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ORIGINAL

Epidemiological profile of leprosy in a municipality of northeastern Brazil in the face of the challenges of those affected

Perfil epidemiológico da hanseníase em um município do Nordeste Brasileiro frente aos desafios dos acometidos

Perfil epidemiológico de la lepra en un municipio del Nordeste brasileño frente a los desafíos de los afectados

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ABSTRACT

Objective: To characterize through data obtained from secondary sources the epidemiological profile of leprosy patients in Teresina, Piauí, from 2017 to 2021 in relation to challenges such as disabilities, involvement in children and the rate of deaths related to leprosy. **Methods:** This is an observational, analytical study of the ecological type, through data from the Notifiable Diseases Information System (SINAN). The variables gender, gender, age, schooling, endemicity index, Physical Disability Degree (DPD), clinical forms and deaths were investigated, through the chi-square test, the Shapiro-wilk test and the odds ratio calculation. **Results:** There was predominance of the clinical and epidemiological profile with predominantly male gender, color/mixed race, with educational level up to high school, with dimorphous clinical characteristics, however without predominant reactions, but with high DPD Index I. **Conclusion:** Through the data collected in SINAN it was possible to identify that the population of Teresina currently faces challenges regarding the detection of leprosy in children, is oscillating parameters between hyperendemic and very high endemicity, 9% of the affected population developed some DPD and deaths with higher prevalence were identified in the elderly, however, a scarcity of large number of information from SINAN was observed.

Descriptors: Leprosy. Epidemiology. Cities. Brazil. Statistics on Sequelae and Disability. Primary Health Care.

RESUMO

Objetivo: Caracterizar através de dados obtidos de fonte secundaria o perfil epidemiológico de acometidos por hanseníase em Teresina, Piauí de 2017 a 2021 em relação aos desafios como as incapacidades, ao acometimento em crianças e ao índice de óbitos relacionados a hanseníase. **Métodos:** Trata-se de um estudo observacional, analítico do tipo ecológico, através de dados do Sistema de Informação de Agravos de Notificação (SINAN). Foram investigadas as variáveis sexo, gênero, idade, escolaridade, índice de endemicidade, Grau de Incapacidade Física (GIF), formas clínicas e óbitos, através do teste qui-quadrado, do teste de Shapiro-wilk e do cálculo de *odds ratio*. **Resultados:** Houve predominâncias do perfil clínico e epidemiológico com gênero predominantemente masculino, cor/raça parda, com nível de escolaridade até o ensino médio, com características clínicas dimorfa, no entanto sem reações predominantes, mas com alto índice de GIF I. **Conclusão:** Através dos dados coletados no SINAN foi possível identificar que a população de Teresina atualmente enfrenta desafios quanto a detecção da hanseníase em crianças, está oscilando parâmetros entre hiperendêmica e muito alta endemicidade, 9% da população acometida desenvolveu algum GIF e foram identificados óbitos com maior prevalência em idosos, no entanto, foi observado escassez de grande número de informações provenientes do SINAN.

Descritores: Hanseníase. Epidemiologia. Cidades. Brasil. Estatísticas de Sequelas e Incapacidade. Atenção Primária à Saúde.

RESUMÉN

Objetivo: Caracterizar a través de datos obtenidos de fuentes secundarias el perfil epidemiológico de los pacientes con lepra en Teresina, Piauí, de 2017 a 2021 en relación con desafíos como discapacidades, participación en niños y la tasa de muertes relacionadas con la lepra. **Métodos:** Estudio observacional, analítico de tipo ecológico, a través de datos del Sistema de Información de Enfermedades de Declaración Obligatoria (SINAN). Se investigaron las variables sexo, sexo, edad, escolaridad, índice de endemicidad, Grado de Discapacidad Física (GDF), formas clínicas y muertes, a través de la prueba chi-cuadrado, la prueba de Shapiro-wilk y el cálculo del odds ratio. **Resultados:** Predominó el perfil clínico y epidemiológico con sexo predominantemente masculino, color/raza mixta, con nivel educativo hasta bachillerato, con características clínicas dimorfas, sin embargo sin reacciones predominantes, pero con alto índice GDF I. **Conclusión:** A través de los datos recolectados en el SINAN fue posible identificar que la población de Teresina actualmente enfrenta desafíos en cuanto a la detección de la lepra en niños, oscila parámetros entre hiperendémicos y endemicidad muy alta, 9% de la población afectada desarrolló algún GDF y se identificaron muertes con mayor prevalencia en ancianos, sin embargo, se observó una escasez de gran cantidad de información del SINAN.

