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Outcome and Prevalence of Congenital Heart Diseases in Neonates at A Tertiary Hospital in The State of Santa Catarina

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Abstract

Objective: The present study aims to analyze the conduct and outcome of patients diagnosed with congenital heart disease (CHD) referred to by the neonatology service of a tertiary hospital in the State of Santa Catarina.

Study design: This research is characterized by being a cross-sectional epidemiological design. To this end, we used the records of newborns admitted to the Neonatal Intermediate Care Unit, Neonatal Intensive Care Unit and the Delivery Room of the hospital service who had suspected CHD by transthoracic echocardiogram within 60 days after birth, in the period of June from 2017 to June 2022. During data collection, several variables were analyzed, including pregnancy, the characteristics of the newborn, and the relationship between the two in the outcome of the CHD condition.

Results: In the studied region, it was detected that 8 out of every 1,000 natives were diagnosed with CHD. Among newborns with CHD, it was found that 67.2% were born preterm, and 93% of pregnant women underwent prenatal care, with the number of consultations considered adequate in 58.6%. Furthermore, 59.4% of unborn children were classified as low weight. Clinical treatment occurred in 69.5% of cases, referral to a reference unit in 19.5% of patients and 10.9% of infants died.

Conclusion: Finally, it is important to highlight that knowledge of the prevalence of CHD is essential to establish appropriate conduct and management techniques for newborns (NB) with CHD, aiming to provide better care for these patients from the beginning.

Keywords: Congenital Heart Disease; Pediatric Cardiology; Neonates; Neonatology

Abbreviations: NB: New Borns; CHD: Congenital Heart Disease; SD: Standard Deviation; SPSS: Statistical Package for the Social Sciences; PA: Pulmonary Atresia; AVSD: Atrioventricular Septal Defect

Introduction

Congenital heart disease (CHD) can be defined as any malformation in the structure or function of the heart that occurs between the first 8 weeks of pregnancy. The prevalence of congenital heart defects varies from 6 to 13 in every 1,000 newborns [1]. Approximately 1% of newborns have some type of CHD and 10% of births diagnosed with fatal CHD. Of the newborns diagnosed with CHD, around ¼ require correction through surgery or a catheter procedure in the first year of life. Some types of CHD include patent foramen ovale, patent ductus arteriosus, atrial septal defect, interventricular septal defect, total atrioventricular septal defect, complex congenital heart disease. Two Given this,

this article seeks to elucidate the outcome and prevalence of CHD in newborns at a tertiary hospital in Santa Catarina.

The general objective was to analyze the data collected regarding the clinical outcome of patients diagnosed with CHD. In delimiting the topic, the following problem arises: the influence of personal conditions and the method of approach on the outcome of the treatment of congenital heart disease in newborns at a tertiary hospital in Santa Catarina.

To solve the problem, the following hypothesis is raised:

a. It is assumed that the patient's personal conditions, mainly the gestational age at the date of delivery and the carrying out of exams and medical consultations during pregnancy, directly influence the method of approach used by the responsible doctor, and, therefore, in the outcome of congenital heart disease. The analysis of CHD was chosen given the scarcity of data on the development of the disease, given personal conditions and the method of approach to the outcome of CHD treatment in newborns at a tertiary hospital in Santa Catarina.

Method

This research is characterized by being a cross-sectional epidemiological design, based on medical records from a tertiary hospital in the Alto Vale do Itajaí Region in the State of Santa Catarina, Brazil. The research was approved by the Ethics and Research Committee on Human Beings of the Centro Universitário para o Desenvolvimento do Alto Vale do Itajaí (UNIDAVI), under opinion number 5,826,097. To this end, records of newborns admitted to the Neonatal Intermediate Care Unit (NICU), Pediatric/ Neonatal Intensive Care Unit and the Emergency Department of the hospital service who had suspected CHD by transthoracic echocardiogram within 60 days of birth were used. in the interim from June 2017 to June 2022.

