

Review Article

Records of Congenital Heart Diseases in Children under One Year in the State of Ceará

Mauro Mccarthy de Oliveira Silva, Shura do Prado Farias Borges, Vanessa de Carvalho Nilo Bitu, Tassia Lobato Pinheiro Belmino, and Marlene Menezes de Souza Teixeira*

Dr Leão Sampaio University Center, Brazil

***Corresponding author**

Marlene Menezes de Souza Teixeira, Dr. Leão Sampaio University Center, Brazil, Tel: (88) 996163848; Email: marlenesouza@leaosampaio.edu.br

Submitted: 26 April 2020

Accepted: 12 May 2020

Published: 16 May 2020

ISSN: 2373-9312

Copyright

© 2020 de Oliveira Silva MM, et al.

OPEN ACCESS**Keywords**

- Congenital Cardiopathy; Cardiovascular Malformations; Congenital Cardiovascular Defects

Abstract

The objective of this research was to describe the occurrence of cases of congenital heart disease in children under one year of age registered in health information systems in the state of Ceará, Brazil, from 2010 to 2015. It is a descriptive study of cases of congenital heart disease in the state of Ceará. We refer to the time window from 01/01/2010 to 12/31/2015, of children under 01 (one) year of age (observing the possible outcome of death in the following year up to 11 months and 29 days of life), codes Q20.0 to Q28.9 ICD-10. At Sinasc, 770,999 live births were observed for the years indicated in the survey, of this number 221 children were diagnosed with some congenital heart malformation, totaling 3.5 children for every 1000 live births. In the SIM, the recorded values of 739 deaths due to congenital heart malformations among children under one year old stand out, resulting in 6.35% of all infant deaths in this period. There were 145,445 hospitalizations of children under one year of age in the state, with 2,333 hospitalizations for procedures and treatments related to congenital malformations of the circulatory system. The correct information for databases and the performance of specific tests for early diagnosis of congenital cardiac malformations is extremely relevant.

INTRODUCTION

Congenital heart diseases (CC) are alterations consisting of anatomical malformations in the cardiac pump and / or large vessels, compromising the structure or function of the heart [1,2]. The cause of most heart defects is inexact, it is believed that a large part results from the combination of several factors, including the interaction between genetic and environmental factors [3]. Brasil (2017), points out that these changes are due to the altered embryological development of a given structure.

In Brazil, the incidence of congenital heart diseases is nonspecific, however, there is an average stipulated according to records notified in national databases of the Unified Health System (SUS) related to congenital heart diseases, which can be consulted through the Information System on Live Births (Sinasc), Hospitalization Information System (SIH / SUS) and Mortality Information System (SIM), where they deal, respectively, with births, hospitalizations and mortality [4].

In the state of Rio de Janeiro, 1,089 hospital admissions of children under one year of age with a diagnosis of congenital malformations of the cardiovascular system were notified, within the five-year window, from 2006 to 2010 [4].

Congenital heart diseases represent an expressive value of 10% of infant deaths, with 20 to 40% of deaths resulting from some congenital malformation [1]. Oliveira et al. [2], calculates the average estimate of infant mortality and global morbidity in values ranging from 4 to 50 deaths for every 1000 live births.

In the midst of the gaps pertinent to the theme, this study aims to describe the occurrence of cases of congenital heart disease in children under one year of age registered in the health information systems of the state of Ceará, Brazil, in 2010 to 2015, as well as the exposure of the signs and symptoms of the most common congenital heart diseases, in addition to drawing a comparison between all the results found.

When analyzing the different clinical cases and approaches taken from the differentiated diagnosis to the satisfactory prognosis, the importance of a broad study related to the theme was demonstrated, with this, the scarcity of correlated research and the need for knowledge involved in the content for professionals of different health care areas led to the elaboration of this research. Having this information makes it possible to plan specific public policies for the care of these patients, raise awareness about the correct filling of data for databases and reinforces the performance of specific tests for early diagnoses of congenital cardiac malformations.

In the social sphere, the research becomes relevant and contributory to the broad knowledge of cases and causes, due to the number of cases regularly presented of congenital heart diseases among children, acting as an alert to the population regarding the performance of tests relevant to early diagnosis, also paying attention to the need for investments to care for these patients, in addition to serving as material for dissemination in campaigns and research as an updated tool, representing through clinical cases, numbers, graphs and reviews, a presentation of the

cases that will be worked on and attended to by doctors, nurses, technicians and other on duty, coordinated by health managers, related to primary, secondary and tertiary care referring to the health of children, adolescents and the community.

METHODOLOGY

It is a descriptive and bibliographic research with a study of the relationship of variables through a quantitative approach. Data collection was done through systematic observation.

The research was developed using the database of the Unified Health System called DATASUS, with indexes referring to the state of Ceará. DATASUS is the IT department of the Brazilian Unified Health System [5].

Population data belong to both sexes, without restriction of race or social class, as long as they are diagnosed with congenital heart disease at birth or who have some outcome (hospitalization or death) due to the same pathology until completing one year of life, with birth registration dated from January 2010 to December 2015, all attended in the state of Ceará and attended by hospital units that are part of the SUS network.

