Original Article

Prevalence of respiratory nursing diagnoses in Neonatal Intensive Care Units

Tamires Mesquita de Sousa[1], Viviane Martins da Silva[2], Fernanda Cavalcante Fontenele[3], Marcos Venícios de Oliveira Lopes[4], Alline Ramos Araújo[5], Anna Virgínia Viana Cardoso Dantas[6], Larissa Gabrielle Dias Vieira[7], Tânia Alteniza Leandro[8]

ABSTRACT

To identify the prevalence of the nursing diagnoses: Ineffective breathing pattern (IBP), Impaired gas exchange (IGE) and, Impaired spontaneous ventilation (ISV) and their clinical indicators in newborns admitted in Neonatal Intensive Care Units. This is a cross-sectional study, with a quantitative approach, carried out with 154 newborns. The data were collected through gasometry inspection and assessment. For the analysis, the tests used were: Pearson's Chi-Square test and Fisher's Exact test. The diagnoses presented high prevalence: ISV 94.2%; IGE 88.3% and, IBP 87.7%. Dyspnea and Increase in accessory muscle use were the most prevalent clinical indicators for ISV and IBP. For IGE, they were Dyspnea and Abnormal skin color. The association showed a significant correlation for few prevalent indicators: dyspnea, decrease in partial pressure of oxygen/hypoxemia, increase in accessory muscle use, abnormal breathing pattern, tachypnea, bradypnea, a decrease in carbon dioxide and, arterial blood gases. ISV, IGE, and IBP were highly prevalent in newborns of Intensive Care Units.

Descriptors: Nursing Diagnosis; Neonatology; Intensive Care Units, Neonatal; Neonatal Nursing.

[1] Nurse. Student of the Nursing Graduate Program, Master's level, at the Federal University of Ceará. Fortaleza, CE, Brazil. E-mail: tamires.mesquita@yahoo.com.br.

[2] Nurse, Ph.D. in Nursing. Associate Professor at the Federal University of Ceará, Porangabuçu Campus. Fortaleza, CE, Brazil.E-mail: viviane.silva@ufc.br.

[3] Nurse, Ph.D. in Nursing. Adjunct Professor of the University Center Estácio of Ceará, Via Corpvs Campus. Fortaleza, CE, Brazil. E-mail: fernanda_meac@hotmail.com.

[4] Nurse, Ph.D. in Nursing. Associate Professor at the Federal University of Ceará, Porangabuçu Campus. Fortaleza, CE, Brazil. E-mail: marcos@ufc.br.

[5] Nurse. Nurse of the Family Health Strategy. Russas, CE, Brazil. E-mail: alline_ra@yahoo.com.br.

[6] Nurse, Master of Nursing. Student of the Nursing Graduate Program, Doctoral level, at the Federal University of Ceará. Fortaleza, CE, Brazil. E-mail: annavirginiaviana@gmail.com.

[7] Nurse. Master of Nursing. Fortaleza, CE, Brazil. E-mail: larissagabrielle@hotmail.com.

[8] Nurse, Master of Nursing. Student of the Nursing Graduate Program, Doctoral level, at the Federal University of Ceará. Fortaleza, CE, Brazil. taniallt@yahoo.com.br.

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INTRODUCTION

Respiratory distress in premature newborns (NBs) relates to deficiency of gas exchange due to pulmonary immaturity, decrease and/or surfactant insufficiency, constituting one of the causes of neonatal mortality. Thus, the signs and symptoms associated with respiratory discomfort in this population are very severe, compromising the respiratory function and the alveolar ventilation. It can cause hypoxemia, acid-basic disorders and, respiratory insufficiency[1].

Due to this clinical condition, it is indispensable for the nurse to be proficient in knowledge and in the processability to propitiate safe and efficacious care. One of the ways to provide care is through the use of Nursing Diagnoses (NDs) because they contribute to the promotion, prevention, recovery and rehabilitation of the individual, family and, community. They also provide the knowledge of human responses to the professional who is in practice. Thus, it directs the professional to intervene in the health-disease process of these individuals, which increases and subsidizes the quality of the provided assistance.