The population was initially 130 newborns, however, due to the lack of information about the analyzed criteria, two medical records were eliminated, and the study was carried out on 128 patients. For data collection, a research instrument was developed, where the following variables were weighed: sex, gestational age at birth, classification of gestational age, age of the newborn when undergoing the transthoracic echocardiogram, whether the pregnant woman received prenatal care, number of prenatal consultations carried out, whether or not the number of prenatal consultations carried out were adequate, whether a morphological examination was carried out, whether a fetal echocardiogram was carried out, type of delivery, Apgar scale of the newborn at birth (first and fifth minute of life), birth weight, weight classification, whether there was a need for resuscitation in the delivery room, postpartum referral, whether the newborn received oxygen during hospitalization, type of ventilation, whether there was use of prostaglandin during hospitalization, whether there was use of vasoactive drug during hospitalization, days of hospitalization, case outcome, types of CHD, number of complications, characteristics of CHD.

Statistical Analyses

Inferential data analysis was performed using the IBM Statistical Package for the Social Sciences (SPSS) software version 26.0. A descriptive analysis was performed presenting discrete and continuous quantitative variables in the form of mean ± standard deviation (SD), or median and interquartile range (IIQ). Qualitative variables were presented as absolute number (n) and percentage (%).

Results

This study included 128 patients diagnosed with CHD in the aforementioned period, after excluding normal functional echocardiographic records unrelated to CHD and born outside the hospital studied. In relation to the gestational clinical-epidemiological profile shown in Table 1, regarding the registered cases, it was found that the patients were born on average at 234 days (± 30.9). Regarding the classification of gestational age, the present study found the

preponderance of preterm births, occurring in 86 (67.2%) of cases, followed by full-term births in 33 (25.8%) of patients and post -term in only 1 (0.8%) of the pregnancies, it is also verified that the identification was occluded in 8 (6.3%) of the records. Regarding prenatal care, it was found that 119 (93%) of the pregnant women underwent follow-up, 4 (3.1%) did not undergo follow-up, and in 5 (3.9%) of the cases there was no identification regarding the performance. or not of prenatal care. Furthermore, the number of consultations carried out on average was 7.22 (± 3.5), with the number of consultations being adequate in 75 (58.6%), not adequate in 52 (40.6%) and, not identified in 1 (0.8%) of the patients (Table 1).

Regarding the morphological examination, this was carried out in 114 (89.1%), not carried out in 10 (7.8%) and not identified in 4 (3.1%) of the pregnancies, in relation to the fetal echocardiogram this was not carried out in the majority of newborns, which are 101 (78.9%) of the cases, being performed only in 23 (18%) of the patients, and not identified in 4 (3.1%) of the medical records (Table 1). Regarding the type of delivery, it was normal in 43 (33.6), cesarean section in 80 (62.5%), and unidentified in 5 (3.9) of the pregnant women (Table 1).

Regarding the data covered in Table 2, it was verified in relation to the clinical-epidemiological profile of newborns with diagnosed CHD, that 73 (57%) of the patients were male and 55 (43%) were female. Also, patients in this research had an average weight of 2189 grams (± 1057) at birth, and a median of 1910 grams, with 76 (59.4%) of the newborns being classified as underweight, 41 (32%) of the infants as normal, macrosomic in 6 (4.7%) of the

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patients, and unidentified in 5 (3.9%) of the newborns. Regarding age when the echocardiogram was requested, the median was 5 days (Table 2). The Apgar scale in the 1st minute of life of newborns had an average of 6.48 (± 2.18), and in the 5th minute of life, the average was 7.91 (± 1.53), in addition, in 114 (89.1%) of the patients did not require resuscitation in the delivery room, with resuscitation occurring only in 14 (10.9%) (Table 2). After birth, none of the newborns were transferred to the room, 30 (23.4%) were transferred to the Neonatal Intermediate Care Unit and 98 (76.6%) to the neonatal ICU (Table 2). During hospitalization, 25 (19.5%) of the newborns did not need oxygen therapy, and 103 (80.5%) of the patients received oxygen therapy, of these, 90 (70.3%) of the cases used invasive ventilation and 38 (29.7%) of the natives underwent non-invasive ventilation (Table 2).

Table 1: Gestational clinical-epidemiological profile.

