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MAIN CONGENITAL HEART DISEASES IN NEONATAL INTENSIVE CARE: AN INTEGRATIVE REVIEW

PRINCIPAIS CARDIOPATIAS CONGÊNITAS NA TERAPIA INTENSIVA NEONATAL: UMA REVISÃO INTEGRATIVA

Ionara Ferreira de Sousa - ionara.sousa12@gmail.com
Nursing student at the Northeast Adventist University Center - UNIAENE, Cachoeira, Bahia, Brasil.
Samara Trindade de Almeida Sena Mendes - samara.student01@gmail.com
Nursing student at the Northeast Adventist University Center - UNIAENE, Cachoeira, Bahia, Brasil.
Kauan Alcântara Teixeira de Menezes - kauanmennezeskm@gmail.com
Nursing student at the Northeast Adventist University Center - UNIAENE, Cachoeira, Bahia, Brasil.
Jailson Vieira Machado - jailsonvmachado@gmail.com
Master in Health Technologies from the Bahiana School of Medicine and Public Health - EBMSP; Professor of the Nursing course at the Northeast Adventist University Center - UNIAENE, Cachoeira, Bahia, Brasil.

Abstract: Introduction: Congenital heart defects compromise cardiovascular hemodynamics and are the most common congenital malformations with a high morbidity and mortality rate. In this way, nursing plays a leading role in neonatal intensive care, since it acts directly in the intensive care of the newborn, with technical-scientific skills and prioritizing humanized care. **Objective:** To understand from the literature which congenital heart diseases affect newborns in the Neonatal Intensive Care Unit. **Methodology:** This is an Integrative Literature Review with a qualitative approach, carried out in August 2022 in the SciELO, LILACS, PubMed and MEDLINE databases using the descriptors: Congenital Heart Disease; Neonatal Intensive Care Units; Newborns and Nursing Care, combined with the Boolean operators "AND" and "OR". The inclusion criteria were articles published between 2017 and 2022, full text, Portuguese and English languages, and that addressed the theme, obtaining 5 articles as the final sample. **Results:** The main congenital heart defects identified were atrial septal defect, ventricular septal defect, pulmonary stenosis and patent ductus arteriosus. In terms of clinical profile, there was a predominance of males, prematurity, low birth weight, small for gestational age, and the need for invasive procedures with an emphasis on mechanical ventilation. As for nursing care, none of the studies selected addressed this issue. **Final Considerations:** The conclusion is that there is a need for more in-depth and recent studies that provide up-to-date information on the knowledge of heart disease, the profile of neonates, the treatments available, as well as the diagnosis and care provided to these patients, as the lack of this information led to limitations in this

study.

Keywords: Congenital Heart Diseases; Neonatal Intensive Care Units; Newborn; Nursing Care.

INTRODUCTION

Congenital heart disease (CC) corresponds to the most frequent congenital malformations with the highest rate of morbidity and mortality[1]. This condition compromises cardiovascular hemodynamics, which may or may not generate manifestations after birth, and later in childhood or adulthood[2] . Cardiac malformations are CC, but common isolated anomaly, which corresponds to 3 to 5% of deaths in neonates [3,4].

It should be noted that factors of environmental and genetic nature directly influence cardiac changes[4] . CCs can be classified according to their physiological changes, corresponding to two distinct groups, being cyanotic and acyanotic [5].

Among the general population, it is estimated that 130 million newborns are affected annually, and the incidence of presumed CC is 8 to 10 cases in every 1,000 live births [2.6]. CC represent the third cause of death among neonates, and of the four million deaths in the neonatal period in the world, 7% of these are related to CC [5]. In Brazil, the incidence per 1,000 live births varies from 2 to 10 cases [2].

In a cross-sectional study conducted in two hospital units in the city of Rio de Janeiro, Brazil, it was identified that among the patients with CC, those referring to the acyanotic group corresponded to 39.6%, and in children the interatrial communication (IAD) and the interventricular communication (IVC) obtained greater prominence. Regarding the cyanotic group, only 25% made up the sample, with emphasis on the transposition of the great arteries [5].

Thus, the Neonatal Intensive Care Unit (NICU) has the direction focused on assisting newborns who need comprehensive care, of high complexity, and continuous care, through strategic actions, humanized care, as well as the use of technologies for integrated care to the comfort of the newborn (RN) [7,8].

The nursing professional who tends to work in an Intensive Care Unit (ICU) needs to have skills and competencies to act in critical situations and adverse events, ensuring quality in comprehensive and decisive patient care, as well as performing care process practices [9].