Descriptores: Lepra. Epidemiología. Ciudades. Brasil. Estadísticas de Secuelas y Discapacidad. Atención Primaria de Salud.

INTRODUCTION

Leprosy is a chronic, infectious disease whose etiological agent is Mycobacterium leprae.[1] Its transmission occurs through the dissemination of aerosols through the upper airways through close, intimate and prolonged contact with multibacillary patients who have not received treatment.[2,3]

After contamination, the bacterium settles on the skin and Schwann cells and initiates the multiplication process, presenting dermatological lesions and causing neurological damage with important axonal losses, which results in several changes such as the loss of sensory and motor function of the affected site.[4] Its presence in the body is not directly related to cases of death, but to the high Degrees of Physical Disability (DPD) it causes to individuals.[5]

With regard to classification, leprosy can present in operational forms, Paucibacillary (CP) encompassing the indeterminate and tuberculóidel clinical forms, and multibacillary (MB) composed of the dimorphous and Virchowian clinical.[3]

It is characteristically a disease of young adults and its occurrence in childhood is rare, due to the long incubation period, on average 5 to 7 years.[6] However, when identified in children it can be considered an indicator of the prevalence of the disease in the general population and its detection is important to determine the level of transmission.[7]

Leprosy treatment is outpatient, in which the affected usually receives the supervised dose of polychemotherapeutic treatment (MDT) and constant evaluation with the objective of preventing disabilities.[8]

Approximately two to three million individuals will develop some degree of physical impairment as a result of leprosy, and about 20% of patients affected by the disease or treated may have some DPD and psychosocial restrictions, even requiring some type of intervention in rehabilitation and/or continuity of care.[9,10]

However, DPD can be avoided or reduced if affected people are identified and diagnosed early, treated with appropriate technique and monitored by basic health services.[11]

In the world, only Brazil has not reached the goal of eliminating leprosy as a public health problem, this scenario legitimizes the realization of regional investigations, which allow the identification of priority municipalities for intervention.[12] It is considered as a neglected disease, as these are highly prevalent infectious conditions, marked by the high degree of morbidity, but relatively low mortality.[13,14]

The analysis of the epidemiological profile of leprosy, as well as other infections, enables the direction of actions of health services to cope adequately.[15]

In this sense, considering that the capital of the study in question is considered hyperendemic for leprosy and that there are few publications on the subject, investigate the epidemiological profile, the factors that may be related to the development of DPD and the difficulties in individuals with leprosy, may help in decision-making for prevention, early diagnosis of cases and targeted treatment. Thus, the present research aims to characterize through data obtained from secondary source the epidemiological profile of leprosy patients in Teresina, Piauí from 2017 to 2021 in relation to challenges such as disabilities, involvement in children and the rate of deaths related to leprosy.

METHODS

This is an observational, analytical ecological study conducted from January to April 2022, which followed the recommendations of the STROBE. Data were collected through the computerized system of leprosy notification data, linked to the Municipal Health Department and DATASUS/TABNET covering the period between 2017 and 2021, the choice of this time frame was because they are the years with the highest number of cases identified in the system, in the city studied and because they are the most current years, where you may still be having active cases. The DATASUS/TABNET system consists of all leprosy cases since 2001 notified and confirmed through the Individual Leprosy Notifiable/Investigation Form, filed in the Notifiable Diseases Information System (SINAN).

