CHAPTER 87

Clinical-epidemiological profile of dengue cases in Picos-PI, from 2020 to 2021

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Janaina Alvarenga Aragão

Luciano Silva Figueiredo

Maria Beatriz Rufino Leal Valles

Rayla Beatriz de Sousa Silva

Estefany da Silva Oliveira

Cintia Maria Sousa

Vitória dos Santos Ribeiro

ABSTRACT

OBJECTIVE: To evaluate the epidemiological-clinical profile of patients affected by acute febrile illness in a city in northeastern Brazil. METHODOLOGY: Descriptive, cross-sectional retrospective study with patients infected by DENV in the city of Picos-PI. The collection was provided by an employee of the epidemiological surveillance center of the Municipal Health Department of the municipality. Data was extracted by the Notification System for Notifiable Aggravations - Online (SINAN-online) in the years 2020 and 2021. RESULT: In the studied period, 442 cases of dengue were reported. With the emphasis on the female population (in 2020), and a prevalence of the white population (50%, in 2020) and mixed race (72%, in 2021), most of the diagnosed patients had the 1st to 4th incomplete grade of elementary school (4.23%). CONCLUSION: It was found that there was a drop in the number of notifications in the period studied, due to the COVID-19 pandemic in 2020 and 2021. The present study used a secondary source of information from the public health service, which makes it susceptible to inconsistencies, and further studies on the subject may be necessary.

Keywords: Dengue; Epidemiological Profile; Arboviruses.

1 INTRODUCTION

Dengue is an arbovirus, caused by the DENV virus, an RNA virus that belongs to the Flaviviridae family, of the *Flavivirus* genus , has four known serotypes (DENV 1; DENV 2; DENV 3; DENV 4), which are antigenically distinct, however serologically . associated, and cause a systemic, febrile and acute disease, with a wide spectrum of symptoms (GUEDES; ROCHA, 2019).

Its transmission occurs by the bite of female mosquitoes of the species, to a lesser extent, *Aedes albopictus* and *Aedes aegypti*, the latter being the vector responsible for transmission in Brazil. After inoculation, the virus undergoes an incubation period of 4 to 10 days in humans, until the appearance of the first symptoms, which are generally debilitating but self-limiting, since most patients have a benign course, evolving with remission of symptoms and recovery, however a part of patients can progress to severe forms, including death (BRASIL, 2009).

The disease has three clinical phases: febrile, critical and recovery. The first manifestation of the febrile phase is high fever (39°C to 40°C), with an abrupt onset, associated with headache, adynamia, myalgias, arthralgias and retro-orbital pain. There may also be a rash with or without pruritus, anorexia, nausea, vomiting and non-voluminous diarrhea, in general most patients recover gradually and return to daily life (BRASIL, 2016).

The critical phase may be present in some patients and begins with the defervescence of fever, between the third and seventh day of the onset of the disease, accompanied by the emergence of alarm signs, which indicate a worsening of the clinical condition and can lead the patient to death, reason for the adoption of different measures of clinical management and observation in these cases. In the third and final phase, recovery, there is an improvement in the general condition of the patient, a reduction in symptoms and hemodynamic stabilization (BRASIL, 2016).

Currently being one of the most important arboviruses in Brazil and in the world, dengue has a high incidence in tropical and underdeveloped countries, whose environmental conditions favor the proliferation of the mosquito, due to its climatic, environmental and social characteristics (WHO, 2022). transmission in Brazil started at the end of the 19th century, the first known case occurred in the city of Curitiba - PR, with the first clinical and laboratory notification only in 1981 in Boa Vista - RR with the isolation of DEN - 1 and DEN - 4 serotypes (FIOCRUZ). Since its introduction, the virus has been a major national concern, causing epidemics in all Brazilian regions.

The emerging condition, categorized as the main arbovirus disease known in the country, is consolidated in an epidemic situation, as shown by data published in the epidemiological bulletin for the 2020s (979,764 cases, incidence of 466.2 cases per 100,000 inhabitants) and 2021. (534,743 cases, incidence of 250.7 cases per 100,000 inhabitants), where the Midwest region led the ranking in the two referred years with 1,200 cases per 100,000 inhabitants in 2020 and 616.8 cases per 100,000 inhabitants in 2021, in the first year, the Northeast region ranked 4th with 261.5 cases per 100,000 inhabitants and 2nd place in 2021 with 115.4 cases per 100,000 inhabitants. Such data confirm the Northeast region as one of the main areas affected by arboviruses.