For the present study, the records were selected according to the following inclusion criteria:

a) From the Sinasc database, all records of newborns with birth dates between 01/01/2010 and 12/31/2015 were included and with registration, in field 41 of DNV, of codes Q20.0 to Q28.9 of the Tenth Revision of the International Statistical Classification of

Diseases and Health-Related Problems (ICD-10), codes referring to malformations of the cardiovascular system. After this screening, only the variables relevant to the study were selected, namely: year of birth, sex and place of birth, in the state of Ceará.

b) On the basis of SIM, all death records of children born in the period from 01/01/2010 to 12/31/2015 and who died with less than one year of life were identified; in the case of births that occurred in 2015, the possible outcome of death in the following year and up to 11 months and 29 days of life was observed. Another important criterion that was identified is the presence of the underlying cause of death classified with one of the codes in the ICD-10 range from Q20.0 to Q28.9. After this selection, the following variables were kept in the bank: sex; city of death; set of causative pathologies; age at the time of death in the state of Ceará.

c) On the basis of SIH / SUS, all hospitalization records of children under one year of age, born between 01/01/2010 and 12/31/2015, with the main diagnosis identified among codes Q20.0 a Q28.9 of ICD-10. After the selection process, the following variables were kept in the database: gender; number of hospitalizations; and hospital unit where hospitalization took place, in the state of Ceará

To search for quantitative data, they were collected through databases with sources in the records of the Live Birth System (Sinasc), Hospital Information System of the Unified Health System (SIH / SUS) and Mortality Information System (SIM), with numbers belonging to the state of Ceará. All results will be

described referring to the time window from 01/01/2010 to 01/31/2015, in the case of children under 01 (one) year of age (observing the possible outcome of death in the following year and with up to 11 months and 29 days of life), recorded in field 41 of DNV, of codes Q20.0 to Q28.9 of the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10). These codes refer to malformations of the cardiovascular system.

DATA ANALYSIS AND INTERPRETATION

Right after obtaining the data, the information collected was organized using the static description technique. A tabulation of the data will be developed where they will be arranged in the form of tables and graphs, separated by subjects, for a better visualization and understanding of the analyzed reality.

The interpretation of the data was developed in a sequential and specific way for each item analyzed, with comparative and referenced methods, in order to make the content presented more clearly. The discussion was developed with descriptive analysis techniques and arranged with ethical precepts so as not to alter the research bias.

The research was developed following the relevant ethical and scientific precepts prescribed in resolution 510 of 2016 on the legal aspects of research. In line with the principles, this research was based on scientific facts and using the appropriate methods to answer the questions raised from the quantitative research, respecting the cultural, social, moral and ethical values with the use of materials and data collected exclusively for the purpose foreseen in the your protocol.

RESULTS AND DISCUSSION

In the Sinasc database researched 03 (three) different variables, namely: year of birth, sex and place of birth. All data are related to patients diagnosed at birth with some type of malformation of the circulatory system in the period from 01/01/2010 to 12/31/2015.

In the analyzed time window, 770,999 births were recorded in the state of Ceará, where 5,923 had some type of anomaly and 4% of that number are congenital anomalies of the circulatory system. In total numbers, this shows that for every 1000 live births, 3.5 children had some congenital heart disease. 221 diagnoses of malformations of the circulatory system were identified in the period analyzed in the state of Ceará. In 2010, 30 cases were reported, in 2011 the number of cases was also 30, in 2012 the numbers grew to 34 cases followed by a reduction in the numbers from 2013 to 29. In 2014 the numbers went up again reaching 36 cases and in 2015 exceeds the average of the years studied with 62 cases diagnosed at birth. Graph 1 depicts the curve in the quantity of these numbers in comparison with the plotted average for the years analyzed.

The number of diagnoses at birth, when compared by sex in each year, does not demonstrate a predominance of either sex. In 2010 and 2011, males had a higher rate of diagnostic cases, however, in subsequent years, females showed higher rates, except in 2014, where the rates were the same (Graph 2).

In total numbers, 118 diagnoses were made in female patients, this is equivalent to 53.4% of the studied cases, while

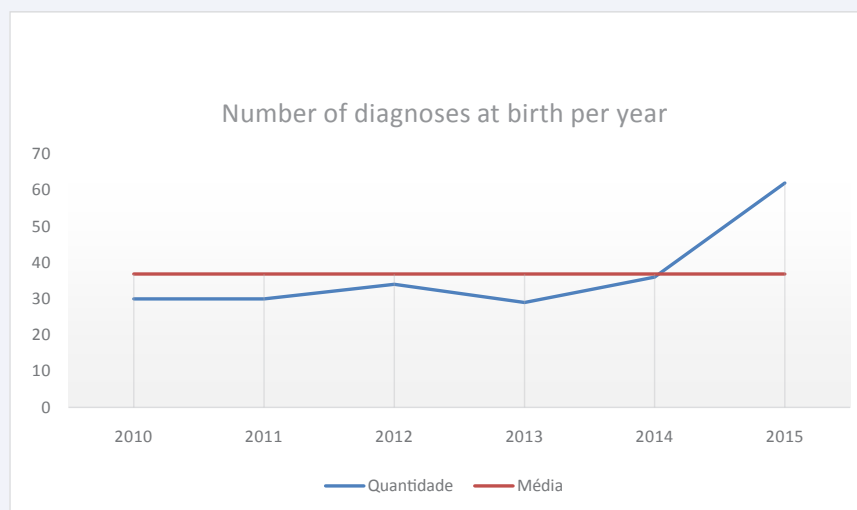


Figure 1 Comparative curve between annual cases and the average for diagnosed cases of congenital malformations of the circulatory system at birth from 2010 to 2015.

Fonte: DATASUS: estatísticas vitais. 2018.

in the male gender 101 cases were identified, being related to 46.6% of the numbers. It is important to note that 17.64% of cases were diagnosed only in girls in 2015, obtaining a significant increase in values. It is noted that in the years 2011 and 2012 there were records as ignored, this means that the sex was not specified in the records, these cases were ignored in the total of 2 being one in each year (Graph 2).

When we look at the number of diagnoses at birth related to the place of birth, we find expressive numbers concentrated in the capital and metropolitan region, holding the vast majority of diagnoses, as shown in Table 1. These numbers were described by city and place where births occurred. Having as analysis all Ceará citizens, however, only those who showed records were cited.

These numbers can be analyzed by the state health macro-region, where 192 cases in the macro-region of Fortaleza were identified, the highest percentage among those studied with approximately 87% of diagnoses. The Macroregion of Sobral and Cariri reported 11 cases, equivalent to 5% of the cases in each, in addition, 5 cases were identified in the Macroregion with 2% of the Litoral Leste / Jaguaribe and 2 cases in the Central Sertão with approximately 1% of the total percentage of cases. These percentages equivalent to the numbers can be analyzed in Graph 3, showing how they are presented in all cases.