It is known that the respiratory NDs are commonly a priority because they directly affect the tissue oxygenation. Because this is a vital function of the body, there is a need for the nurse to create quick and resolutive evidence-based interventions. It requires good clinical thinking intended to predict more accurate diagnoses and to select adequate interventions[2].

Considering the direct compromising of the airways, high-risk newborns can develop human responses as the ineffective breathing pattern (IBP), Impaired gas exchange (IGE) and Impaired spontaneous ventilation (ISV)[3]. These respiratory diagnoses present common signs and symptoms, which difficult the diagnostic inference and its implementation into practice by nurses.

Studies about the respiratory NDs were found in the pediatric population with asthma, acute respiratory insufficiency, and congenital cardiopathy. In these, the assessed populations presented a high prevalence of specific diagnoses[4-7]. In the NB population, studies with respiratory diagnoses indicate a gap in the evidence for the identification of the defining characteristics[8], conceptual validation of the defining characteristics[9], as well as the assessment of the frequency of respiratory diagnoses and the accuracy of their clinical indicators in premature NBs[10]. Therefore, it is noted that studies showing the prevalence of respiratory NDs in this population in intensive care units are still insufficient.

Thus, research involving the prevalence of respiratory nursing diagnoses in premature NB population is indispensable for the choice of adequate interventions, considering that the care responsibility of the nursing is grounded in the assessment of the health state of these individuals. Considering this context, it is assumed that an improvement in the clinical practice can direct the nurse to intervene specifically in respiratory issues of the child and it is believed that this can reflect in the reduction of neonatal morbidity and mortality of high-risk newborns.

Considering what was mentioned, there is the need to deepen the theme of respiratory nursing diagnoses in neonatology. There is a belief in the relevance of this study, in a trial to favor the nursing professional, and the perception of the amplitude of this theme, for the improvement of assistance activities in the care for the NB and its implication in developing the action plan[11].

The objectives are to identify the prevalence of the nursing diagnoses IGE, ISV and IBP and their clinical indicators in newborns admitted in Neonatal Intensive Care Units (NICUs). Also, to verify the association between the clinical indicators and the presence of the referred NDs.

METHODS

It is a cross-sectional study with a quantitative approach. The study was conducted in two Neonatal Intensive Care Units of reference maternity for the whole state of the northeast region of Brazil. One was a tertiary hospital with attention directed to high-risk management and to the mother-child binomial. The hospital currently has a structure with 24 medical offices and 211 hospital beds. From these, 21 beds are designated for the neonatology intensive care service, divided between the two units.

Newborns took part in the study, of both sexes, admitted in two Neonatal Intensive Care Units of the referred hospital. The inclusion criteria were: NBs in oxygen therapy Continuous Positive Airway Pressure (CPAP), non-invasive ventilation (NIV) and invasive mechanical ventilation (IMV) and with daily arterial gasometry collection. As exclusion criteria, it was established: NBs with congenital malformations, as they could influence the presence of respiratory diagnoses or the use of other types of oxygen therapy (e.g., oxihood, nasal catheter), in which the gasometry collection was not routinely conducted due to institutional matters. However, this test is a fundamental marker for the assessment of a few clinical indicators. The inclusion and exclusion criteria were standardized for the whole sample, intended not to overestimate the prevalence of a specific diagnosis.

The sample was composed of 154 NBs selected by convenience in a consecutive manner, representing 47.82% of the children who were admitted to the units during the data collection period. There were 15 denials of parents regarding the participation of their children. The sample calculation was determined by the formula applied for cross-sectional studies, and it used the following parameters: confidence level of 95%, the proportion of individuals with the phenomenon of interest 50% and, a sampling error of 8%. For the data collection, an instrument[12] previously used in a study was adapted to allow the identification of the clinical indicators of the diagnoses according to the NANDA International, Inc. (NANDA-I) [3]. The material was divided into two parts: personal data and clinical conditions of the birth and, after, assessment of the clinical indicators.