In view of the above, it is pertinent to seek and characterize the most affected population and draw a clinical-epidemiological profile of the disease in the region, which is still poorly studied. Such knowledge will facilitate the identification of adequate preventive and therapeutic measures that must be implemented to meet the population defined as a risk and thus provide a better quality of life and health for them. Therefore, the general objective of the study was to verify the epidemiological-clinical profile of patients affected by acute febrile illness in a city in northeastern Brazil, describing its distribution and general characteristics of the cases.

2 METHODOLOGY:

The study is descriptive, cross-sectional retrospective, with patients infected by DENV, in the city of Picos - PI. Located in the central-south region, the city has 577,284 km², a hot/dry climate and is considered a strong commercial hub and a reference in the macro-region. The population is 78,627 inhabitants, with an estimated population density of 137.30 inhab /km² (IBGE, 2021).

The data were extracted by an employee of the Epidemiological Surveillance Center of the Municipal Health Department of the municipality, secondary data, consisting of identification data and classification items from the records, based on the SINAN's own dengue and chikungunya investigation form, these forms they are standardized and incorporate relevant data about the disease, the affected patient, clinical and laboratory information, as well as alarm signals and important complementary information. Of the dengue and chikungunya cases, only confirmed dengue cases were considered, by clinical-epidemiological and laboratory criteria (Hilab Remote Laboratory Test of Dengue NS1 and by IgM serology), notified in the Information System of Notifiable Diseases-Online (SINAN-Online), from January/2020 to December/2021 in Picos-Piauí.

The incidence coefficient (CI) of dengue was calculated per 1,000 inhabitants, using the population residing in Picos in the last year of 2021 as the denominator, according to data available from the SUS Department of Informatics (BRASIL, 2022).

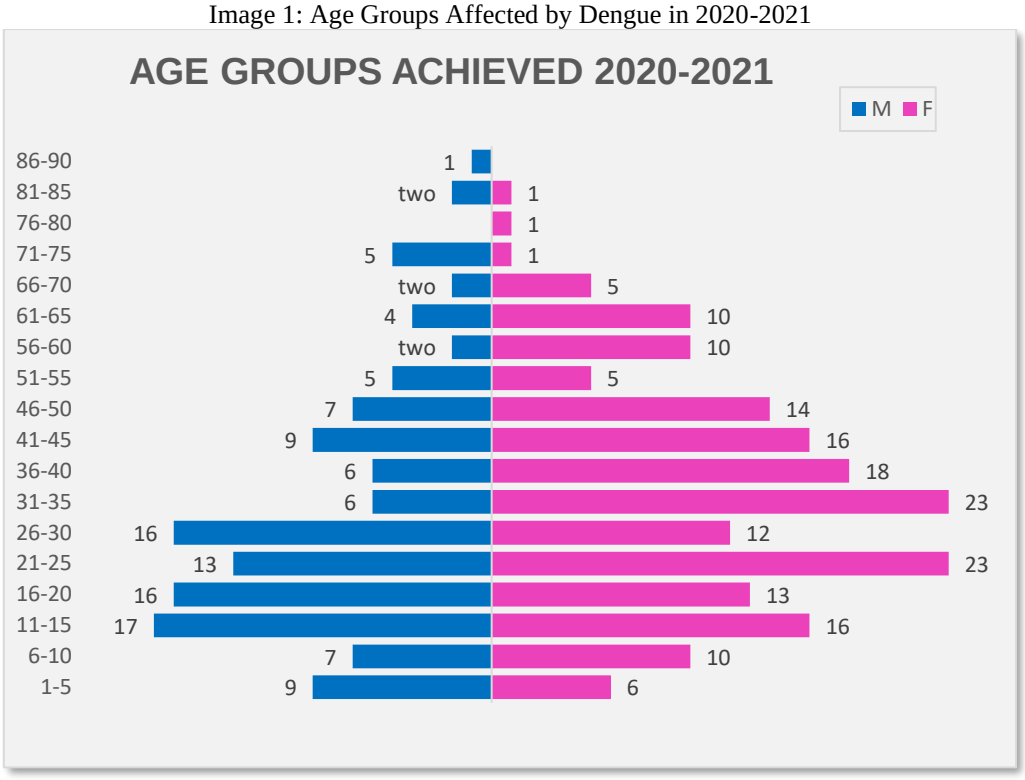
Then the information provided was tabulated in *Microsoft Excel spreadsheets* (2019), from which it was possible to build tables and graphs to clearly demonstrate the municipal epidemiological situation regarding the theme.