In the data from Sinasc there is an increase in the number of diagnoses of children up to one year old, this representative increase draws even more attention in the years 2014 and 2015. This quantitative evolution is attributed to Ordinance No. 20 of 10 of June 2014, where it became mandatory to test the little heart in all live births in maternity hospitals in the Brazilian territory. The "little heart test" is represented by a set of actions performed in the first hours of birth or before the newborn is discharged from the hospital, after the implementation of these actions the number of early diagnoses has doubled, allowing children to have care in a timely manner for partial or total reversal of cardiac anatomical / functional problems [6].

Even with the increase in diagnoses of the last two years studied, the cases presented in maternity hospitals are still considered low and this points to two aspects: the first refers to the implementation of ordinance No. 20 of June 10, 2014, where the tests mandatory measures described in these ordinances are not being applied with the necessary efficiency or are not part of hospital routines. It is estimated that the effectiveness of the tests when applied in a timely manner and correctly by health professionals has a sensitivity of 75% and specificity of 99%, which demonstrates that the vast majority of congenital heart diseases could be diagnosed in the first hours of life observing basic patterns [4,6].

Within the implementation of the ordinance that refers to the "little heart test", in addition to mentioning what types of tests to be performed, professional and dimensional aspects are also portrayed, which makes hospital centers able to provide assistance to this public through the Cegonha Network, this dimensioning is performed in the middle of specific technical training to perform the tasks of detecting, diagnosing and treating congenital heart diseases. This training must be offered by the hospital network at no additional cost to professionals [1,6].

The second aspect refers to the notification of cases of heart disease in the declaration of live birth DNV, where when being diagnosed at birth, this description is necessary in field 41 of the declaration and, many times, the professionals who deal with these cases do not feel the necessary security to carry out this notification, generating future losses for the patient and the state, with costly treatments that were not established in advance. According to Catarino et al. [4], the reliability of the data presented in DNV referendums to cardiology offer agreement in only 41% of registered cases. These data refer to the state of Rio de Janeiro, however, mentioned as a mirror of the other states of Brazil.

In Brazil, an estimate of diagnosed cases of congenital heart disease per year was traced, reaching the number of 28,846 new cases per year, among all age groups [7]. By monitoring the

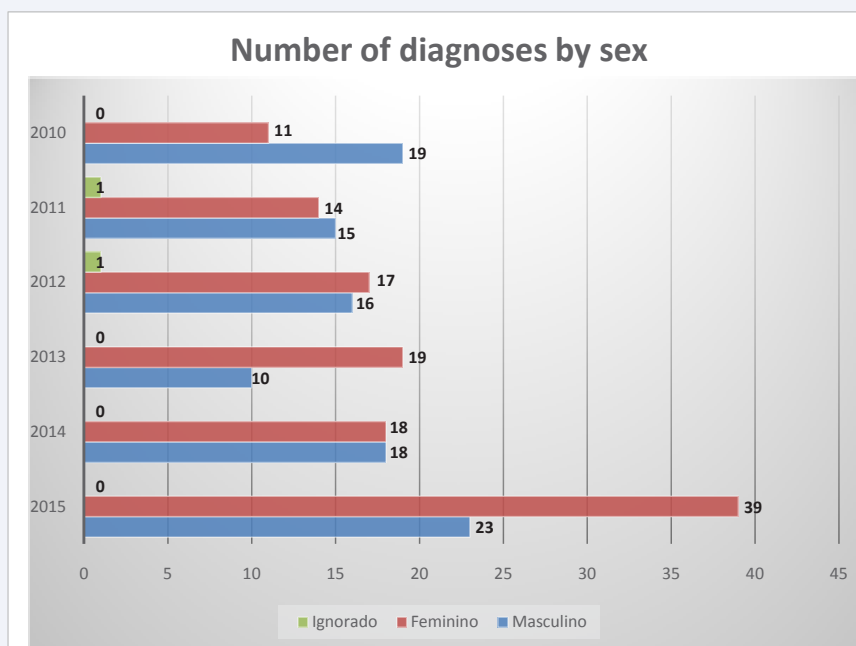


Figure 2 Number of diagnoses of circulatory malformations at birth separated by sex in the period from 2010 to 2015. Fonte: DATASUS: estatísticas vitais. 2018.

Table 1: Distribution of congenital heart diseases by city and place of birth in the state of Ceará from 2010 to 2015.

| Region | Hospital | Other | Total |
|----------------|------------|----------|------------|
| Fortress | 178 | 3 | 181 |
| Maracanaú | 10 | - | 10 |
| Aracati | 3 | - | 3 |
| Quixeramobim | 1 | - | 1 |
| Senator Pompeu | 1 | - | 1 |
| lemon Tree | 2 | - | 2 |
| Sobral | 8 | - | 8 |
| Ipueiras | 1 | - | 1 |
| Farm | 1 | - | 1 |
| Martinópolis | 1 | - | 1 |
| Iguatú | 1 | - | 1 |
| Brejo Santo | 1 | - | 1 |
| Crato | 3 | - | 3 |
| Juazeiro | 5 | - | 5 |
| Barbalha | 1 | - | 1 |
| Horizon | 1 | - | 1 |
| total | 218 | 3 | 221 |

Source: DATASUS: vital statistics. 2018.

results collected for the age range in which diagnoses are made in greater numbers, it is noted that the numbers increase with the age of the audience studied, with approximately 50% of the diagnoses performed in the state of Ceará until one year old were between 28 and 365 days old. This demonstrates the delay in diagnoses, when the estimated period for early detection is up to 20 days of life.

RESULTS FOUND IN THE SIM

On the basis of the SIM, 03 (three) variables were analyzed, namely: sex, city of death and age at death, all in the state of Ceará, related to patients born from 01/01/2010 to 12/01 / 2015 with death outcome in less than one year of age, extending data collection until 2016.