Given the above, it is considered essential to know the main congenital heart diseases that harm this vulnerable group, since they are configured as one of the main causes of death in the neonatal period. The nurse has a preponderant role in the ICU since she works directly in neonatal intensive care, with technical-scientific skills and prioritizing humanized care.

Therefore, this study aims to understand in the literature which CCs affect the NBs in the NICU.

METHODOLOGY

This is an Integrative Literature Review (RIL) with a qualitative approach. The method allows a condensation of the knowledge found in the various studies available in a given area of health, providing professionals with a better use of this evidence, as well as the introduction and use of the results in practice [10].

The construction of this RIL followed six phases: 1ª phase - elaboration of the guiding question; 2nd phase - performing the search in databases and definition of criteria; 3rd phase - use of instruments to extract detailed information from each study; 4th phase - critical inspection of each included study; 5th phase - presentation of the selected studies; and in the 6th phase - exposition of the results of each study [11].

In the first phase, for the refinement of the guiding question, the adapted PICo strategy was used, which corresponds to the acronym P: population; I: to the phenomenon of interest; and Co: to the analyzed context[12], resulting in the following question: "What are the main congenital heart diseases in newborns in the neonatal intensive care unit?".

In the second phase, a search was carried out in the databases: Scientific Electronic Library Online (SciELO), Latin American and Caribbean Literature in Health Sciences (LILACS) available through the Virtual Health Library (VHL), US National Library of Medicine (PubMed) and Medical Literature Analysis and Retrievel System Online (MEDLINE), made in August 2022. To define the keywords, we considered both the Descriptors in Health Sciences (DeCS): Congenital Heart Diseases; Neonatal Intensive Care Units; Newborn and Nursing Care; as well as the Medical Subject Headings (MeSH): Heart Defects, Congenital, Intensive Care Units, Neonatal, Infant, Newborn, Nursing Care, crossing these with the Boolean operators “AND” and “OR”.

The criteria determined for the inclusion of articles were: studies that addressed the theme, published in full in the period from 2017 to 2022, in Portuguese and English. Duplicate articles, incomplete texts, abstracts, course completion works, monographs, and theoretical review articles were excluded from the work. Table 1 describes the results obtained.

Table 1 – Crossing of DECS/MESH descriptors. Cachoeira, BA – Brazil.

DATABASE	CROSSING	ARTICLES FOUND	AFTER APPLYING FILTERS	EXCLUDED ARTICLES*	FINAL ARTICLES
SCIELO	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Neonatal Intensive Care Units" OR "Intensive Care Units, Neonatal"	231	60	59	1
	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Neonatal Intensive Care Units" OR "Intensive Care Units, Neonatal" AND "Nursing Care" OR "Nursing Care"	0	0	0	0
	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Newborn" OR "Infant, Newborn" AND "Nursing Care" OR "Nursing Care"	13	4	4	0
LILACS	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Neonatal Intensive Care Units" OR "Intensive Care Units, Neonatal"	11	2	2	2
	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Neonatal Intensive Care Units" OR "Intensive Care Units, Neonatal" AND "Nursing Care" OR "Nursing Care"	0	0	0	0
	"Congenital Heart Defects" OR "Heart Defects, Congenital" AND "Newborn" OR "Infant, Newborn" AND "Nursing Care" OR "Nursing Care"	16	1	1	0
PUBMED	"Heart Defects, Congenital" AND "Intensive Care Units, Neonatal"	193	50	50	0
	"Heart Defects, Congenital" AND "Intensive Care Units, Neonatal" AND "Nursing Care"	3	1	1	0
	"Heart Defects, Congenital" AND "Infant, Newbornl" AND "Nursing Care"	39	5	5	0
	"Heart Defects, Congenital" AND "Intensive Care Units, Neonatal"	195	56	54	2

MEDLINE	"Heart Defects, Congenital" AND "Intensive Care Units, Neonatal" AND "Nursing Care"	13	4	4	0
	"Heart Defects, Congenital" AND "Infant, Newbornl" AND "Nursing Care"	0	0	0	0
TOTAL					5

Source: Authors themselves, 2022.
*Articles excluded after reading the title, abstract and full text.

