000 people from 2017 to 2019. In the Baixada Cuiabana health region, where the state capital is located, the incidence rate was 1,032.8 cases per 100,000 people in the 2017–2019 period and 551.9 cases per 100,000 people in the 2020–2022 period (Figure 2).

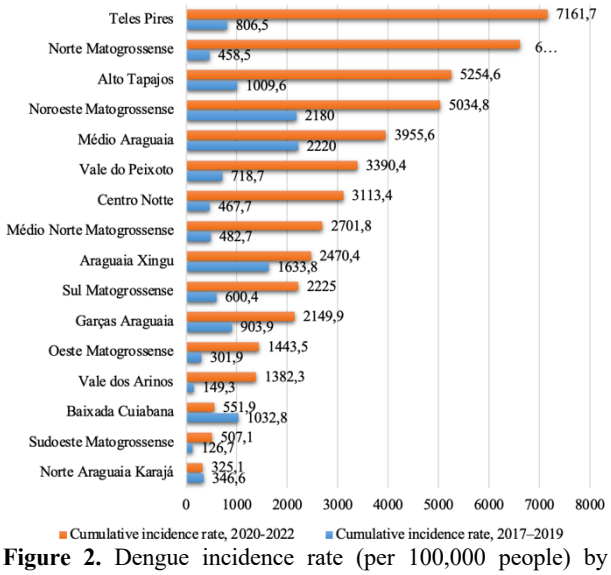

Figure 2. Dengue incidence rate (per 100,000 people) by health region in Mato Grosso during the triennia of 2017–2019 and 2020–2022.

A significant difference in the distribution of cases by sex was observed between the two analyzed triennia (p<0.01). From 2020 to 2022, the proportion of male cases increased from 46.10% to 48.54%, compared to the previous triennium. There was also significant variation in age group (p<0.01), particularly in the 1–9 age group, which increased proportionally from 11.65% to 14.45%.

Regarding race/skin color, the proportion of notifications increased among individuals classified as white during the pandemic (30.79%) compared to the previous period (25.56%), while the proportion of individuals classified as brown decreased. This pattern was reflected in the educational level variable as well, with a significant increase in the proportion of cases among individuals who had completed secondary education (Table 1).

Table 1. Sociodemographic Characteristics of Suspected Dengue Cases Reported in Mato Grosso, Brazil During the 2017–2019 and 2020–2022 Triennia.

	2017-2019 N (%)	2020-2022 N (%)	p-value*
Sex			<0.01
Male	12,838 (46.10)	45,097 (48.54)	
Female	15,011 (53.90)	47,810 (51.46)	
Age group (in Years)			
Under 1 year old	612 (2.20)	1,950 (2.14)	
1-9	3,247 (11.65)	13,429 (14.45)	
10-19	5,150 (18.49)	16,675 (17.94)	
20-59	16,485 (59.17)	53,513 (57.57)	
60 or older	2,365 (8.49)	7,352 (7.91)	
Race/skin color			<0.01
White	7,122 (25.56)	28,622 (30.79)	
Black	1,274 (4.57)	3,520 (3.79)	
Yellow	213 (0.76)	956 (1.03)	
Brown	16,488 (59.18)	49,568 (53.32)	
Indigenous	114 (0.41)	383 (0.41)	
Unknown	2,648 (9.51)	9,906 (10.66)	
Education			<0.01
Illiterate; incomplete elementary education	4,988 (34.09)	16,732 (32.15)	
Complete elementary education	3,814 (26.07)	12,889 (24.77)	
Incomplete/complete secondary education	4,686 (32.03)	17,937 (34.47)	
incomplete/complete higher education	1,144 (7.82)	4,479 (8.61)	
Ignored	13,228 (47.48)	40,919 (44.02)	

Abbreviation: *p-value of the chi-square test.

An increase in the proportion of cases confirmed by laboratory criteria was observed when the diagnostic confirmation criterion was evaluated between the two analyzed triennia, rising from 35.4% to 57.2% (p < 0.01). While the proportion of PCR testing remained stable, the number of PCR tests performed increased from 271 to 856, reflecting an expansion of diagnostic capacity in the state during the pandemic. There was also an increase in the proportion of positive IgM results (from 24.92% to 32.96%) and in the predominance of the DENV-1 serotype (from 64.46% to 83.85%) between the two periods (Table 2).