During this period, 11,630 deaths of children under one year were recorded, with approximately 7% of these deaths being due to some congenital heart disease, that is, 7 deaths for every 100 registered were due to congenital heart diseases. This percentage translated into total numbers reveals that 807 infant deaths from congenital heart disease were recorded in the state of Ceará in the analyzed period.

In 2010, 109 deaths were recorded. The year 2011 had the lowest number of deaths among those analyzed, with 97 records. In 2012 the number of deaths jumped above the average with 118 deaths, then in the years 2013 and 2014 the numbers decreased, remaining stable and below the average with 102 deaths. In 2015, the number rises again and exceeds the average with the highest value notified, in a total of 147 deaths. In 2016, the numbers decreased again, with 132 deaths, however, remaining above the average. This curve of values is properly represented in Graph 4.

When comparing these deaths by sex, there is almost a hegemony in the predominance of males, where only in 2012 the numbers presented were lower than for females. This difference in the number of deaths by sex is considered high. In the years 2011, 2013 and 2016, 3 records (one in each year) of deaths from congenital heart diseases were observed where sex was not described, counting in the study as "ignored" (Graph 5).

In the total representation, 469 deaths were registered in male children, corresponding to 58.11% of deaths and 335

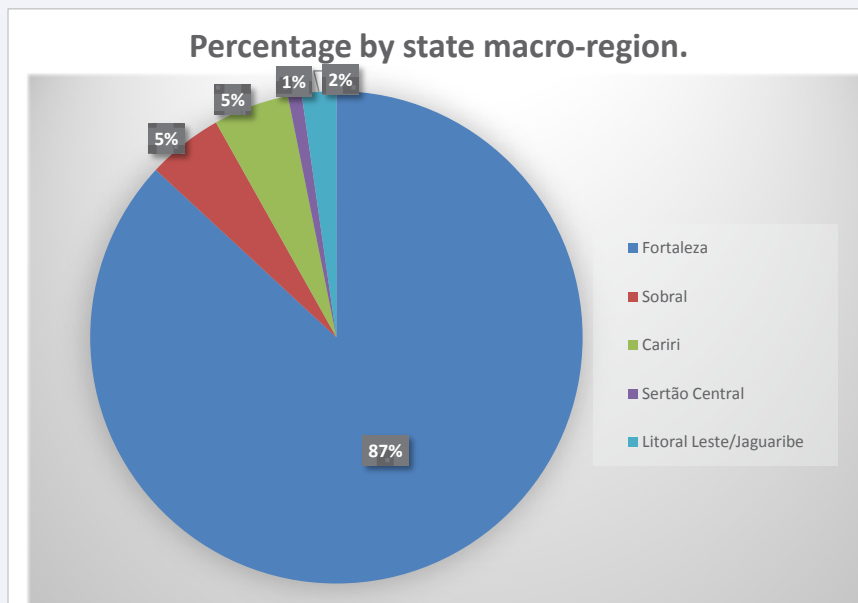


Figure 3 Percentage distribution of cases of congenital heart disease in state macro-regions from 2010 to 2015. Fonte: DATASUS: estatísticas vitais. 2018.

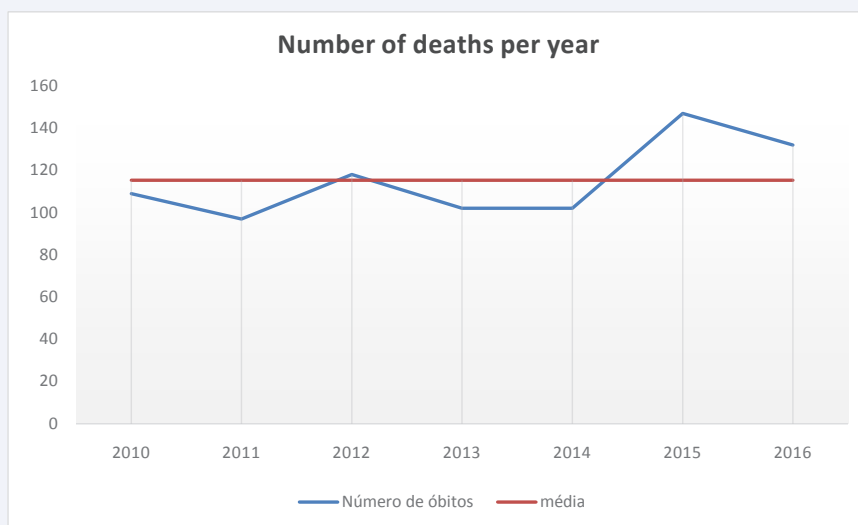


Figure 4 Distribution of the number of deaths related to congenital heart diseases in the period from 2010 to 2016. Fonte: DATASUS: estatísticas vitais. 2018.

deaths in female, corresponding to 41.57% of the total. In 2016, we followed the highest number by registered sex, where the male sex reported 85 deaths, this is equivalent to 18.12% of the numbers related to the male sex and 10.53% of the general numbers.

Analyzing by age group, they were divided by the number of days of life, the first category from 0 to 6 days old, the second from 7 to 27 days old and the third from 28 to 364 days, comprising early neonatal mortality, mortality late neonatal and infant mortality, respectively. 50% of deaths were recorded in children aged 28 to 364 days, with infant mortality rates, 29.61% were recorded as early neonatal mortality and 20.32% were recorded

as late neonatal mortality. The total numbers can be compared in Graph 6.

Death numbers can also be sectioned and analyzed by the state health macro-region. When we make this division, we observe that the macroregion of Fortaleza holds the vast majority of the number of deaths due to the pathologies studied, with a total of 653 deaths, this macroregion comprises 79.67% of the numbers. The other macroregions together refer to 20.33% of deaths, where the Sobral macroregion presented 83 deaths, the Cariri macroregion 56 deaths, the Sertão Central macroregion 15 deaths and Litoral Leste / Jaguaribe 10 deaths.