All research followed the rules established by Resolution No. 466/2012 of the National Health Council.

3 RESULTS:

Of the total measured in the sample, 72 suspected cases of dengue were reported in 2020, of these 14 were confirmed, in 2021, 370 cases were reported and that year 297 were confirmed. In the two years surveyed, the female population was the most affected, leading, in the first year, 10 of the 14 diagnosed cases; in the following year with 174 cases (51 cases more than the male population), as shown in image 1. Of the total number of confirmed cases in both years, only 08 pregnant women were affected, all in 2021.

Image 1: Age Groups Affected by Dengue in 2020-2021



Source: Prepared by the authors, 2022.

In 2020, the white population occupied 50% of the diagnoses, followed by the brown color (36%), in the following year the brown population led the ranking with 72%, followed by the white population (24%), in terms of education, in 2020 the most of the diagnosed patients had incomplete 1st to 4th grade of elementary school (4.23%), as shown in table 1.

The cases were confirmed by laboratory and clinical epidemiological criteria, with IgM serology being the most used of the laboratory tests, of those confirmed, all evolved to cure; in 2020, 2 hospitalizations were reported, in 2021 the number increased to 34, with a greater number of dengue with warning signs and 3 cases of severe disease, as shown in table 1.

TABLE 1: Characteristics of dengue cases reported in the city of Picos-PI in the years 2020 and 2021.

Race
White
Black
Asian
Indigenous people
Mixed race
Ignored
Schooling
1st to 4th grade incomplete in elementary school
4th Grade complete in elementary school
5th to 8th grade incomplete in middle school
Middle school complete
Highschool complete
Highschool incomplete
Higher education Complete
Higher education incomplete
Don't apply
Ignored
illiterate
Empty
Confirmation criterion
Laboratory
Clinical Epidemiological
Dengue types
Dengue
Dengue with signs
Grave dengue
Hospitalization
Yes
No

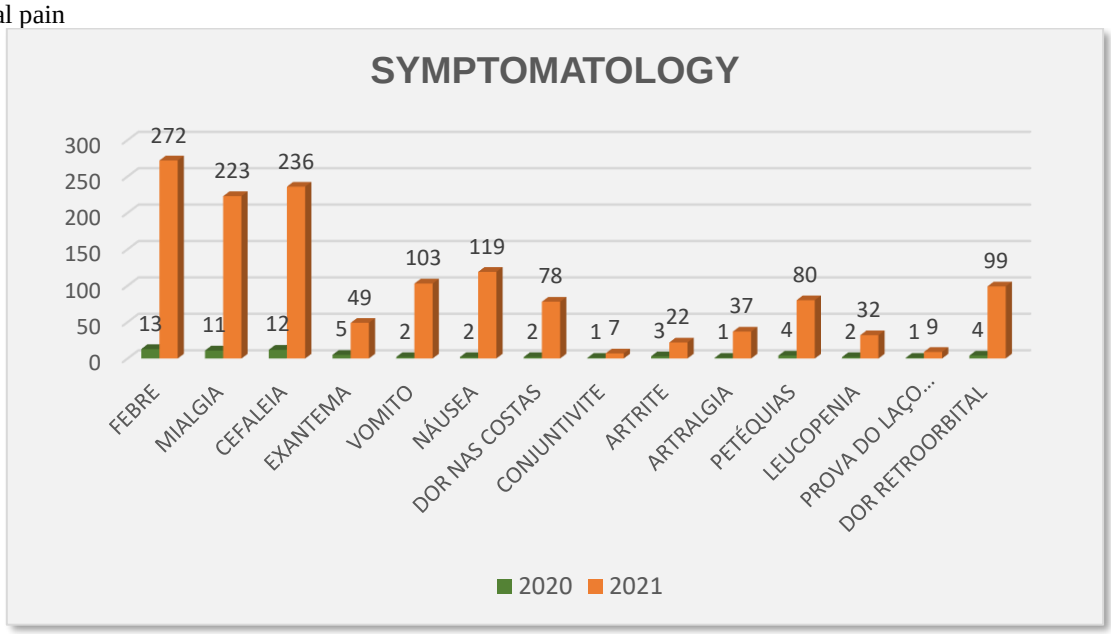
RAÇA	2020	%	2021	%
BRANCA	7	50%	71	24%
PRETA	2	14%	11	3%
AMARELA	0	0%	0	0%
INDÍGENA	0	0%	1	0,33%
PARDA	5	36%	213	72%
IGNORADA	0	0%	1	0,33%
ESCOLARIDADE	**2020**	**%**	**2021**	**%**
1ª A 4ª SÉRIE INCOMPLETA DO ENSINO FUNDAMENTAI	3	21%	32	10,70%
4ª SÉRIE COMPLETA DO ENSINO FUNDAMENTAL	0	0%	8	2,60%
5ª A 8ª SÉRIE INCOMPLETA DO ENSINO FUNDAMENTAI	1	7%	35	11,78%
ENSINO FUNDAMENTAL COMPLETO	1	7%	11	3,70%
ENSINO MÉDIO COMPLETO	3	21%	59	19,86%
ENSINO MÉDIO INCOMPLETO	0	0%	25	8,41%
EDUCAÇÃO SUPERIOR COMPLETA	1	7%	36	12%
EDUCAÇÃO SUPERIOR INCOMPLETO	0	0%	15	5%
NÃO SE APLICA	4	29%	18	6,60%
IGNORADO	1	7%	51	17%
ANALFABETO	0	0%	2	0,60%
VAZIAS			5	1,68%
CRITÉRIO DE CONFIRMAÇÃO	**2020**	**%**	**2021**	**%**
LABORATÓRIO	13	92%	231	78%
CLÍNICO EPIDEMIOLÓGICO	1	8%	66	22%
TIPOS DE DENGUE	**2020**	**%**	**2021**	**%**
DENGUE	13	92%	285	96%
DENGUE COM SINAIS DE ALARME	1	8%	9	3%
DENGUE GRAVE	0		3	1%
HOSPITALIZAÇÃO	**2020**	**%**	**2021**	**%**
SIM	2	14%	34	12%
NÃO	12	86%	255	88%