All reported cases with a confirmed diagnosis of leprosy in the municipality of Teresina-Piauí in the last 5 years were included in the study because the years were the most expressive and current data recorded in SINAN. However, all cases that, although notified, did not present diagnostic confirmation or that contained inconsistencies were excluded from the analysis.

The categories prevalence coefficient and general detection coefficient, sociodemographic aspects (race, gender, schooling and age), clinical leprosy data (clinical forms and DPD) and death information in the population of interest were observed for further description.

After the search with the help of the DATASUS/TABNET tool, the data was entered in the Microsoft Excel 2016 Software to calculate the rates. Exploratory (descriptive) analyses of the data were performed, based on the calculation of simple, absolute and percentage frequencies for categorical variables and organization of the results in tables.

To verify the differences in association or tendency between the subgroups of sex (female/male), race (brown, black, white, yellow) and schooling, the chi-square test with yates correction was performed. The Shapiro-wilk test was performed for normality analysis. Odds ratio calculation was also performed for probability analysis or possibility in 2x2 table. The data were analyzed with the software SPSS version 25.0.0 and Graph Pad Prism, considering a significance level of 5% (p value ≤ 0.05).

It is noteworthy that this study was conducted with secondary data, available in a public database, free access, and the information presented does not link or imply ethical damages and/or consequences to third parties, according to the prerogatives of the National Research Ethics Commission, in Art 1, the sole paragraph of resolution No. 510/2016, does not require ethical appreciation.

RESULTS

The capital of Piauí, Teresina has the highest records of new leprosy cases in all of Piauí in the last 5 years. With 2097 cases registered in SINAN, where 546 were in 2017, 536 in 2018, 447 in 2019, 266 in 2020 and 302 in 2021. The second municipality of Piauí with the highest number of cases was Parnaíba with 219 cases between 2017 and 2021.

In relation to the years, for the classification of endemicity levels of the municipality in each year as defined by the Brazilian Ministry of Health (MS), the general detection rate is considered hyperendemic when >40.00 cases per 100,000 inhabitants; very high >20.00 to 39.99 cases per 100,000 inhabitants; high >10.00 to 19.99 cases per 100,000 inhabitants; average >2.00 to 9.99 cases per 100,000 inhabitants; and low <2.00 cases per 100,000 inhabitants.

Therefore, it can be observed that in Teresina the years 2017, 2018 and 2019 presented hyperendemic parameters (**Table 1**) and that despite having reduced the total value of the years 2020 and 2021, they still presented parameters considered very high in relation to the general detection rate per 100,000 inhabitants.

Table 1. Description of endemicity levels, 2017 to 2021. Teresina, Piauí, Brazil, 2022.

YEAR	IBGE POPULATION	NEW CASES	OVERALL DETECTION RATE/100,000 INHABITANTS	PARAMETERS
2017	850,198	546	64,22	Hyperendemic
2018	861,442	536	62,22	Hyperendemic
2019	864,845	447	51,69	Hyperendemic
2020	868,075	266	30,64	Too high
2021	871,126	302	34,67	Too high

Source: DATASUS/SINAN and IBGE, 04/04/2022.

There was no case of leprosy in children under one year of age in the municipality studied, however, new cases were observed in 132 children, 4 between 1 and 4 years, 50 cases between 5 and 9 years and 78 between 10 and 14 years. In the cases, between 5 and 14 years of age, 96 children were attending Incomplete Elementary School (IES) at the time of diagnosis.

When comparing the years using pearson's x 2 trend test by age groups (**Table 2**) to identify whether there is a greater tendency of one item of the subgroup in relation to another, it was identified that in the gender variable of those affected, it was observed that the male sex had superiority 54% (n=1135) compared to the female 46% (n= 962). As in relation to race, there was a predominance of 68% (n=1405) of those affected by the brown race, with superiority when compared to the black race 19% (n=384), white race 11% (n=233), yellow 1% (n=26) and indigenous 1%, with only one case recorded in 2018. In the age range 20 to 39 years, the highest rates of affected (n=117) with Complete High School (CHS) were identified; And in the range of 40 to more than 70 years there was a predominance of individuals only with THE (n=593), which reveals that the population with the highest rate of new cases has a low level of education, when compared to the indexes of Incomplete Higher Education (IHE) and Complete Higher Education (CHE) both with (n=63) and (n=144) respectively. While, the lowest number of adults per schooling index was those affected with Complete Elementary School (CES) with (n=129), compared to the total and the illiterate (n=197) and people With Incomplete High School (WIHS) with (n=395). With significantly different p value between subgroups, sex (p <0.0073), race (p <0.0001) and schooling (p <0.0001).