Once again the macroregion of Fortaleza represents the

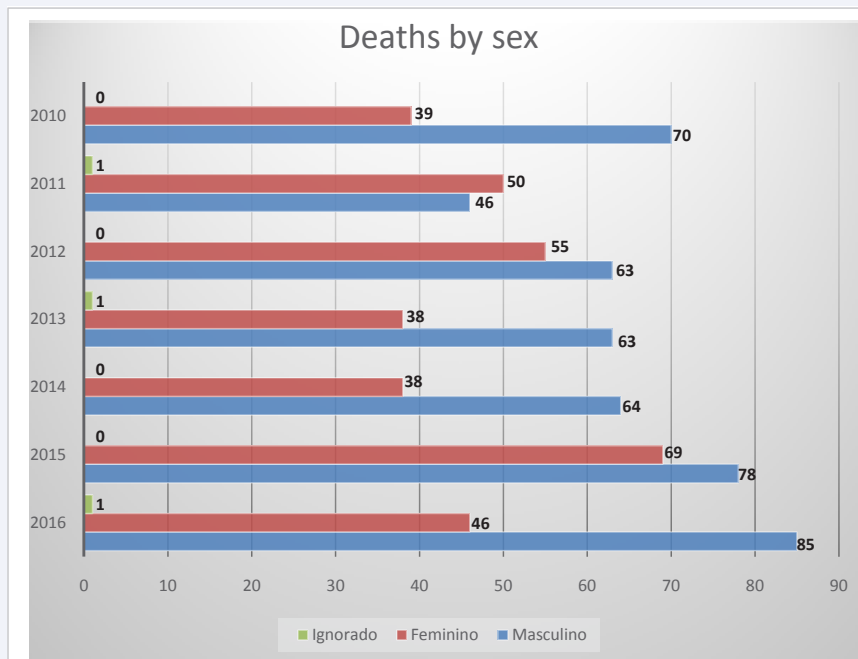


Figure 5 Distribution of the number of deaths related to congenital heart diseases separated by sex in the period from 2010 to 2016. Fonte: DATASUS: estatísticas vitais. 2018.

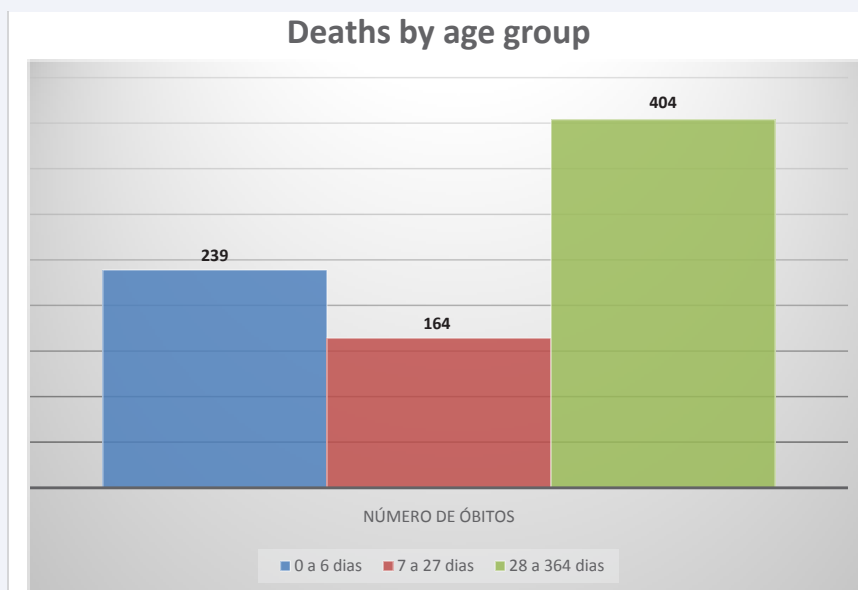


Figure 6 Distribution of the number of deaths by age group related to congenital heart diseases in the period from 2010 to 2016. Fonte: DATASUS: estatísticas vitais. 2018.

vast majority of records, as it is the large treatment center, however, it is worth mentioning that the numbers referring to the macro regions of Sobral and Cariri reported an increase in the percentages of deaths compared to the percentages diagnoses at birth, demonstrating the importance of strict observation in other regions (Graph 7).

Among the analyzed heart diseases, there are those with a higher incidence, these pathologies can be more dangerous or

just more frequent. Among the registered deaths we can highlight those pathologies that are part of the group codified by ICD-10 referring to “congenital malformations of the heart” with code Q24. This set of diseases was responsible for 61.1% of deaths. The second most frequent group was the “congenital malformation of the cardiac septa”, with the code Q21, representing 14.74% of deaths, followed by the “congenital malformations of the cardiac chambers and communications”, with code Q20, with 8.3% of the deaths.

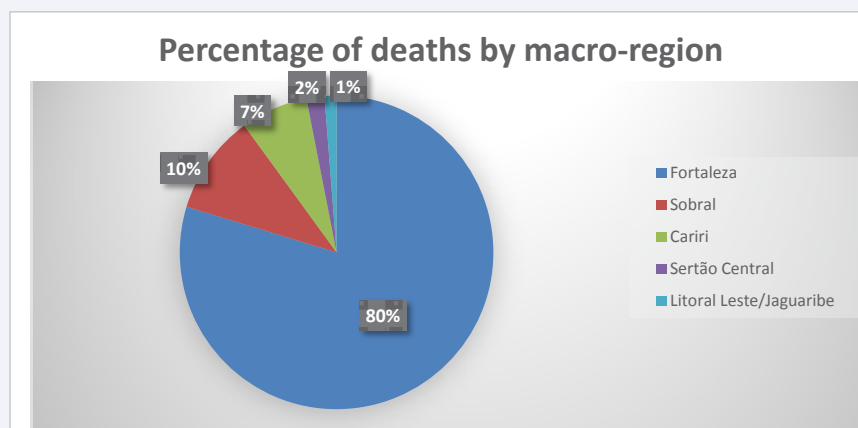


Figure 7 Distribution of the percentage of deaths due to congenital heart diseases in the state macro-regions from 2010 to 2016. Fonte: DATASUS: estatísticas vitais. 2018.