The third phase consisted of extracting the relevant information from the selected articles, where we used the Ursi (2005) form adapted(10), composed of five parts: Identification, Institution host of the study, Type of scientific journal, Methodological characteristics of the study and the Evaluation of methodological rigor. Then, going to the 4th phase, we analyzed the studies by classifying them in the hierarchy of levels of evidence, being: Level 1: evidence resulting from meta-analysis and controlled and randomized clinical studies; Level 2: evidence with experimental design; Level 3: quasi-experimental evidence; Level 4: evidence from non-experimental studies or qualitative approach; Level 5: evidence from case or experience reports; Level 6: evidence with expert opinions [10].

RESULTS

From the aforementioned criteria, and leaving for the fifth phase, five articles were selected, two in LILACS, two in MEDLINE, and one in SciELO. Regarding the year of publication, two articles were found in 2019, in sequence an article appeared both in the years 2017, 2018, 2020. In relation to the country of origin, the sample proved to be diverse, with Brazil having three articles being the country with the highest number of publications, followed by Turkey and the United States with one study each. Regarding the level of evidence, all studies presented level four of evidence by the criterion of Evidence-Based Practice[10], we emphasize that the type of retrospective study appeared in three articles, followed by the type of cross-sectional study in two. To improve the understanding of the results, we consider the following variables of the selected articles: database, title, authors, country of origin, journal, year/place, design and level of scientific evidence, explained in table 2.

Table 2 - Articles included in the integrative review, their categorization and degree of evidence. Cachoeira, Bahia, Brazil.

Database	Title	Authors	Country of origin	Periodical/Year	Methodological Design	Level of Evidence
SciELO	Findings from clinical evaluation of swallowing in infants with post-surgical heart disease(13) [13]	Souza PC de, Gigoski VS, Etges CL, Barbosa L da R.	Brazil	CoDAS, 2018.	Transversal	4
Lilacs	Characteristics of Congenital Heart of Premature Newborns[14]	Sena G de S, Sampaio SSS, Torres VB, Azevedo IG, Arrais NMR, Bezerra IFD, et al.	Brazil	Journal of Health Sciences, 2019.	Retrospective	4
Lilacs	Drug-related problems in cardiac neonates under intensive care[15]	Nascimento ARF do, Leopoldino RWD, Santos MET dos, Costa TX da, Martins RR.	Brazil	Revista Paulista de Pediatria, 2020.	Transversal	4
Medline	Does prenatal diagnosis of critical congenital heart diseases influence the prereferral mortality in a center without surgical intervention?[16]	Özer Bekmez B, Alyamaç Dizdar E, Okur N, Büyüktiryaki M, Uraş N, Oğuz SS.	Turquey	The Journal of Maternal-Fetal & Neonatal Medicine, 2019.	Retrospective	4
Medline	Congenital Heart Disease in Premature Infants 25-32 Weeks' Gestational Age[17]	Chu PY, Li JS, Kosinski AS, Hornik CP, Hill KD.	United States	The Journal of Pediatrics, 2017.	Retrospective Cohort	4

Source: Authors themselves, 2022.

In the sixth phase of the RIL, which corresponds to the presentation of the results of each study, the main CCs found in the NICU, the clinical profile of the neonates, as well as the nursing care and their respective authors are exposed in table 3.

Table 3 - Congenital heart disease in the Neonatal Intensive Care Unit (NICU), clinical profile of newborns, nursing care and respective authors. Cachoeira, BA – Brazil.

Study number	Congenital heart disease in the NICU	Clinical profile of newborns	Nursing care	Authorship
1	Coarctation of the aorta (11);	Surgical procedure (31);	Not evidenced.	Souza PC de,