A clinical protocol with conceptual (meaning) and operational (how it was measured) definitions of each clinical indicator was adapted from previous studies[12-13] and used in the present research to standardize the data collection and to help classify the presence or absence of each indicator.

The data were collected during the months of February to June of 2017 by two assistant nurses previously trained, both selected in accordance with the literature recommendations[14]. They had publications and participation in research groups in the field of nursing diagnoses and child, as well as clinical experience. It is important to highlight that the training to standardize the data collection was given in a four-hour workshop. At this moment, the clinical protocol and the collection instrument were explained. The data measurement was initiated after the confirmation of the inclusion and exclusion criteria of participants and with the consent of the parents through the signature of the Free and Informed Consent Term. The instrument was filled out at the measure that the clinical assessment was conducted. After, the arterial gasometry result was verified.

In this study, the following clinical indicators were assessed: nasal flaring; bradypnea; dyspnea; tachypnea; abnormal breathing pattern; use of accessory muscles referring to IBP. For ISV: dyspnea, increase in heart beat, increase in partial pressure of carbon dioxide, decrease in partial pressure of oxygen, decrease in arterial oxygen saturation and, use of accessory muscle. Yet, for IGE: nasal flaring, cyanosis, abnormal skin color, diaphoresis, decrease in carbon dioxide, dyspnea, abnormal blood gases, hypercapnia, hypoxemia, hypoxia, irritability, abnormal breathing pattern, abnormal arterial pH and, tachycardia. It is noted that the indicators similar to the studied diagnoses were assessed in one unique moment, to know: nasal flaring; dyspnea; abnormal breathing pattern; use of accessory muscle; increased heart rate/tachycardia; decrease in partial pressure of oxygen/hypoxemia; increase in partial pressure of carbon dioxide/hypercapnia.

It is important to highlight that orthopnea, increase in anterior-posterior chest diameter and, altered chest excursion were not measured due to recommendations regarding the minimum handling and unstable hemodynamic condition of NBs. Yet the clinical indicators decrease in vital capacity, prolonged expiration phase, decrease in expiratory pressure, decrease in inspiratory pressure, decrease in minute ventilation and decrease in tidal volume could not be assessed because they needed specific tests to measure them, and the application of these need cooperation from patients, which it is not applicable to the studied population. Besides these, measurement of other indicators are not applicable to the study population, being the use of three-point position, headache upon awakening, confusion, visual disturbance, somnolence, apprehensiveness, decrease in cooperation, increase in metabolic rate, pursed-lip breathing.

When data collection was over, two nurses who had a Master's title, publications, and participation in research group focused in nursing diagnosis, as well as, experience in the neonatology field as recommended by the literature[14], conducted a diagnostic inference. The nurses were chosen by the convenience of a study and research group focused in nursing diagnoses. After explaining the objectives and procedures, they confirmed their participation through the signature of the Free and Informed Consent Term.

The nurses received the spreadsheets through electronic mail, containing the information about the presence or absence of clinical indicators, and the support material with the study's clinical protocol. After judging the clinical history of each patient, they determined the presence of the studied diagnoses. The occurrence of diagnosis was determined by the absolute agreement between them. In situations where there was no agreement, the assessors discussed the cases and reached a consensus about the inference.

For data analysis, descriptive and inferential statistics were conducted through the software Statistical Package for the Social Sciences (SPSS), version 21.0 for Windows®. For descriptive analysis, absolute frequencies and percentages, measures of central tendency and dispersion were considered. The Kolmogorov-Smirnov test was applied to verify the normality of numerical data. For the association analysis between the categorical variables, the Pearson's Chi-Square test was applied. The Fisher's exact test was applied when the expected frequencies of the categorical variables were lower than 5. A statistical significance level of $p<0.05$ was adopted.