Table 2. Population trend characteristics by age categories and sociodemographic variables 2017 a 2021. Teresina, Piauí, Brazil, 2022.

VARIABLES	1-4	5- 9	10-14	15-19	20-29	30-39	40-49	50-59	60-69	>70	P -VALUE
SEX											
FEMALE	4	20	35	45	110	165	164	197	18	84	<0,0073
MALE	-	30	43	51	139	151	200	190	195	135	
RACE											
PARDA	1	43	61	60	172	213	250	255	212	138	
BLACK	-	4	10	23	40	57	71	75	65	339	<0,0001
WHITE	3	3	4	9	25	38	25	51	44	31	
YELLOW	-	-	-	3	3	4	5	5	4	2	
SCHOOLING											
ILLITERATE	-	-	-	-	2	6	17	40	47	67	
IES	-	32	64	21	49	92	147	193	160	93	
CES	-	-	5	6	14	23	24	29	21	7	
EMI	-	-	5	38	29	35	39	18	15	10	<0,0001
CHS	-	-	-	25	92	101	75	50	37	15	
IHE	-	-	-	4	35	11	5	6	1	1	
CHE	-	-	-	-	12	20	24	19	16	53	

Source: DATASUS/SINAN, 25/03/2022.
Legend: P value analyzed by the chi-square test.

The predominant clinical form in the Teresin population was the dimorphous identified in (n=1254) people, with predominance in all age groups, followed by virchowiana present in (n=317) people, with higher rates in the age groups 15 to 19 and 30 to over 70 years, when compared to the tuberculoid, which was more present between ages 5 to 14 and 20 to 29 years with (n=243).

The indeterminate form with (n=214) was less frequent in general, with higher indicators only between the age groups 5 to 14 years and 30 to 39 years when compared to the virchowian and tuberculoid forms.

In none of the clinical forms, DPD I and DPD II were identified in children under 4 years of age, however, there was also no notification of DPD 0 in this population, and the fields were marked by hyphen. However, children between 5 and 9 years were investigated for this, but less than half of the total number of children in each clinical form was reported.

According to the DPD, the indeterminate clinical form presented more DPD 0 (n= 66) in practically all age groups, with no record in children under 4 years and in those over 70 years of age. However, in those over 70 years of age, a person with DPD I was identified, as well as between the age group 60 and 69 years and the highest rate was two people with DPD I, between 40 and 49 years. However, in the indeterminate form, DPD II was not found (as well as the indeterminate form, the tuberculoid form also did not present individuals with DPD II. However, more individuals with DPD 0 (n=77) and DPD I (n= 7) were observed in comparison.

As the dimorphist clinical form presents a higher number of affected individuals, this superiority also reflects the amount of disabilities. People with DPD 0, (n=92) people with DPD I, with a higher number of people between 50 and 59 years (n=24) and (n=37) people with DPD II, were slightly older between 60 and 69 years (n=10) were identified.

In children and adolescents in SINAN cases of disabilities were also reported, presenting higher rates in children aged 5 to 9 years (n=4) all with DPD I. DPD I was higher in all age groups, except between 15 and 19 years in which DPD II was higher (n=2) than DPD.

It is possible to observe that the virchowian clinical form was the one that most oscillated mainly in DPD 0, with a total of (n=68). DPD I, on the other, remained with a slight increase between 50 and 59 years (n=9), compared to the total (n=30). DPD II had no pattern, with two elevation peaks, one between 20 and 29 years (n=3) and the other with more than 70 years (n=3).