	Ventricular septal defect (10); Patent ductus arteriosus (8); Atrial septal defect (8); Pulmonary stenosis (6); Patent foramen ovale (3); Transposition of the great arteries (2); Intracardiac tumor (2); Supravalvular aortic stenosis (1); Tricuspid atresia (1); Hypoplastic left heart syndrome (1); Atrioventricular septal defect (1); Hypoplastic aortic arch (1).	Invasive mechanical ventilation through Orotracheal Intubation (OTI) (31); Eutrophic (24); Acyanotic heart disease (24); Male gender (18); Use of enteral tube (15); Female gender (13); Cyanotic heart disease (7); Low weight (7).		Gigoski VS, Etges CL, Barbosa L da R (2018)[13].
2	Patent ductus arteriosus (38); Pulmonary stenosis (12); Ventricular septal defect (3); Atrial septal defect (3); Transposition of the great arteries (1); Double outlet right ventricle (1).	Birth weight (1.075-1.370 median); Gestational age in weeks (28-30 median); Invasive mechanical ventilation (48); Respiratory distress (28); Atelectasis (8); Pulmonary hypertension (6); Surgical indication (3).	Not evidenced.	Sena G de S, Sampaio SSS, Torres VB, Azevedo IG, Arrais NMR, Bezerra IFD, et al. (2019)[14].
3	Patent ductus arteriosus (37), Atrial septal defect (23), Ventricular septal defect (23), Pulmonary artery atresia/stenosis (11), Heart valve defects (10), Coarctation of the aorta (9), Transposition of the great vessels (7); Cardiomyopathies (4); Arrhythmias (3).	Idade gestacional em semanas (33,1 média); Peso ao nascer, em gramas (2.084 média); Uso de medicamentos (12,4 média); Gênero: masculino (65), feminino (57); Óbito (23).	Not evidenced.	Nascimento ARF do, Leopoldino RWD, Santos MET dos, Costa TX da, Martins RR (2020)[15].
4	Tetralogy of Fallot with pulmonary atresia (12); Hypoplastic left heart syndrome (12); Complex cardiac anomaly (10); Transposition of the great arteries (9); Critical pulmonary stenosis (6); Coarctation of the aorta (6); Hypoplastic right heart syndrome (5); Interrupted aortic arch (5); Pulmonary atresia with ventricular septal defect (4); Tricuspid atresia (4); Total anomalous pulmonary venous return (3); Ebstein's anomaly (1).	Birth weight (2.770 - 2.810 median); Gestational age in weeks (38 median); Prostaglandin use (58); Male sex (38); Mechanical ventilation (25); Small for gestational age (SGA) (19).	Not evidenced.	Özer Bekmez B, Alyamaç Dizdar E, Okur N, Büyüktiryaki M, Uraş N, Oğuz SS (2019)[16].
5	Atrial septal defect (23,299); Ventricular septal defect (4,514); Pulmonary stenosis (1,771); Hypoplastic left heart syndrome (556); Tetralogy of Fallot (306); Coarctation (286); Atrioventricular canal defect (172); Interrupted aortic arch (102); Aortic stenosis (94); Pulmonary atresia (94);	Very/Extremely premature (28,806); Female (13,982); Race/Color white (11,398); Small for gestational age (SGA) (1,705).	Not evidenced.	Chu PY, Li JS, Kosinski AS, Hornik CP, Hill KD (2017)[17].

	Double-socket right ventricle (87); Transposition of the great arteries (84); Truncus arteriosus (62); Tricuspid atresia (47); Ebstein's anomaly (41); Common ventricle (35); Total anomalous pulmonary venous return (27).			

Source: Authors themselves, 2022.

Given the analysis of the articles, we selected the three main heart diseases that appeared in each study with the largest number, so we identified that by bringing together articles 1, 3 and 5 the Atrial Communication/Atrial Septal Defect (ACD) was the main CC found, followed by the Interventricular Communication/Ventricular Septal Defect (VIV). When analyzing articles 2 and 5 we found Pulmonary Stenosis, and therefore Arterial Canal Persistence (PCA) in articles 1, 2, and 3. The following CCs were found in smaller quantities in articles 1 and 4: Tetralogy of Fallot with Pulmonary Atresia, Hypoplastic Left Heart Syndrome, Aortic Coarctation and Complex Cardiac Anomaly.

Regarding the clinical profile of newborns, it is noted that in article 5 the female gender predominates, however, when analyzing the other articles 1, 3 and 4, the male gender presents itself with primacy. In addition, in terms of weight, both in articles 1, 2, 3 and 5 the newborns revealed to have low weight, highlighting the prematurity according to the Gestational Age (GI) in articles 2, 3 and 5. With regard to articles 4 and 5, newborns were configured as Small for gestational age (GIP). Regarding invasive procedures, mechanical ventilation was presented in articles 1, 2 and 4.

We highlight that after the application of the crosses, none of those focused on nursing care presented compatible studies for inclusion in the sample to be analyzed by this RIL, and those who were selected did not discuss this subject.

DISCUSSION

The CC are configured as congenital anomaly of greater frequency and lethality, being classified into cyanotic, which correspond to the lesions that cause cyanosis, and acyanotic lesions that do not cause cyanosis. Nursing has a crucial role in the care of patients with CC, as it provides direct assistance to newborns, having a critical and broad vision, which makes it possible to identify the signs and symptoms manifested.