Table 2. Diagnostic-related aspects of suspected dengue cases reported during the 2017–2019 and 2020–2022 triennia in Mato Grosso.

	2017-2019 N (%)	2020-2022 N (%)	p-value*
Diagnostic criterion	-	-	<0,01
Laboratory	9,859 (35.4)	53,171 (57.2)	
Clínical-epidemiological	14,672 (52.7)	29,046 (31.2)	
Unkown	3,329 (11.9)	10,739 (11.5)	
p-value			
PCR testing			<0.01
Performed	271 (0.97)	856 (0.92)	
Not performed	19,830 (71.18)	52,963 (56.98)	
Unkown/blank	7,759 (27.85)	39,137 (42.10)	
p-value			
IgM para dengue			
Positive	6,943 (24.92)	30,640 (32.96)	<0.01
Negative	1,160 (4.16)	5,102 (5.49)	
Inconcluive	106 (0.38)	295 (0.32)	
Unkown	19,651 (70.53)	76,570 (61.23)	
p-value			<0.01

continue

	2017-2019 N (%)	2020-2022 N (%)	p-value*
Sorotiype			
DENV-1	107 (64.46)	457 (83.85)	
DENV-2	39 (23.49)	84 (15.41)	
DENV-4	20 (12.05)	4 (0.73)	
p-value			
Outcome			<0.01
Recovery	23,710 (85.10)	77,509 (83.38)	
Death due dengue	13 (0.05)	51 (0.05)	
Death due other causes	21 (0.08)	56 (0.06)	
Unkown	4,116 (14.77)	15,340 (16.50)	

Abbreviation: *p-value of the chi-square test.

DISCUSSION

This study significantly contributes to our understanding of dengue epidemiological dynamics in the state of Mato Grosso. It accomplishes this by comparing two distinct periods: before and during the Covid-19 pandemic. The study demonstrates how this context influenced not only disease incidence, but also the sociodemographic profile of reported cases and diagnostic patterns. The analysis, which is based on SINAN data, identifies changes that may have been driven by shifts in population behavior, reorganization of health services, the impact of social distancing measures, and the prioritization of resources to address the pandemic. Understanding these changes is essential for guiding future strategies for integrated surveillance and responses to endemic diseases in public health emergency scenarios. The findings presented here may inform more effective public policies and encourage similar studies in other regions of the country.

When analyzing incidence rates across Mato Grosso's health regions, the vast majority showed an increase in rates during the second triennium. However, Baixada Cuiabana and North Araguaia Karajá health regions showed a slight reduction.

The higher incidence rates observed during the pandemic were consistent with national trends. Bulletins from the Ministry of Health revealed that dengue incidence increased throughout the country during the 2020–2022 period.[7] However, the reduction observed in regions such as Baixada Cuiabana and North Araguaia-Karajá suggests different hypotheses. One possibility is underreporting of cases during the pandemic, particularly in regions with a higher concentration of health facilities dedicated to treating patients with Covid-19. Another hypothesis is that social isolation imposed during the outbreaks reduced urban mobility and consequently exposure to the vector in densely populated areas. Additionally, these regions may have implemented more effective vector control measures, which had a localized impact on viral transmission.[10] Such regional variations underscore the necessity of ongoing territorial analyses sensitive to local contexts, especially in scenarios involving overlapping health crises.

Upon evaluating the sociodemographic characteristics, it was observed that, although women accounted for the majority of reported suspected cases, the proportion of male cases increased from 46.1% during the 2017–2019 period to 48.54% during the 2020–2022 period. Changes in the distribution of cases by age group were also noted, including a proportional increase in the 1–9 age group, which increased from 11.65% in the first triennium to 14.45% in the second. This increase among children may be due to their greater immunological susceptibility, resulting from lower prior exposure to the dengue virus and reduced acquired immunity against different circulating serotypes. Changes in patterns of household and recreational exposure during social isolation may also be a factor. The suspension of in-person school activities and increased time spent at home may have expanded contact with vector breeding sites in residential environments. The increase in notifications among white individuals and those with higher educational attainment may reflect historical inequalities in access to diagnosis, with more advantaged groups being more likely to access health services and undergo testing.[11] The reduction in the 20–59 age group may indicate lower healthcare-seeking behavior in this group during the pandemic due to fear of contracting Covid-19 or prioritizing care for more vulnerable groups.