Individuals over 60 years of age are more likely to develop a disability either grade I or II, than people under 60 years of age, or in the tuberculform (R=2,1667; P=0,3870), virchowiana (R= 1,7882; P<0,0001) or dimorphous (R=1,4817; P=0,3729). And mainly and indeterminate form that was 10 times more likely to develop disability (**Table 3**). It is noteworthy that some individuals were not classified in any of grades 0, I or II.

Table 3. Ratio between clinical forms and disability, 2017 to 2021. Teresina, Piauí, Brazil, 2022.

VARIABLES	DPD	<60 YEARS OLD	>60 YEARS OLD	ODDS RATIO	P-VALUE
UNDETERMINED	Yes	2	2	10,000	=0,0343
	No	60	6		
TUBERCULOID	Yes	12	2	2,1667	=0,3870
	No	65	5		
VIRCHOWIANA	Yes	91	39	1,7882	<0,0001
	No	242	58		
DIMORPHA	Yes	15	13	1,4817	=0,3729
	No	53	31		

Source: DATASUS/SINAN, 25/03/2022.
Legend: P value by calculating *odds ratio*.
Note: Unfilled cases were removed, resulting in (n=582) individuals evaluated.

In relation to the leprosy reactions there were no notifications in children under 4 years of age in the city investigated. The type 1 reaction was the most present in all other age groups and was the only one identified in children aged 5 to 9 years (n=2). And the age range from 30 to 39 years was the one that presented the most reactions (n=55). The only age group to present type 2 reaction with predominance was between 50 and 59 years (n=14). And the combination of type 1 and 2 reactions was the least observed in all age groups that presented reactions, and its highest peak was between 40 and 49 years (n=8).

The leprosy reactions can be so severe as to trigger the onset of some disability, in view of this, a comparison was made between people who had reactions and who were notified with some DPD.

In this comparison, the type 1 reaction in relation to the FiGs, it was possible to observe that the interval between 50 and 59 years presented more DPD I (n=9) compared to the total (n=27) of DPD I, followed by elderly over 70 years with a higher number of DPD I (n=5).

While in relation to DPD II, the highest indices were between 50 and 59 years of age and older than 70 years, both with (n=3), followed by intervals 15 to 19 and 30 to 39, both with (n=2). In children who presented type 1 reaction, between 5 and 9 years, of the total of 2 children with reactions 1 developed DPD I, as well as, in the interval of 10 to 14 years with a person classified as DPD I.

FIGs were less frequent when there was type 2 leprosy reaction, with a total of (n=13) when summing up all age groups. However, the age range

with the highest number of DPD cases was 40 to 59 years (n=8), with a predominance of DPD I (n=5). In relation to DPD II, the age ranges with the most affected were 40 to 49 and 60 and 69 both with the same amount of DPD II (n=2).

As well as reaction type 2, the age range with the highest number of DPD I (n=2) and DPD (n=1) was 40 to 49 years. However, between 20 and 29 years old there were two people who presented the type 1 and 2 reaction, and both developed some type of DPD. One case of DPD I was observed in the age range from 30 to 39 years and 60 to 69 years. In the comparison of type 1 reaction, there was a significant difference between the FIGs (table 4), while in the type 2 and type 1 reaction, no significant difference was observed. In the comparison between the groups, a significant difference was verified.

Table 4. Associative analysis between type of reaction and degree of disability, 2017 to 2021. Teresina, Piauí, Brasil, 2022.

VARIABLES	INABILITY	P-VALUE	P-VALUE
TYPE 1 REACTION	DPD I	0,0043[a]	
	DPD II		
TYPE 1 REACTION	DPD I		
	DPD II	0,1478	<0,0001[b]
TYPE 1 REACTION	DPD I	0,1269	
	DPD II		

Source: DATASUS/SINAN, 25/03/2022.
Legend: P value analyzed by the chi-square test.
Note: Unfilled cases were removed, resulting in (n=77) individuals evaluated.