The study was approved by the Ethics in Research Committee under the protocol nº 1.869.521, following the recommendations of the Resolution 466/12, referring to studies with human beings.

RESULTS

The newborns assessed presented a median of two days of life (IIQ 1) being the majority males (61.7%). Also, they obtained a median in relation to the time of admission of 39 days (IIQ 1) and a height at birth of 39 cm (IIQ 8). Regarding the gestational age, 66 (42.9%) were extreme premature with less than 30 weeks, 63 (40.9%) were moderate premature, between 31 to 34 weeks. In consonance, most participants weighted between 1000 and 2499 grams (61.7%). Additionally, 22 (14.3%) presented weight at birth lower than 750 grams. Besides, the Apgar level < or = 7 in the first minute of life was verified in 83 (53.9%) NBs and it was > or = 7 in the fifth minute in 133 (86.4%) participants.

Regarding the most frequent medical diagnoses, 78 (50.6%) were premature, had respiratory distress syndrome and neonatal infection, while 57 (37%) were premature and had respiratory distress syndrome. Therefore, the most prevalent oxygen therapy was the IMV with 96 NBs (62.3%) followed by the use of CPAP in 53 (34.4%) participants. Regarding the maternal data, 89 (57.8%) of puerperal had less than six consultations during the prenatal phase.

The data referring to the prevalence of NDs ISV, IGE, IBP, and their clinical indicators are following described in Table 1.

Table 1: Prevalence of the nursing diagnoses ISV, IGE, IBP, and their clinical indicators. Fortaleza, CE, Brazil, 2017.

Clinical Indicator	Present		Absent	
	N	%	N	%
Impaired spontaneous ventilation	**145**	**94.2**	**9**	**5.8**
Dyspnea	141	91.6	13	8.4
Increase in accessory muscle use	139	90.3	15	9.7
Decrease in partial pressure of oxygen	84	54.5	70	45.5
Increase in heart beat	44	28.6	110	71.4
Increase in partial pressure of carbon dioxide	22	14.3	132	85.7
Decrease in arterial oxygen saturation	16	10.4	138	89.6
Impaired gas exchange	**136**	**88.3**	**18**	**11.7**
Dyspnea	141	91.6	13	8.4
Abnormal skin color	130	84.4	24	15.6
Decrease in carbon dioxide	100	64.9	54	35.1
Abnormal arterial pH	98	63.6	56	36.4
Abnormal arterial blood gases	91	59.1	63	40.9
Hypoxemia	84	54.5	70	45.5
Abnormal breathing pattern	81	52.6	73	47.4
Tachycardia	44	28.6	110	71.4
Irritability	34	22.1	120	77.9
Hypercapnia	22	14.3	132	85.7
Hypoxia	7	4.5	147	95.5
Cyanosis	5	3.2	149	96.8
Nasal flaring	2	1.3	152	98.7
Diaphoresis	-	-	154	100.0
Innefective breathing pattern	**135**	**87.7**	**19**	**12.3**
Dyspnea	141	91.6	13	8.4
Increase in accessory muscle use	139	90.3	15	9.7
Abnormal breathing pattern	81	52.6	73	47.4
Tachycardia	56	36.4	98	63.6
Bradypnea	27	17.5	127	82.5
Nasal flaring	2	1.3	152	98.7

Footnotes: N- the number of individuals; %- percentage

About Table 1, respiratory diagnoses were highly prevalent in the study population, varying from 94.2% to 87.7%. We highlight the clinical indicators that presented prevalence higher than 50%: dyspnea, increased in accessory muscle use, abnormal skin color, decrease in carbon dioxide, abnormal arterial pH, abnormal arterial blood gases, decrease in partial pressure of oxygen/hypoxemia and abnormal breathing pattern.

Following, Table 2 demonstrated the statistical association between the ND Impaired spontaneous ventilation and its clinical indicators.

Table 2: Association between Impaired spontaneous ventilation and its clinical indicators. Fortaleza, CE, Brazil, 2017.