Gestational Profile Variables	Mean ± SD or n (%) (n=130) or median
Gestational Age on Delivery Date (days)	
Average	234 ± 30.9
Gestational Age Classification	
Pre-Term	86 (67.2)
In Right Term	33 (25.8)
Post-Term	1 (0.8)
Not Identified	8 (6.3)
Prenatal	
Yes	119 (93)
No	4 (3.1)
Not Identified	5 (3.9)
Number of Consultations	
Average	7.22 ± 3.5
Appropriate Number of Consultations	
Yes	75 (58.6)
No	52 (40.6)
Not Identified	1 (0.8)
Morphological examination performed	
Yes	114 (89.1)
No	10 (7.8)
Not Identified	4 (3.1)
Whether a Fetal Echocardiogram was performed	
Yes	23 (18)
No	101 (78.9)
Not Identified	4 (3.1)
Type of Delivery	
Normal	43 (33.6)
Cesarean Section	80 (62.5)
Not Identified	5 (3.9)

Caption: n = sample size; N = population size. Data are expressed: absolute frequency (n) and percentage (%). **Statistical Method Employed:** Descriptive analysis of frequencies.

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Table 2: Clinical-epidemiological profile of newborns with diagnosed CHD.

Profile of Newborns Variables	Mean ± SD or n (%) (n=130)
Age When the Echocardiogram is Requested (days)	
Median	5
Sex	
Masculine	73 (57)
Feminine	55 (43)
Birth Weight (grams)	
Average	2189 ± 1057
Median	1910
Weight Classification	
Low Weight	76 (59.4)
Normal	41 (32)
Macrosomic	6 (4.7)
Not identified	5 (3.9)
Apgar 1st Minute of Life	
Average	6.48 ± 2.18
Apgar 5th Minute of Life	
Average	7.91 ± 1.53
Need for Resuscitation in the Delivery Room	
Yes	14 (10.9)
No	114 (89.1)
Referral to	
Room	0
NICU	30 (23.4)
Neonatal ICU	98 (76.6)
Oxygen Therapy	
Yes	103 (80.5)
No	25 (19.5)
Type of Ventilation	
Invasive	90 (70.3)
Non-Invasive	38 (29.7)
Use of Prostaglandin	
Yes	8 (6.3)
No	120 (93.8)
Use of Vasoactive Drugs	
Yes	46 (35.9)
No	82 (64.1)
Days of Hospitalization	
Median	21
Outcome	
Clinical Treatment	89 (69.5)
Referral to Reference Unit	25 (19.5)
Death	14 (10.9)

Caption: n: sample size; N: population size. NICU: Neonatal Intermediate Care Unit. ICU: Intensive Care Unit. Data are expressed: absolute frequency (n) and percentage (%). **Statistical Method Employed:** Descriptive analysis of frequencies.

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With regard to the use of prostaglandin, this was introduced in 8 (6.3%) of the cases, not being applied in 120 (93.8%) NB, as for vasoactive drugs, these were used in 46 (35.9%) %) of newborns and were not used in 82 (64.1%) of live births (Table 2). Regarding the days of hospitalization of newborns, the median obtained in the cases analyzed was 21. The outcome was predominantly clinical treatment, which occurred in 89 (69.5%) cases, referral to a reference unit in 25 (19 .5%) patients, and 14 (10.9%) of the infants died (Table 2).

With regard to the types and characteristics of diagnosed CHD, shown in Table 3, the prevalence of acyanogenic CHD was found in 119 (93%) of the cases, which are described as interventricular communication 3 (2,3); interatrial communication 30 (23.4); patent ductus arteriosus 30 (23.4); patent foramen ovale 29 (22.7); and cyanogenic only in 9 (7%) of the patients, which were identified as Tetralogy of Fallot; Transposition of the Great Arteries; Tricuspid Atresia and Atrioventricular septal defects 1 (0.8) and complex congenital heart disease 2 (1.6). Furthermore, it was observed that 95 (74.2%) of the patients had 1 complication, 29 (22.7%) of the cases had 2 complications, and 4 (3.1%) of the newborns had 3 complications (Table 3).

Table 3: Types and characteristics of diagnosed congenital heart diseases.

Types and Characteristics of CHD Variables	Mean ± SD or n (%) (n=130)
Types of CHD	
CIA	30 (23.4)
PCA	30 (23.4)
CIV	3 (2.3)
FOP	29 (22.7)
DSAV	1 (0.8)
CHDC	2 (1.6)
Other Presentations	33 (25.8)
Number of Complications	
1 complication	95 (74.2)
2 complications	29 (22.7)
3 complications	4 (3.1)
CHD feature	
Acyanogenic	119 (93)
cyanogenic	9 (7)

Caption: n: sample size; N: population size. PFO: Patent Foramen Ovale; DAP: Ductal Arterial Persistence; ASD: Interatrial Communication; IVC: Interventricular Communication; Total AVSD: Total Atrioventricular Septal Defect; CHDC: Complex congenital heart disease. Data are expressed: absolute frequency (n) and percentage (%). **Statistical Method Employed:** Descriptive analysis of frequencies.