At the aggregate level, the literature has shown that income and race/skin color impact incidence rate ratios within a territory, with higher risks among those who self-identify as Black or Brown.[12] However, analysis of the race/skin color variable revealed a proportional increase in notifications among those classified as White from 2020 to 2022 compared with the previous period (increasing from 25.56% to 30.79%), while the proportion of notifications among those who self-identify as Brown decreased (decreasing from 59.18% to 53.32%). The results of the present study should be interpreted with caution, as previous studies have indicated that the distribution of reported dengue cases by race/skin color often reflects inequalities in access to health services, patterns of health system use, and the quality of notification form completion.[13]

Regarding educational level, the proportion of cases among individuals with complete secondary education increased from 32.03% in 2017–2019 to 34.47% in 2020–2022. However, as previously

described in the literature, the high level of incompleteness of these variable limits more robust inferences about the educational profile of cases in the state.[14] In this sense, the findings reinforce the need to improve the quality of notification form completion, which is essential for more accurate epidemiological analyses and for planning surveillance and control actions.

A substantial increase in laboratory confirmation was noted regarding diagnostic criteria in the 2020–2022 period compared with the previous triennium. This may indicate improved access to or greater availability of laboratory testing during this period, which may be associated with the enhanced capacity and technology that laboratories implemented to confront the Covid-19 pandemic. Laboratory diagnosis of dengue is essential for confirming infection and ensuring the appropriate clinical management of patients.[15] During the pandemic, the Central Public Health Laboratory (LACEN) of Mato Grosso rapidly adapted to implement and expand testing. This laboratory played a crucial role in identifying cases of SARS-CoV-2 while simultaneously continuing to diagnose other endemic diseases, such as dengue.[16] This growth may indicate an increase in the operational capacity of state public laboratories, driven by investments made for SARS-CoV-2 testing. The expansion of equipment, supplies, and laboratory teams during the pandemic may indirectly benefit the diagnosis of endemic diseases, such as dengue.

PCR testing and IgM detection for dengue revealed significant differences between the two time periods. The increase in IgM detection indicates greater viral circulation in the more recent period. It may also be related to intensified laboratory surveillance and sustained viral circulation in the state. These results highlight the importance of monitoring collective immunity dynamics, particularly in populations with prior exposure to different serotypes, as this can elevate the risk of severe dengue through cross-reactive immune responses.[17]

The distribution of dengue serotypes changed significantly between the analyzed periods. Although DENV-1 predominated in both periods, its proportion increased markedly in the second period, while the proportion of DENV-2 decreased. This dynamic may reflect cycles of serotype replacement, a widely described phenomenon in the literature associated with the interaction between viral circulation and the population's collective immunity profile.[17] The reemergence or intensification of a given serotype's circulation tends to occur when population-specific immunity declines, favoring its spread in endemic contexts. Additionally, shifts in serotype predominance have significant implications for disease severity because secondary infections with different serotypes are associated with a higher risk of severe dengue mediated by immunological mechanisms, such as antibody-dependent enhancement.[17]

The increase in cases with unknown outcomes during the second triennium (from 14.77% to 16.50%) suggests that there were weaknesses in the timely closure of notifications during the pandemic. This may be due to an overload of epidemiological surveillance teams, reassignment of professionals to the response to the pandemic, and prioritization of respiratory conditions in care flows. In many municipalities, the pandemic caused disorganization in record systems, hindering monitoring of the clinical outcomes of suspected cases. Studies indicate that public health emergency contexts tend to generate discontinuity in endemic disease follow-up processes, especially when conditions with similar symptoms overlap, such as dengue and Covid-19.[18] These findings reinforce the importance of maintaining resilient health surveillance structures capable of responding simultaneously to different threats.