It is worth mentioning that the codes presented represent a set of subcodes, that is, each code refers to a specific set of heart diseases that are listed in Table 2. These codes are grouped according to ICD-10 in order to obtain a better understanding and analysis of the Dice.

Evaluating the records found in health information systems, underreporting of Sinasc data is observed, especially when compared with SIM data. The number of diagnoses is described as 221 cases in the period studied, however, the number of deaths in the same period and the same public was 807 deaths, that is, the number and deaths is 3.6 times greater than that of diagnoses. There is a huge discrepancy between these diagnoses and deaths of 586 cases, this exposes some gaps in the whole process and opens the question of 'who are these patients and why were they not diagnosed?'

Studies reveal that about 30% of patients with congenital heart disease are discharged from the hospital without a traced diagnosis, progressing sequentially to cardiorespiratory arrest, shock, hypoxia and death before receiving adequate assistance [4]. Within the state, the large percentage of diagnostic cases come from metropolitan centers, particularly those in the state capital. These large metropolitan regions are equipped with cardiovascular reference hospitals assisted by the SUS network, facilitating access and providing qualified care in the cardiological aspect, however, not all of these hospitals work as maternity hospitals and their main function has been the late diagnosis and treatment of cases presented, increasing the death rates in these places.

RESULTS FOUND AT SIH / SUS

On the basis of SIH / SUS, 03 (three) variables were analyzed, namely: sex, number of admissions and hospital unit where the admissions occurred, all in the state of Ceará, related to patients born from 01/01/2010 to 12/01 / 2015 with outcome in hospitalizations less than one year old.

145,445 hospitalizations of children under one year of age were identified in the state of Ceará, of which 2,333 hospitalizations were for procedures and treatments related to congenital malformations of the circulatory system identified in ICD-10 (Graph 8).

Outlining these figures per year, we observed that the year 2014 registered the largest number of hospitalizations for the treatment of congenital heart diseases with 409 visits, with values well above the state average drawn in the decade, representing 17.53% of hospitalizations. The year 2012, on the other hand, showed the lowest number of hospitalizations, with 374, showing values below the average. As for the other years, 2010 and 2011 were the ones that came closest to the state average with 388 and 389 hospitalizations respectively, the other years alternated between higher or lower values, with 374 hospitalizations in 2013 and 404 hospitalizations in 2015.

Regarding treatment, only 20% of cases have a spontaneous cure, however, these cases are related to the type of heart disease and hemodynamic repercussions. It is estimated that 23,000 surgical procedures for congenital cardiovascular problems are performed in Brazil per year, including new births and readmissions in this estimate [7]. In the state of Ceará these hospitalizations and procedures are concentrated in more than 90% in the metropolitan region in the capital, this reflects in a unidirectional flow of people in search of better health conditions in the great centers of specialties, therefore, the number of specific treatments for such pathologies it is reduced in the other state regions (Graph 9).

When analyzing the "sex" factor, we noticed a change between which represented a higher prevalence, where, in the years 2010, 2012, 2014 and 2015 the numbers referring to the male sex were higher and in the years 2011 and 2013 the female sex had prevalence. Reported in total numbers, males had 1,242 hospital admissions, representing 53.24% of admissions and females registered 1,091 admissions, representing 46.76% of total values.

Hospitalizations were performed and registered in several hospital health units throughout the state of Ceará, which are of medium and high complexity in secondary and tertiary health care in the SUS network. The vast majority of hospitalizations were made at the HM Hospital de Messejana Dr Carlos Alberto Studart Gomes, located in the state capital, being a reference center in cardiology, registering 66.18% of state admissions [8-14].

Table 2: Distribution of the number and percentage of deaths by set of heart diseases coded according to ICD-10 in the period from 2010 to 2016.

| Code | Set of Heart Diseases | Number of deaths | Percentage of deaths |
|------|--|------------------|----------------------|
| Q20 | Congenital malformations of chambers and cardiac communications. | 67 | 8,3% |
| Q21 | Congenital malformations of the cardiac septa | 119 | 14,74% |
| Q22 | Congenital pulmonary and tricuspid valve malformations | 23 | 2,85% |
| Q23 | Congenital malformations of aortic and mitral valves | 37 | 4,58% |
| Q24 | Other congenital malformations of the heart | 493 | 61,1% |
| Q25 | Congenital malformations of the great arteries | 56 | 6,93% |
| Q26 | Congenital malformations of the great veins | 4 | 0,5% |
| Q27 | Other congenital malformations of the peripheral vascular system | 2 | 0,25% |
| Q28 | Other congenital malformations of the circulatory system | 6 | 0,75% |

Fonte: DATASUS: estatísticas vitais. 2018.

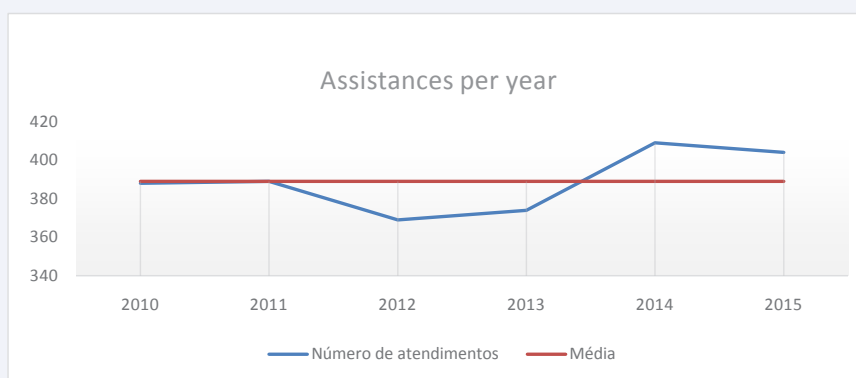


Figure 8 Distribution of the number of visits by children under one year old by CC in the period from 2010 to 2015. Fonte: DATASUS: assistência à saúde. 2018.