Discussion

The prevalence of CHD on the South American continent is approximately 6 to 12 per 1,000 newborns, according to information published in the study Global birth prevalence of congenital heart defects 1970–2017: updated systematic review and meta-analysis of 260 studies by Yingjuan Liu et al. published by the International Journal of Epidemiology. The region included in the present study detected that 8 out of every 1,000 newborns were diagnosed with CHD, thus approximately 1%, in a sample of 15,831 native patients from June 2017 to June 2022. According to information from the DATASUS system, in the aforementioned period, 15,831 newborns were born in the Rio do Sul microregion [3].

In view of this, it was verified that the prevalence of CHD found in the present study validates the data presented in several articles published worldwide. Bearing in mind that research on large population-based data has found similar incidences of CHD in newborns, despite the lack of precision in diagnosing CHD in natives, which occurs due to the different variables in each type of CHD, late diagnosis or absent, as well as due to the lack of adequate referencing. Analysis of the gestational profile presented reveals important information about the pregnant women included in the research. Therefore, the average gestational age at the date of delivery was 234 days, with a standard deviation of 30.9 days, this information being correlated with the classification and data below prematurity. The gestational age of the pregnancies in the study was predominantly below 37 weeks, being considered preterm. It is important to highlight that premature babies face a series of challenges in the transition from intrauterine to extrauterine life, in terms of physiological adaptation after birth, these may include respiratory, hemodynamic, metabolic and neurological problems, as well as infections and difficulties in adapting to life outside the uterus [4]. From the data collected, we observed that most pregnant women received prenatal care, 3.1% did not, and in 3.9% of cases, it was not possible to identify whether prenatal

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care was provided or not. The average number of consultations during prenatal care was 7.22, with a standard deviation of 3.5, indicating variability in the number of consultations. Furthermore, regarding the adequacy of the number of consultations, the majority of pregnant women performed a number considered appropriate, while, however, a significant portion (40.6%) did not reach this recommendation, in addition, 0.8% of cases do not have information about the adequacy of consultations.

Lack of prenatal diagnosis can significantly affect the postnatal course, with potential economic and public health consequences. Likewise, the quality of prenatal care, when performed, is a critical determinant of the detection of CHD by routine ultrasound, so that education programs for greater engagement in carrying out prenatal consultations with more detailed examinations and Fetal echocardiography would increase the prenatal detection of CHD, thus generating better postnatal preparation [5,6]. Regarding the morphological examination, this was carried out by the majority of patients (89.1%), and in (11.9%) it was not completed. In view of this, the postnatal course of babies with critical CHD may be negatively impacted if the diagnosis is delayed due to a failure to undergo examination.

Given the above, regarding infant mortality caused by congenital malformations, it was found that CHD are considered the most predominant cause. Early diagnosis of cardiac anomalies is essential to improve the outcome of CHD. The availability of prenatal exams that can detect these malformations early is crucial to refer complex CHD cases to specialized services, which have better technical conditions to perform cardiac corrections and act quickly. In conclusion, as the understanding of the pathophysiology and treatment of diseases associated with CHD advances, several studies and guidelines are published. This is extremely relevant, as such data are essential to inform policy makers' priorities. Knowledge of the prevalence of CHD is essential to establish appropriate conduct and management of newborns with CHD, aiming at better care for these patients. Therefore, it was possible to verify that the hypothesis was confirmed, since the pregnant women who performed the prenatal care properly, as well as the requested exams and medical recommendations, were already aware of the conditions of the unborn child, a fact that also benefits the tertiary health sector, given that it receives prior information collected by the primary health sector, thus enabling the preparation for carrying out a delivery with specific conditions of CHD. In addition, statistics highlight the importance of a multidisciplinary and specialized approach in the care of newborns with CHD, considering that early diagnosis, monitoring and access to appropriate treatments are essential to improve outcomes and ensure the best possible quality of life for the infants.