The present study revealed significant changes in the sociodemographic and clinical profiles of dengue cases in Mato Grosso between 2017 and 2022, suggesting a potential shift in access to diagnosis and disease notification. This shift was likely influenced by the Covid-19 pandemic. The need to allocate resources and attention to combating the virus may have compromised dengue epidemiological confirmation and surveillance. However, there was also increased access to laboratory confirmation of cases. This increase may reflect a greater emphasis on diagnostic accuracy, which contributes to differentiation and provides a more precise and critically important response. During the pandemic, distinguishing dengue symptoms from those of Covid-19 was more difficult due to health system overload.[19]

Although a higher number of notifications were recorded during the pandemic triennium, diagnostic delays or underreporting cannot be ruled out, as most medical and laboratory resources were directed toward addressing the pandemic. This situation underscores the complexity of the challenges that health systems face when managing two public health crises simultaneously.

This study has limitations inherent to the use of secondary data from SINAN, including underreporting, incomplete records, and possible inconsistencies in the outcome and final classification fields. There is a particular emphasis on the incompleteness of the educational level variable. These limitations may have affected the accuracy of certain variables, particularly during periods of greater health system overload. The absence of detailed clinical data and complete laboratory information also limited the analysis of specific clinical outcomes.

This study revealed significant changes in the epidemiological and laboratory profiles of dengue in

Mato Grosso when comparing the pre- and pandemic periods of the Covid-19 pandemic. There was an increase in the cumulative incidence rate, a shift in the most affected age groups, a change in the sociodemographic profile of reported cases, and an increase in laboratory confirmations. These variations suggest the pandemic directly influenced epidemiological surveillance through service reorganization and increased laboratory testing availability. These findings address the objective of analyzing the impact of the pandemic on dengue notifications and diagnoses, emphasizing the need for resilient health systems that can address multiple diseases simultaneously. Understanding these transformations is essential to improving dengue control and prevention strategies, particularly in the event of future overlapping public health emergencies.

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REFERENCES

1. Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde e Ambiente. Departamento de Ações Estratégicas de Epidemiologia e Vigilância em Saúde e Ambiente. Brasília; Ministério da Saúde; 6, rev.; 2024. v.2. Disponível em: https://pesquisa.bvsalud.org/bvsms/resource/pt/mis-71492

2. Costa, C.S. da; et. al. Aspectos da educação em saúde no contexto das doenças transmitidas por vetores. BEPA. Boletim Epidemiológico Paulista, São Paulo, v. 12, n. 135/136, p. 50–54, 2023. DOI: 10.57148/bepa.2015. v.12.39262.

3. Fiocruz, Instituto Oswaldo Cruz – Dengue Vírus e Vetor, 2023. Disponível em: https://www.ioc.fiocruz.br/dengue/textos/longatraje.html

4. Brasuk, Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Protocolo de manejo clínico do coronavírus (COVID-19) na atenção primária à saúde. 2020. Versão 9. Brasília, DF. Disponível em: https://www.saude.ms.gov.br/wp-content/uploads/2020/03/Protocolo-Manejo-Clinico_APS_versao04.pdf

5. Rabiu AT, Mohan A, Çavdaroğlu S, Xenophontos E, Costa ACS, Tsagkaris C, Hashim HT, Ahmad S, Essar MY. Dengue and COVID-19: A double burden to Brazil. J Med Virol. 2021 Jul;93(7):4092-4093. doi: https://doi.org/10.1002/jmv.26955.

6. Roster KO, Martinelli T, Connaughton C, Santillana M, Rodrigues FA. Estimating the impact of the COVID-19 pandemic on dengue in Brazil. Res Sq [Preprint]. 2023 Feb 9:rs.3.rs-2548491. doi: 10.21203/rs.3.rs-2548491/v1.

7. Brasil, Ministério da Saúde Brasil, Secretaria de Vigilância em Saúde e Ambiente Departamento de Imunização e Doenças Imunopreveníveis, Guia de Vigilância Genômica do SARS-CoV-2 Uma Abordagem Epidemiológica e Laboratorial, 1ed. e atual, Brasília DF 2023. Disponível em: Guia de Vigilância Genômica do SARS-CoV-2: uma abordagem epidemiológica e laboratorial — Ministério da Saúde.