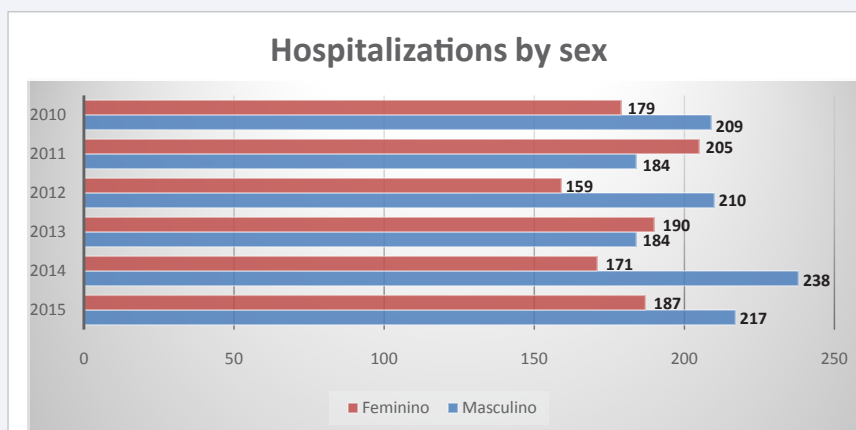


Figure 9 Distribution of the number of hospital admissions related to congenital heart diseases separated by sex between 2010 and 2015. Fonte: DATASUS: assistência à saúde. 2018.

When examining hospital admissions by macroregion, we again note the predominance of the macro-region of Fortaleza, with 2,228 admissions, followed by the macro-region of Sobral and Cariri, with 64 and 39 admissions, respectively. The Sertão Central macro-region had 22 hospitalizations and the Litoral Leste / Jaguaribe macro-region did not present hospitalization numbers (Graph 10).

FINAL CONSIDERATIONS

The research design sought to inform several indexes related to diseases of the cardiocirculatory system that presented outcomes due to hospitalization or deaths following a line of reasoning resulting in the values presented. These values need individual analysis as an explanation of the theme.

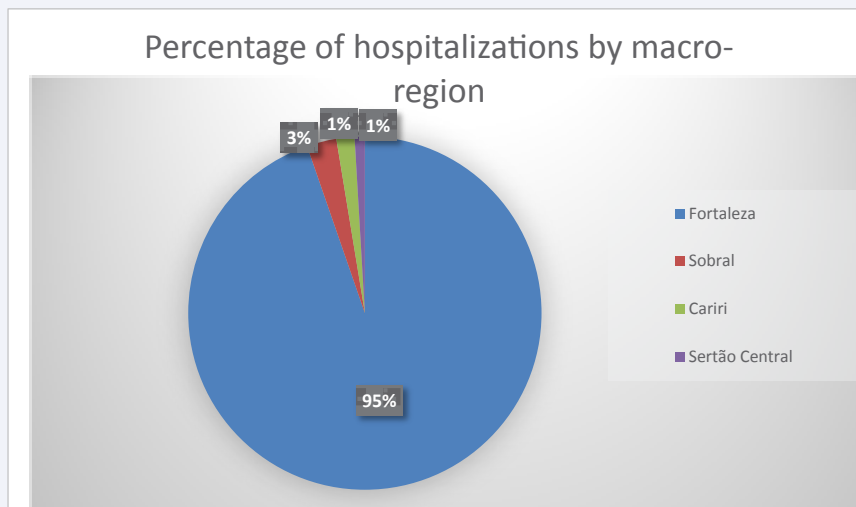


Figure 10 Distribution of the percentage of hospital admissions for congenital heart disease divided by the state macro-regions in the period from 2010 to 2015.

Fonte: DATASUS: assistência à saúde. 2018.

Table 3: Distribution of hospitalizations for the treatment of congenital heart diseases in children under one year old by hospital units from 2010 to 2015.

| Unit Code | Hospital Name | Number of Hospitalizations |
|-----------|--|----------------------------|
| 2328399 | HOSPITAL AND MATERNITY JESUS MARIA JOSE HMJMJ | 22 |
| 2415488 | HOSPITAL E MATERNIDADE SAO FRANCISCO DE ASSIS | 2 |
| 2415631 | ANTONIO PRUDENTE HOSPITAL | 2 |
| 2426072 | HOSPITAL CHILD MUNICIPAL MARIA AMELIA BEZERRA | 7 |
| 2479214 | HM HOSPITAL DE MESSEJANA DR CARLOS ALBERTO STUDART GOMES | 1.544 |
| 2479907 | H J M A HOSPITAL JOSE MARTINIANO DE ALENCAR | 1 |
| 2480646 | IMTAVI | 1 |
| 2481073 | HOSPITAL SAO LUCAS | 1 |
| 2481286 | MATERNIDADE ESCOLA ASSIS CHATEAUBRIAND | 16 |
| 2482339 | HOSPITAL DISTRITAL NOSSA SENHORA DA CONCEICAO | 13 |
| 2497654 | HGF HOSPITAL GERAL DE FORTALEZA | 28 |
| 2499029 | HOSPITAL E MATERNIDADE ZULMIRA SEDRIN AGUIAR | 1 |
| 2526638 | SOPAI HOSPITAL INFANTIL | 1 |
| 2529068 | HOSPITAL DISTRITAL GONZAGA MOTA JOSE WALTER | 8 |
| 2560852 | HOSPITAL MATERNIDADE MADALENA NUNES | 1 |
| 2561492 | HOSPITAL UNIVERSITARIO WALTER CANTIDIO | 4 |
| 2562154 | HOSP MATERN JOAO FERREIRA GOMES | 1 |