Therefore, there is evidence to support the fact that prenatal diagnosis allows for better perioperative results after birth, so that the medical team can be prepared for possible complications associated with CHD, such as heart failure, heart infections, arrhythmias, pulmonary hypertension, poor growth and development, and pulmonary complications. Treatment involves a multidisciplinary approach, such as medications, surgery and regular medical monitoring [7]. On the other hand, only 18% of patients underwent fetal echocardiography. To improve the accuracy of prenatal diagnosis, it is essential to perform a fetal echocardiogram when CHD is suspected during pregnancy, thus ensuring the necessary family counseling regarding prognosis and appropriate prenatal planning [8,9].

Regarding the type of birth, it was observed that the majority (62.5%) were performed by cesarean section, while 33.6% occurred by natural birth. Vaginal birth is safe in patients with CHD of all severities, and a higher cesarean section rate does not translate into better outcomes. On the other hand, the literature suggests that a higher incidence of cesarean section is in fact associated with an overall increased risk of adverse outcomes, including mortality for the mother [10]. Based on the relationship with the newborn itself and its clinical aspects, shown in Table 2, the median age at which the echocardiogram was requested was found to be 5 days, allowing early post-term detection and diagnosis. accurate, as soon as there were clinical parameters for the hypothesis of CHD.

Regarding sex, the majority of newborns were male, while the smallest portion (43%) were female. This statistic is slightly discrepant in relation to the sexual epidemiology of the prevalence of CHD worldwide and in South America, as in both the relationship is 1 to 1. Birth weight was an important aspect to be considered, with an average of 2189 grams, so that the majority of newborns were classified as low birth weight (59.4%), highlighting the importance of specialized care in these cases, and only 32% were at normal birth weight. Additionally, some neonates were identified as macrosomic (4.7%), indicating a condition in which the baby has an excessively high weight. At this point, it is important to highlight that low weight newborns with CHD have a higher risk of mortality than babies with CHD who are not low weight, as the increased risk is multifactorial, being related to the underlying etiology of CHD and technical issues. related to the absolute size of the newborn, which may be correlated with the genetics of the parents [11].

The management of high-risk patients must consider the pathophysiology of CHD, the pathophysiology attributable to prematurity, intrauterine growth restriction, associated anomalies or syndromes, such as the absolute size of the newborn. It is also evident that even without CHD, premature or small for gestational age (SGA) babies have higher morbidity and mortality than those born at term [11]. The Apgar assessment, which is an indicator of neonatal health, revealed an average of 6.48 in the first minute of life, and an average of 7.91 in the fifth minute. These numbers help to evaluate the newborn's initial adaptation after birth. The 5-minute Apgar score, and particularly the existence of a change

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in the score between 1 minute and 5 minutes, is a useful index of response to resuscitation. However, the Apgar score alone cannot be considered as evidence or consequence of asphyxia, and is not predictive for individual mortality or adverse neurological outcome [12].

The need for resuscitation in the delivery room was observed in 10.9% of cases, highlighting the importance of emergency measures in these crucial moments. Regarding referral, 23.4% were directed to the Neonatal Intensive Care Unit (NICU), while 76.6% went to the neonatal ICU, where they could receive specialized care. With regard to oxygen therapy, this was necessary for 80.5% of neonates, highlighting the importance of adequate respiratory support. Among the oxygen ventilation methods used, 70.3% received invasive ventilation, while 29.7% received non-invasive ventilation. At this point, it is important to emphasize that the administration of oxygen to infants with CHD must be personalized and carefully monitored, considering the specific nature of the cardiac condition and the individual respiratory needs of the neonate. [13,14] There are different methods for carrying out oxygen therapy, which vary according to the clinical condition and severity of the heart disease, with the available options consisting of the administration of supplemental oxygen through nasal cannulas, the use of non-invasive ventilation, or, in more serious cases, mechanical ventilation [15]. Regarding the use of prostaglandins, this was identified in only 6.3% of cases, indicating a lower use of this type of intervention. Prostaglandin is used in neonates with CHD to keep the patent ductus arteriosus (PAD), a structure that connects the aorta and pulmonary artery, open before birth.15 Furthermore, the administration of synthetic prostaglandin, commonly intravenously, helps keep the PAD open, allowing blood to flow properly. This leads to an improvement in oxygenation and blood flow in newborns with CHD, until additional procedures can be carried out, such as corrective cardiac surgery [16].