8. IBGE, Instituto Brasileiro de Geografia e Estatística, censo 2022. Disponível em: https://www.ibge.gov.br/cidades-e-estados

9. Mato Grosso, Secretaria Estadual de Saúde de Mato Grosso, Resolução CIB/SES-MT nº 57 de 26/07/2018, Disponível em: https://www.saude.mt.gov.br/storage/old/files/resolucao-cib-n572018-dispoe-sobre-as-diretrizes-cronograma-e-a-conformacao-das-regioes-para-o-processo-do-pri-mt-%5b689-040722-SES-MT%5d.pdf

10. Ferreira DTO, et al. Recent dengue virus infection: epidemiological survey on risk factors associated with infection in a medium-sized city in Mato Grosso. São Paulo Med J. 2022;140(1):33-41. DOI: 10.1590/1516-3180.2020.0718.R1.18052021

11. Leandro GCW, et al. Temporal and spatial analysis of municipal dengue cases in Paraná and social and environmental indicators, 2012 to 2021: ecological study. Revista Brasileira de Epidemiologia. 2023;25.pe220039. DOI: https://doi.org/10.1590/1980-549720220039

12. Johansen, I. C. et al. Environmental and demographic determinants of dengue incidence in Brazil. Revista de Salud Publica, v. 20, n. 3, p. 346–351, 2018. DOI: https://doi.org/10.15446/rsap.v20n3.54315

13. Brasil, Ministério da Saúde, Secretaria de Vigilância em Saúde e Ambiente. Boletim Epidemiológico Saúde da População Negra. Número Especial-Vol. 2. 2023. Disponível em: https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/especiais/2023/boletim-epidemiologico-saude-da-populacao-negra-numero-especial-vol-2-out.2023/view

14. Guimarães LM, Cunha GM da. Diferenças por sexo e idade no preenchimento da escolaridade em fichas de vigilância em capitais brasileiras com maior incidência de dengue, 2008-2017. Cad Saúde Pública. 2020;36(10):e00187219. DOI: https://doi.org/10.1590/0102-311X00187219

15. Brasil, Ministério da Saúde Brasil, Secretaria de Vigilância em Saúde, Departamento de Imunização e Doenças Transmissíveis, Plano de contingência para resposta às emergências em Saúde Pública por dengue, chikungunya e Zika, 1. ed. e atual, Brasília DF 2022. Disponível em: plano-de-contingencia-para-resposta-as-emergencias-em-saude-publica-por-dengue-chikungunya-e-zika

16. Mato Grosso, Secretaria Estadual de Saúde de Mato Grosso, Laboratório Central de Saúde Publica de Mato de Grosso, 2020. Disponivel em: https://www.saude.mt.gov.br/unidade/laboratorio-central-de-saude-publica-do-estado-de-mato-grosso-lacen-mt

17. Guzman, M., Halstead, S., Artsob, H. et al. Dengue: a continuing global threat. Nat Rev Microbiol 8 (Suppl 12), S7–S16 (2010). https://doi.org/10.1038/nrmicro2460

18. Gagossian D.I, et. al. Análise epidemiológica da COVID-19 e da dengue em meio a cenário pandêmico em Palmas -TO. Revista de Medicina, São Paulo, Brasil, v. 101, n. 3, p. e-189145, 2022. DOI: 10.11606/issn.1679-9836.v101i3e-189145.

19. García AH, De Sanctis JB. Exploring the Contrasts and Similarities of Dengue and SARS-CoV-2 Infections During the COVID-19 Era. Int J Mol Sci. 2024 Oct 29;25(21):11624. doi: 10.3390/ijms252111624.

AUTHORS' CONTRIBUTIONS

Michelly Lustri Fabre de Figueiredo contributed to drafting the abstract and methods, interpreting the results, drawing conclusions, reviewing the manuscript, and performing statistical analyses. **Elaine Cristina de Oliveira** provided and

coordinated access to the data, supporting the understanding of the database. **Ana Cláudia Pereira Terças Trettel** contributed to the review of the manuscript and the interpretation of the results. **Ana Paula Muraro** contributed to the drafting of the abstract and methods, the interpretation of the results, the conclusions, the manuscript review, and the statistical analyses.

All authors approved the final version to be published and are responsible for all aspects of the work, including ensuring its accuracy and integrity.

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