The most recurrent WC in neonates in this study were ASD, IVD, Pulmonary Stenosis and PCA, which differ from a study conducted in a reference Hospital in Pediatric Cardiology in the city of Campo Largo, Paraná, Brazil(18), which used 77 medical records of children in which the main WC found were IVC, ASD and PCA. It should be noted that in a cross-sectional study conducted in two hospital units in the city of Rio de Janeiro, Brazil, the CIA and the IVC were

highlighted regarding the acyanotic group[5], however, both aforementioned studies were conducted with children from 0 to 10 years and 0 to 19 years, respectively, which justifies the discrepancy found in this study with newborns hospitalized in a NICU.

An investigation conducted through the Department of Informatics of the Unified Health System (DATASUS) in the northern region of Brazil, showed that ASD and IVD are the main cardiac malformations responsible for deaths in the first year of life [19].

In addition, an analysis made with 118 NBs highlighted that the most prevalent CCs observed were the transposition of the great arteries 11.9%, coarctation of the aorta 10.2%, tetralogy of Fallot and IVS 9.3% and pulmonary stenosis with 7.6%(20), while in the present study, coarctation of the aorta and tetralogy of Fallot appeared in smaller numbers. Some authors portray in their studies that Fallot's Tetralogy is the WC of the most common cyanotic type corresponding to 10% of all heart diseases [18,21].

In line with the presence of two or more heart diseases found in articles 1, 3 and 4, similar results were found, in which about 80% of the children had two or more heart diseases, and when they had two CC classifications, the most frequent were: PCA+CIA in most cases; and with three classifications in smaller numbers: the IVS+CIA+Pulmonary stenosis(18). Gender of birth is also an important characteristic to be observed.

It is known that male newborns are the most affected by CC when compared to females. A study conducted in a Maternal and Child Hospital in Brasília, Distrito Federal, Brazil, analyzed 58 medical records of children with WC aged 0 to 10 years, identifying the prevalence for males 68%(22), unlike a study conducted in a pediatric ICU in Paraná, Brazil, which also analyzed medical records of children of the same age group, however, this one obtained prevalence for females 53%(18). Although there is this differentiation between the aforementioned findings, in two cross-sectional, descriptive and hospital-based analyzes, carried out both at the Hospital and Emergency Room of the Child South Zone in the city of Manaus, Amazonas, Brazil, and in hospital units in the city of Rio das Ostras, Rio de Janeiro, Brazil, we found results similar to those obtained in this study, showing in their articles that the male sex also corresponds to the most affected profile [23,5].

As for the treatment of heart disease, it is emphasized that it will depend on the type and importance, considering that pharmacological or surgical measures in mild heart disease are not necessary, as there is a possibility of spontaneous cure. In some cases there is a need for heart surgery and medication [24,22].

Early surgical interventions, when recommended, serve to repair the physiological failures caused by CC, causing greater survival and well-being of the carriers [18]. Regarding the use of medicines, an empirical RIL prepared in 2020 pointed out that treatment can be done with the use of Prostaglandin E-1, or by other drugs such as Dopamine, Dobutamine, Epinephrine, Sildenafil,

Captopril, and Furosemide, depending on the patient's needs [25].

Regarding invasive procedures, articles 1, 2 and 4 highlighted the use of invasive mechanical ventilation in neonates affected by heart disease, revealing that this intervention helps in the maintenance of breathing, as well as in reducing respiratory muscle fatigue and increasing the comfort of the NB.

In a survey involving 20 infants with CC, it was highlighted that five of the participants needed some ventilatory support [26]. Similarly, an analysis involving very low birth weight premature newborns with CC found that in this group, the use of invasive mechanical ventilation was more frequent and for a longer time, which is associated with increased mortality [27]. Another study containing medical records of 379 patients undergoing surgery and who were in the ICU, within those belonging to the group of newborns, 27 of the individuals who received surgical interventions and were kept in the pediatric ICU remained with the help of invasive mechanical ventilation [28].

Neonates with WC are usually below the ideal birth weight (< 2,500g), as also evidenced in a retrospective documentary research which analyzed 77 medical records of children with CC, highlighting that the chances of the presence of heart disease are higher in babies weighing below that recommended for birth[18]. It should be noted that prematurity, low weight, as well as a bad Apgar index are associated with congenital malformations(29). The risk of death in newborns with severe congenital heart disease (SCC) is twice as high among premature infants with low birth weight and Apgar < 7 in the first minute of life [30].