In relation to the days of hospitalization of newborns, the median obtained from the analyzed records was 21. The median number of days of hospitalization for patients can vary considerably, depending on the type and severity of the heart disease, in addition to other individual factors [17]. Regarding outcomes, the majority of cases (69.5%) were treated clinically, demonstrating the effectiveness of non-invasive treatment. Furthermore, 19.5% of infants were referred to a referral unit, where they could receive specialized care. Unfortunately, 10.9% of cases resulted in death, highlighting the complexity and severity of this condition.

The outcome of CHD varies widely depending on the specific type of heart disease, the severity of the heart defect, the timing of diagnosis and access to specialized medical care. Clinical treatment, referral to cardiac surgery and the risk of death are also influenced by these factors [18,19]. Certain CHDs can be very complex, thus presenting a significant risk of death, especially in cases of complex or severe heart defects. The prevalence of death in newborns with CHD varies from 3% to 9% worldwide [20]. The most common types of CHD found in the present research were Interatrial Communication (ASD) and Patent Ductus Arteriosus (PCA), both present in 23.4% of cases. Furthermore, Patent Foramen Ovale (PFO) was found in 22.7% of cases, while other presentations of CHD were observed in 25.8% of cases (these being Transposition of the Great Arteries (TGA) and Pulmonary Atresia (PA). It is also important to highlight that Interventricular Communication (VSD) occurred in only 2.3% of cases and other types of CHD, such as Atrioventricular Septal Defect (AVSD) and Complex Congenital Heart Disease (CCHD) were less frequent, present in less than 3% of cases.

CHD are classified as acyanogenic or cyanogenic. When analyzing the characteristics of CHD, it was observed that the majority of them were acyanogenic (93%), and cyanogenic CHD were less common, present in only 7% of cases. In a global context, it is estimated that acyanogenic heart diseases represent approximately 70-80% of CHD cases, while cyanogenic heart diseases correspond to approximately 20-30% [21]. Acyanogenic heart diseases are characterized by an adequate blood flow of oxygen to the body. Cyanogenic heart diseases are characterized by an abnormal blood flow that allows oxygenated and deoxygenated blood to mix [22]. Regarding the result of the number of complications associated with CHD, it was observed that the majority of cases (74.2%) contained only one complication, 22.7% of patients had two complications, and 3.1% of medical records had three complications. Finally, the presence of complications in a significant number of patients highlights the need for monitoring and multidisciplinary treatment for these newborns, and it is also correlated that the greater the number of complications associated with CHD, the greater the progression to death.

Final Considerations

In view of the above, regarding infant mortality caused by congenital malformations, it was found that CHD are considered the most predominant cause. Early diagnosis of cardiac anomalies is essential to improve the outcome of CHD. The availability of prenatal exams that can detect these malformations early is crucial to refer cases of complex CHD to specialized services, which have better technical conditions to perform cardiac corrections and act quickly. In conclusion, as the understanding of the pathophysiology and treatment of diseases associated with CHD advances, several studies and guidelines are published. This is extremely relevant, as such data is essential to inform the priorities of policymakers. Knowledge of the prevalence of CHD is essential to establish appropriate conduct and management of newborns with CHD, aiming to provide better care for these patients.

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Therefore, it was possible to verify that the hypothesis was confirmed, as pregnant women who underwent adequate prenatal care, as well as the requested exams and medical recommendations, were already aware of the conditions of the unborn child, a fact that also benefits the tertiary health sector, given that it receives prior information collected by the primary health sector, thus enabling preparation for a birth with specific CHD conditions. Furthermore, statistics highlight the importance of a multidisciplinary and specialized approach to the care of newborns with CHD, with early diagnosis, monitoring and access to appropriate treatments being essential to improving outcomes and ensuring the best possible quality of life for the infants.