Source: Prepared by the authors, 2022.

The individuals analyzed in consecutive years (2020 and 2021) obtained, after clinical evaluation, the following classification of symptoms:

Figure 2: Main symptoms of dengue in 2020-2021

Fever
Myalgia
Cephalalgy
Rash
Vomit
Nausea
Backache
Conjunctivitis
Arthritis
Arthralgia
Petechia
Leukopenia
Tourniquet test
Retro-orbital pain



Source: Prepared by the authors, 2022.

4 DISCUSSION

Between 2019 and 2020, dengue proved to be a disease with very striking characteristics, it predominated in the Midwest region, with 920.4 cases/100,000 inhabitants, which concentrates the main urban centers in Brazil with Goiânia. and Brasília occupying the top of the ranking in number of cases, reinforcing the theory that the mosquito that transmits the disease has a preference for urban environments, which has a welcoming sociodemographic structure for its reproduction, with poor sanitation in areas of social vulnerability and tropical climate, increasing its reproduction and consequently the number of infections (BRASIL, 2020).

The Northeast is in third place with 261.5 cases/100 thousand inhabitants, with a semi-arid climate and prevalence of a less favored economic class with low education, which already has a greater propensity to spread dengue cases, due to the lack of adequate water drainage, common in areas of poverty. This

situation is confirmed on a chronological scale, considering that between 2008 and 2017 there were 963,862 deaths, second only to the Southeast region (NORÕES et al., 2021).

When analyzing the notifications of dengue cases in the year 2020 and 2021 in the city of Picos, there was a significant increase between the years (difference of 283 cases). Analogous to these data, the Ministry of Health presented in its epidemiological bulletin a unanimous decrease across the country, where there was a drop in probable cases of dengue in 2020 compared to 2019 (Brasil, 2020). This decline can be explained by the expansion of actions aimed at fighting Covid-19, which caused the delay in the underreporting of arboviruses, by the lower demand for health services due to the fear of the infectivity of the SARS-Cov-2 virus, or even even due to the clinical similarity with some of the symptoms of dengue and Covid, which may have made it difficult to close the diagnosis (DE SOUSA et al., 2022).