| | | |
|---------|--|-----|
| 2562499 | HOSPITAL MATERNIDADE SAO LUCAS | 2 |
| 2563681 | HIAS HOSPITAL INFANTIL ALBERT SABIN | 530 |
| 2564211 | HOSPITAL MATERNIDADE SAO VICENTE DE PAULO | 26 |
| 2651351 | HOSPITAL DISTRITAL GONZAGA MOTA BARRA DO CEARA | 7 |
| 2675560 | HOSPITAL REGIONAL DE IGUATU | 1 |
| 2723212 | HOSPITAL DISTRITAL GONZAGA MOTA MESSEJANA | 48 |
| 2785900 | HOSPITAL GERAL DR WALDEMAR ALCANTARA | 4 |
| 3021114 | SANTA CASA DE MISERICORDIA DE SOBRAL | 37 |
| 6848710 | HOSPITAL REGIONAL NORTE | 25 |

Fonte: DATASUS: assistência à saúde. 2018.

In view of the exposure of the records found referring to congenital heart diseases in children under one year of age in the state of Ceará that were made available in DATASUS, it is concluded that the number of deaths and hospital admissions is alarming, as they represent a high and costly number for the country. This quantitative research acts as a risk alert, demonstrating in real numbers the problematization faced retrospectively and currently by national health services.

This information formulates the national framework for the pathologies confronted and acts as dynamic research material for professionals from different categories and managers who work at the primary, secondary and tertiary levels of care aimed at community health.

There is a need for public policies that interact with the prevention and early diagnosis of these pathologies, aiming at a significant reduction in the outcome of death. The need for an increased investment in care and active searches carried out at the levels of primary care is also emphasized, acting directly

on the prognosis of the patient even in the early stages of the diseases and reducing future complications reported at the other levels of care.

REFERENCES

1. BRAZIL. Ministry of Health. Ordinance No. 1,727, of July 11, 2017. Approves the National Assistance Plan for Children with Congenital Heart Disease. Official Gazette of the Federative Republic of Brazil. 2017.
2. OLIVEIRA PHA, Souza BS, Pacheco EN, Menegazzo MS, Corrêa IS, Zen PRG, et al. Genetic Syndromes Associated with Congenital Heart Defects and Ophthalmic Changes - Systematization for Diagnosis in Clinical Practice. *Arq Bras Cardiol*. 2018; 110: 84-90.
3. HOCKENBERRY, Maillyn J, WILSON, David. Wong. *Fundamentals of pediatric nursing*. Elsevier. Rio de Janeiro. 2014; 25: 784-812.
4. CATARINO, Camilla Ferreira, et al. Records of congenital heart disease in children under one year old in the information systems on birth, hospitalization and death in the state of Rio de Janeiro, 2006-2010. *Epidemiol. Serv. Health, Brasília*. 2017; 26: 35-543.
5. Informatics Department of the Unified Health System (Datusus). *Vital Statistics. Live births: Ceará*. Brasília: Ministry of Health; 2018.
6. BRAZIL. Ministry of Health. Ordinance no. 20, of June 10, 2014. It makes public the decision to incorporate pulse oximetry test of the little heart to be performed universally, as part of the Neonatal screening in the Unified Health System - SUS. Official Gazette of the Federative Republic of Brazil. 2014; 1: 56.
7. JESUS, Valeria Santos de et al. Queue for Treatment of Patients with Congenital Heart Disease: Portrait of an Amazonian Reference Center. *Gaspar Vianna Hospital Hospital Foundation*. Belém. 2018; 31: 374-382.
8. BARROS, Aidil Jesus da Silveira, LEHFELD, Neide Aparecida de Souza. *Fundamentals of scientific methodology*. 3rd ed. São Paulo: Person Educatin. 2007.
9. BRAZIL, Law 8,069, of July 13, 1990. Provides for the Statute of Children and Adolescents and provides other measures. Official Gazette of the Federative Republic of Brazil. 1990.
10. BRAZIL. National Health Council. Resolution 510, of April 7, 2016. Official Gazette of the Federative Republic of Brazil. 2016; 1: 59.
11. GUERRIERO, Iara Coelho Zito. Resolution No. 510 of April 7, 2016, which deals with the ethical specificities of research in the human and social sciences and others that use methodologies specific to these areas. *collective health, Rio de Janeiro*. 2016; 21: 2619-2629.
12. IBGE - Brazilian Institute of Geography and Statistics Foundation. *States: Ceará*. Brazilian Institute of Geography and Statistics. 2018.
13. JACOB, Stanley W, FRANCONI, Clarice Ashworth; LOSSOW, Walter J. *Human anatomy and physiology*. Rio de Janeiro. 1892; 300-364.
14. MOORE, Keith L, DALLEY, Arthur F. *Clinic-oriented anatomy*. Rio de Janeiro. Editora Guanabara. 2001; 103-144.
15. PINTO JUNIOR, Valdester Cavalcante. Epidemiology of congenital heart disease in Brazil. *Rev Bras Cir Cardiovasc, São José do Rio Preto*. 2015; 30: 219-224.
16. SILVA, Valeria Gonçalves. Nursing diagnoses, interventions and results for children with congenital heart disease: an integrative review. *Careful research journal is critical*. Rio de Janeiro. 2014; 1276-1287.
17. TORTORA, Gerard J, DERRICKSON, Bryan. *Human Body: fundamentals of anatomy and physiology*. Sao Paulo. Publisher Artmed. 2012: 379-394.
18. WONG, Donna L. *Pediatric nursing: fundamental elements for effective intervention*. Rio de Janeiro. Editora Guanabara. 1999: 764-774.

Cite this article

de Oliveira Silva MM, do Prado Farias Borges S, de Carvalho Nilo Bitu V, Pinheiro Belmino TL, de Souza Teixeira MM (2020) Records of Congenital Heart Diseases in Children under One Year in the State of Ceará. *Ann Pediatr Child Health* 8(4): 1182.