Treatment with MDT in 6 doses was administered to 460 people, with a higher amount between 20 and 69 years. While 12-dose MDT was administered for most affected individuals (n=1625), and prescribed for most individuals in each age group, even in children who in a total of 4 affected individuals aged 1 to 4 years, 3 received MDT in 12 doses.

Through a linear trend analysis between age group and deaths, it was observed that with advancing age deaths gradually increase. And this gradual increase occurs initially between 39 and 49 years, and between 50 and 59 years occurs a small decrease, which increases again in 60 and in more than 70 years increases more than double the number of people. Individuals with MB leprosy are 9 times more likely (**Table 5**) to progress to deaths than people affected with LEPROSY in the PB type.

Table 5. Odds ratio between the living infected and those who evolved to deaths, 2017 to 2021. Teresina, Piauí, Brazil, 2022.

TYPE	INFECTED (NO DEATH)	DEATHS	ODDS RATIO	CONFIDENCE INTERVAL	P-VALUE
PAUCIBACILAR	460	1	9,1771	1,2506 a 67,344	0,0293
MULTIBACILAR	1604	32			

Source: DATASUS/SINAN and IBGE, 25/03/2022.
Legend: P value by calculating odds ratio.

DISCUSSION

Leprosy mainly affects people between the ages of 25 and 54 years. However, despite being considered an adult disease, there are cases recorded in children and young people. [2] The age groups most affected by leprosy were 20 to 69 years, mainly between 40 and 59 years. This age group includes the economically active population, in which the disease can impair the performance of work activities, causing limitations and interruptions, with early retirement and decreased quality of life of workers.[16]

However, late diagnosis and the occurrence of cases in children under 15 years of age are an important indicator to assess the existence of occult prevalence and MB foci in the family or in the school environment.[6]

Regarding epidemiological characteristics in the pediatric population, in a case series study, it was found that the main affected group was male children, between 10 and 14 years old.[17] Corroborating the present study. This mean age can be related to the immunopathological response of children, genetic factors and the long incubation period of the disease.[18] It was also seen in a descriptive study through the analysis of medical records in a reference hospital in India, where a prevalence of new cases was observed in male children with a mean age of 11 to 14 years.[19]

In the capital studied there was a predominance of the brown race, as well as in other studies.[1,20] However, with regard to skin color, there are no correlations between skin pigmentation and the variation in the possibility of leprosy contagion.[21] However, the predominance of the brown race may occur due to the strong miscegenation existing in the country, especially in the northeast region.[4]

The lower the level of education, the higher the probability of leprosy occurrence and reactivation. Since this class shows little knowledge and difficulty in understanding the guidelines regarding treatment, prevention and self-care related to the diagnosis, understanding and principles of the disease.[13]

In the study by Almeida *et al.*[22] it also states that individuals with low educational level are more likely to abandon MDT and develop DPD. This scenario contributes to the more vulnerable

individuals being more exposed to the disease, since the understanding of it becomes limited.

Leprosy deaths may be related to treatment abandonment, which is usually motivated by the patient's unfavorable socioeconomic conditions and the long duration of therapy, which in some cases can reach 18 months.[1]

Sociodemographic variables also reveal that there is a predominance of gender, with males being more affected by severe manifestations of the disease and sequelae after treatment.[23]

Just like in the study by Siman *et al.*[1] who identified the ratio of hospitalizations between the sexes being 2.1 hospitalizations of males for each female hospitalization.

This is possibly associated with the historical conjuncture related to the migratory and bohemian character in search of work, often unhealthy, and the low demand for public health services, in addition to the low level of self-care and the lower access to information among this population, when compared to women. Men often ignore the symptoms of leprosy and seek health services in more advanced stages of the disease and with more severe clinical manifestations.[24]

Corroborating a study conducted in Colombia on factors associated with the delay in the diagnosis of leprosy, and found that men were more diagnosed with leprosy, with an average delay in the diagnosis of the disease of 33.5 months, already in the form MB and with DPD 2 at the time of diagnosis.[25]