We emphasize that the early detection of CC has increased due to the effective implementation of the public policies of the Ministry of Health, which have the purpose of diagnosis and specialized intervention, promoting comprehensive care for children with CC(31). In an ecological study prepared between the years 2008 and 2013, it was identified that infant mortality rates tended to decline, with the possibility of underreporting and underdiagnosis of cases, impairing the reliability of the data [32].

To develop effective care for patients with CC, the nursing team uses some important tools such as the Nursing Process, which was implemented by Wanda Horta in the 1970s, which consists of five fundamental steps: investigation, diagnosis, planning, implementation and evaluation [33]. It is during the diagnostic stage that the nurse analyzes the collected data and identifies the patient's care needs, as well as their risks, defining the diagnoses based on NANDA International, Inc.

Therefore, a RIL that analyzed three articles of the year 2017 presented the following real and risk diagnoses identified: Hyperthermia; Ineffective cleaning of the upper airways; Ineffective unblocking of the airways; Ineffective respiratory pattern; Disturbed sleep pattern; Risk of changes in the respiratory pattern; Risk of decreased cardiac output; Risk of changes in heart rate, blood pressure and heart rhythm; Risk of changes in fluid volume; Risk of temperature changes; Risk

of damage to skin integrity; and Risk of infection [2].

Similar to the above, in a study involving 82 children admitted to a cardiology reference hospital in the city of Rio de Janeiro, Brazil, we observed the diagnoses of Hyperthermia, Ineffective airway clearance, Ineffective respiratory pattern and Risk of infection. We also identified other real and risk diagnoses present in their analysis, such as: Impaired gas exchange; Intolerance to activity; Decreased cardiac output; Ineffective peripheral tissue perfusion; Delayed growth and development; Disorganized infant behavior; Impaired skin integrity; Constipation; Acute pain; Excessive fluid volume; Risk of activity intolerance; Risk of caregiver role tension; Risk of bleeding; Risk of aspiration; Risk of decreased cardiac tissue perfusion; and Risk of shock [34].

In the face of the identified diagnoses, the nursing professional acts in order to prevent or solve serious problems presented by neonates with CC, acting in the monitoring of vital signs, central venous pressure, urinary output; observing pulse oximetry; performing the aspiration of upper airways and/or orotracheal tube; providing care with drains, catheters and other devices; performing pain control and minimizing the handling of the NB; in addition to monitoring laboratory tests in order to identify electrolyte, ventilatory or metabolic changes [2,35]. The discrimination of the actions carried out by nurses contributes to the analysis of the impact of nursing care on the needs of newborns in the highly complex sector. The author believes that the theories of care, when applied from academic training, have a fundamental role in nursing in its bases.

It should be noted that the diagnoses, as well as the care presented, were obtained from studies found in the literature available on the internet, since in the searches carried out in the SciELO, LILACS, PubMed and MEDLINE databases using the defined crossings, applying the period and language filters, and after a thorough selection of works that addressed the theme, no articles were found that met the inclusion criteria; and the studies selected to compose this work did not discuss this subject.

CONCLUSION

The main CCs that most affected the NBs hospitalized in the NICU observed in this study were: ASD, IVC, Pulmonary Stenosis and Persistence of the Arterial Canal. And in lesser predominance, Tetralogy of Fallot with Pulmonary Atresia, Hypoplastic Left Heart Syndrome, Aortic Coarctation and Complex Cardiac Anomaly. It should be noted that there is a possibility that one heart disease is associated with another.

Regarding the profile of newborns, we observed that, as much as the female gender appeared significantly in the studies, the one that prevailed was the male gender. Most of those affected by heart disease presented themselves as premature, low birth weight and SGA, requiring at some point invasive procedures, with emphasis on mechanical ventilation.

The most prominent nursing diagnoses obtained through additional searches in literature not indexed in the proposed databases were: Hyperthermia, Ineffective airway clearance, Ineffective respiratory pattern and risk of infection. Nursing care, on the other hand, corresponded to the monitoring of vital signs and clinical condition, maintenance of devices, pain control and stressors. We emphasize the need for more recent studies that address nursing diagnoses and care for NBs with CC hospitalized in the NICU, because there is a shortage of work on the subject, which caused a deficit in this research.

It should also be noted that one of the limitations of this study was the absence of current and experimental investigations or controlled and randomized clinical trials, since the data contained in this type of analysis have the most reliable methodological rigor.

Given the above, and in association with high mortality from CC, more in-depth and recent studies are necessary, which bring updated information on heart disease, the profile of newborns, available treatments, as well as the diagnoses and care provided to these patients, because the lack of this information generated limitations to this study.

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