References

1. Escobar LM, Carra PM (2021) Proposal for a protocol for the care of newborns with congenital heart disease.
2. Lopes MT, et al. (2017) Statistical models to support surgical evaluation in children with congenital heart disease.
3. MS/SVS/DASIS - Information System on Live Births - SINASC.
4. Reshma K Reddy, Deani H McVadon, Sinai C Zyblewski, Taufiek K Rajab, Ellen Diego, et al. (2022) Prematurity and Congenital Heart Disease: A Contemporary Review. Neo Reviews 23(7): e472-e485.
5. Jean Trines, Deborah Fruitman, Kevin J Zuo, Jeffrey F Smallhorn, Lisa K Hornberger, et al. (2013) Effectiveness of prenatal screening for congenital heart disease: assessment in a jurisdiction with universal aCHDess to health care. Can J Cardiol 29(7): 879-885.
6. N M Pinto, H T Keenan, L L Minich, M D Puchalski, M Heywood, et al. (2012) Barriers to prenatal detection of congenital heart disease: a population-based study. Ultrasound Obstet Gynecol 40(4): 418-425.
7. Bakiler AR, et al. (2007) ACHDuracy of Prenatal Diagnosis of Congenital Heart Disease with Fetal Echocardiography. Fetal Diagn Ther 22(4): 241-244.
8. Mikhail-Paul Cardinal, Marie-Hélène Gagnon, Cassandre Têtu, Francis-Olivier Beauchamp, Louis-Olivier Roy, et al. (2022) Incremental detection of severe congenital heart disease by fetal echocardiography following a normal second trimester ultrasound scan in Québec, Canada. Circ Cardiovasc Imaging 15(4): e013796.
9. Simpson LL (2012) Screening for congenital heart disease. In: Queenan's Management of High- Risk Pregnancy: An Evidence-Based Approach, Pp. 47-54.
10. Victoria Asfour, Michael O Murphy, Rizwan Attia (2013) Is vaginal delivery or caesarean section the safer mode of delivery in patients with adult congenital heart disease? Interact Cardiovasc Thorac Surg 17(1): 144-150.
11. Ades A, Johnson BA, Berger S (2005) Management of Low-Birth-Weight Infants with Congenital Heart Disease. Clin Perinatol 32(4): 999-1015.
12. (2015) American Academy of Pediatrics Committee on Fetus and Newborn. The apgar score. Pediatrics 136(4): 819-822.
13. Johnson BA, Ades A (2005) Delivery room and early postnatal management of neonates who have prenatally diagnosed congenital heart disease. Clin Perinatol 32(4): 921-946.
14. Markus Khalil, Christian Jux, Lucie Rueblinger, Johanna Behrje, Anoosh Esmaeili, et al. (2019) Acute therapy of newborns with critical congenital heart disease. Pediatr Transl 8(2): 114-126.
15. Sandesh Shivananda, Joel Kirsh, Hilary E Whyte, Koshy Muthalally, Patrick J McNamara (2010) Impact of oxygen saturation targets and oxygen therapy during the transport of neonates with clinically suspected congenital heart disease. Neonatology 97(2): 154-162.
16. H H Kramer, M Sommer, S Rammos, O Krogmann (1995) Evaluation of low dose prostaglandin E1 treatment for ductus dependent congenital heart disease. Eur J Pediatr 154(9): 700-707.
17. Andrew S Mackie, Raluca Ionescu-Ittu, Louise Pilote, Elham Rahme, Ariane J Marelli (2008) Hospital readmissions in children with congenital heart disease: a population-based study. Am Heart J 155(3): 577-584.
18. M J Silka, B G Hardy, V D Menashe, C D Morris (1998) A population-based prospective evaluation of risk of sudden cardiac death after operation for common congenital heart defects. J Am Coll Cardiol 32(1): 245-251.
19. Helen Dolk, Maria Loane, Ester Garne (2011) Congenital heart defects in Europe: prevalence and perinatal mortality, 2000 to 2005. Circulation 123(8): 841-849.
20. Babak Khoshnood, Nathalie Lelong, Lucile Houyel, Anne-Claire Thieulin, Jean-Marie Jouannic, et al. (2012) Prevalence, timing of diagnosis and mortality of newborns with congenital heart defects: a population-based study. Heart 98(22): 1667-1673.
21. Hoffman JI, Kaplan S, Liberson RR (2004) Prevalence of congenital heart disease. Am Heart J 147(3): 425-439.
22. Denise van der Linde, Elisabeth E M Konings, Maarten A Slager, Maarten Witsenburg, Willem A Helbing, et al. (2011) Birth prevalence of congenital heart disease worldwide: a systematic review and meta-analysis. J Am Coll Cardiol 58(21): 2241-2247.

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