This delay in diagnosis may be associated with a lack of health education for the early identification of the pathology by the user, which interferes with the recognition of signs and symptoms by the community, as well as the deficiency of improvement over the disease by health professionals, who sometimes do not perform adequate management to the public.[26]

The lack of health education was overcome in a study conducting an investigation of leprosy cases in Pará, where most leprosy cases were located in the capital Belém, and can be considered an urban endemic.[27]

Another city considered hyperendemic to leprosy, Juazeiro in Bahia, is one of the 40 cities, contemplated by Ordinance No. 2,556 of October 28, 2011, which defines selection criteria for priority municipalities for leprosy control actions. It has presented good epidemiological indicators regarding the quality of leprosy coping services, a fact justified by the high coverage of primary health care in the municipality and a specialized reference center.[28]

The fact of the auto index of cases in capitals was exemplified in a study in the city of Rio de Janeiro, where 37.6% came from other municipalities, with a greater predominance of residents such as São João de Meriti and Belford Roxo, this occurs for cultural reasons, where the inhabitants of rural regions do not feel confident in having treatment in nearby cities, leaving for the capitals.[29]

When analyzing the clinical characteristics of the disease, the highest percentages and rates corresponded to mb cases. This predominance, together with the degree of disability observed in the majority of the population, suggests the occurrence of active transmission of the disease.[30] in the city of Teresina was higher in the period 2017 to 2021.

This fact indicates that the diagnosis is being made after the evolution of the initial phase of the disease and that patients are only looking for health services after the evolution to the most severe forms (dimorphism and Virchowian), which is of extreme concern to the general population, given the devastating potential that Mycobacterium leprae can cause in the human body, if not treated early.[27]

The occurrence of a physical or functional alteration can modify the routine of performing daily activity, but not necessarily lead to the exclusion of the individual in social actions. On the other hand, stigma and prejudice due to the cultural history of the disease can lead to exclusion, even without visible lesions.[31]

Corroborating the statement that leprosy affects quality of life, it is believed that pain is a limiting factor of daily activities, as it is one of the most frequent symptoms, mainly due to nerve involvement.[32]

In addition, leprosy patients are intensely stigmatized, in which they often feel invisible, due to the historical prejudice that the disease carries, being, by metaphor, a stain that hurts the well-being and social identity of those affected, because, despite being a subject widely discussed in academia, socially it is still seen as a sign of repellency.[33]

After psychological sufferings of being driven away by society, as a defense mechanism, the affected by leprosy reactions begins to isolate itself; before society manifests itself, it already seeks this psychological comfort. He even comes to believe it's his decision and not a social repression.[34,35]

In the study by Santos, Bragança and Santos Filho[36] the results obtained through an evaluation of the quality of life questionnaire, the Dermatology Life Quality Index (DLQI), showed that 52% of the patients did not have anxiety, however, 10% presented mild, 28% to moderate and 10% with severe anxiety.

In the present research, the trend line shows an inclination with age, in which people over 70 years have a higher death rate, actions should focus on this population due to the population aging that Brazil goes through, and consequently Teresina, due to the increase in life expectancy and the reduction of fecundity observed in contemporary history, in addition to the lower immunological competence of the elderly.[37]

As limitations, a scarcity of a large number of information was observed, especially in the discontinuity of the monitoring of information after the patient's discharge, which may leave important information about the rates of lost disabilities, in addition to the quality of the records, the availability of the data, and the level of completeness and the inconsistencies related to some records.

CONCLUSION

At the end of this study it was possible to identify that the population of Teresina currently faces challenges regarding the detection of leprosy in

children, is oscillating parameters between hyperendemic and very high endemicity, 9% of the affected population developed some DPD and deaths with higher prevalence were identified in the elderly.

A predominance of males, brown color/race and who had studied until high school was identified. And there was a decline in the incidence of cases from 2017, because in 2017 there was the highest number of new cases identified and this high number was not surpassed in any of the following years, with a lower rate of new cases in 2020, however this information may have been influenced by the Covid-19 pandemic. As for the predominant clinical characteristics of leprosy, dimorphy was, however, without predominant reactions, but with a high DPD I index.

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