Regarding sociodemographic conditions, in relation to sex, a remarkable prevalence of the female public was observed, representing more than half of the cases in 2020 and surpassing the male sex in 2021, a result compatible with other northeastern states in different years, as in Maranhão, where women accounted for 65% of cases of dengue infection in the state (2017) and in the state of Ceará, which had a higher proportion of women with the disease, with a variation of 5% to 10% more female cases with dengue between 2017 and 2020. However, in 2013 and 2015, the State of Bahia observed an inversion in this pattern, where the highest prevalence of dengue infectivity occurred in males (COSTA et.al, 2019). & VERA et.al, 2020 ALVES, 2021).

The supposed predilection for women may be related to the frequency of this public in a peridomiciliary environment , where the outbreaks are more commonly found, and also to the greater demand of this public for health services, making the diagnosis more frequent and easier compared to the male population that presents greater resistance to this search. However, dengue is not directly related to sex, and for this reason there may be differences in results with other studies (COSTA et.al, 2019 & VERA et.al, 2020)

As for the variable referring to the number of pregnant women affected by dengue, the municipality of Piauí reported only 08 cases of dengue in pregnant women in the years 2020 and 2021, representing only 2.57% of the total confirmed cases in the two years. birth et. al., 2017 notes the occurrence of more than 40,000 confirmations of dengue diagnoses in pregnant women in Brazil between 2007 and 2015, also stating that in that period the lethality of pregnant women with arbovirus exceeded the number of deaths of women in non-pregnant childbearing age, also classifying the third trimester as the one with the highest risk of complications such as preeclampsia, eclampsia, hemorrhage and maternal death. In reference to cases confirmed by clinical criteria, in pregnant women, the risk of death increases by three times; being eight times higher in the case of laboratory confirmed cases (Fiocruz, 2018).

There is a prevalence of dengue cases in the mixed-race and white population. In agreement with Oliveira et. al., 2020, which points out the races mentioned above as the majority in the diagnoses of acute febrile illness in the State of Maranhão. Also in agreement with the results of the research carried out by

the authors, in the Northeast region, between January 2008 and December 2017, the mixed race remains the most affected by acute febrile illness, with about 14.3 million diagnosed in that same period. time interval, the white race was the second most affected, with 2.2 million confirmed cases (Norões et al., 2020). According to Pereira et. al., 2008 – the greater involvement of whites and browns can be explained by the fact that they are more susceptible to illness by the flavivirus under study, with blacks being more resistant to the installation of the virus and the development of the pathology.

The clinical presentation of dengue symptoms is variable, however, there is a consistent line of thought among researchers, that the first symptom to manifest is a fever above 39ºC with an abrupt onset and the presence of a macula-papular rash in the region. of the trunk. These are the classic symptoms for the early identification and treatment of dengue. In classic dengue, the importance of recognizing the symptoms and signs that point to an evolution of the disease is also emphasized, these are abdominal pain, hypothermia of sudden onset between the third and seventh day and the reduction in the level of consciousness.

As for education, the data denoted the prevalence in people who have an education level from the 1st to the 4th year of incomplete elementary school and complete high school, this result may be related to the reduced knowledge regarding prevention and care with dengue , considering that the lower the level of education of a population, the less knowledge about the aspects of the disease (CUNHA, 2012). In addition, a considerable percentage was presented in the municipality of Picos in the following categories: Not applicable (29% and 6.60%) and ignored (7% and 17%), in 2020 and 2021 respectively, a result also evidenced in a study carried out in the State of Pernambuco, representing 68.9% of blank or ignored fills (2015 – 2020). (DE LIMA FILHO et.al, 2022). This non-completion makes it difficult to delineate this variable, since this notification can improve the understanding of the epidemiological profile to promote disease prevention and control measures. This point demonstrates a necessary agenda for the discussion of health professionals and managers (VERA et.al, 2020).

5 FINAL CONSIDERATIONS

Considering the epidemiology of dengue in Brazil in recent years, and the drop in the number of notifications for dengue in 2020 and 2021, the hypothesis of a possible underreporting of dengue cases due to the COVID-19 pandemic is raised. In addition, the actions of dengue control programs during the period carried out in the region should be analyzed. Both variables are important for a more concrete assessment related to the decrease in dengue cases.

Furthermore, it is noteworthy that the present study had as a source of information, secondary data from the public health service, susceptible to inconsistencies, requiring further studies on the subject to assess possible divergences.

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