Impaired Spontaneous Ventilation				
Clinical indicators	**Present**	**Absent**	**Total**	**Statistics**
Dyspnea				
Present	140	5	145	*p* = 0.000*
Absent	1	8	9	OR = 224.000
Total	**141**	**13**	**154**	**CI 95%: 23.34–2151**
Increase in heart beat				
Present	44	101	145	*p* = 0.061*
Absent	0	9	9	OR = -
Total	**44**	**110**	**154**	**CI 95%: -**
Decrease in partial pressure of oxygen				
Present	84	61	145	*p* = 0.001*
Absent	0	9	9	OR = -
Total	**84**	**70**	**154**	**CI 95%: -**
Increase in partial pressure of carbon dioxide				
Present	22	123	145	*p* = 0.360*
Absent	0	9	9	OR = -
Total	**22**	**132**	**154**	**CI 95%: -**
Decrease in arterial oxygen saturation				
Present	16	129	145	*p* = 0.509*
Absent	0	9	9	OR = -
Total	**16**	**138**	**154**	**CI 95%: -**
Increase in accessory muscle use				
Present	138	7	145	*p* = 0.000*
Absent	1	8	9	OR = 157.714
Total	**139**	**15**	**154**	**CI 95%: 17.246–1442**

Footnotes:* Fisher's exact test; OR – odds ratio ; CI– confidence interval

Regarding Table 2, the ISV indicators that were statistically significant were dyspnea (*p*=0.000), decrease in partial pressure of oxygen (*p*=0.001) and increase in accessory muscle use (*p*=0.000). Newborns with dyspnea and increase in the use of muscle use presented, respectively, 224 and 154 higher changes to develop the referred diagnosis.

Following, Table 3 demonstrates the statistical association of Ineffective breathing pattern and its indicators.

Within the indicators for IBP, according to Table 3, they are bradypnea (p=0.026), dyspnea (p=0.000), abnormal breathing pattern (p=0.000), tachypnea (p=0.026) and, increase in accessory muscle use (p=0.000), which obtained statistical significance. The NBs with dyspnea, abnormal breathing pattern, tachypnea, and accessory muscle use presented, respectively, 91, 26, 12 and 45 times higher chance to manifest a pattern that does not propitiate an adequate inspiration and expiration.

Table 3: Association between Ineffective breathing pattern and its clinical indicators. Fortaleza, CE, Brazil, 2017.

Ineffective Breathing Pattern				
Clinical indicators	**Present**	**Absent**	**Total**	**Statistics**
Nasal flaring				
Present	2	133	135	*p* = 1.000**
Absent	0	19	19	OR = -
Total	**2**	**152**	**154**	**CI 95%: -**
Bradypnea				
Present	27	108	135	*p* = 0.026**
Absent	0	19	19	OR = -
Total	**27**	**127**	**154**	**CI 95%: -**
Dyspnea				
Present	133	2	135	*p* = 0.000**
Absent	18	11	19	OR = 91.438
Total	**141**	**13**	**154**	**CI 95%: 17.264-484.2**
Abnormal breathing pattern				
Present	80	55	135	*p* = 0.000*
Absent	1	18	19	OR = 26.185
Total	**81**	**73**	**154**	**CI 95%: 3.395-201.90**
Tachycardia				
Present	55	80	135	*p* = 0.003*
Absent	1	18	19	OR = 12.375
Total	**56**	**98**	**154**	**CI 95%: 1.605–95.43**
Increase in accessory muscle use				
Present	131	4	135	*p* = 0.000**
Absent	8	11	19	OR = 45.031
Total	**139**	**15**	**154**	**CI 95%: 11.689-173.4**

Footnote: *Pearson's X^2 test; ** Fisher's exact test; OR – odds ratio; CI – Confidence Interval

Following, Table 4 demonstrates the statistical association between impaired gas exchange and its clinical indicators.

According to Table 4, the indicators with statistical significance (p<0.05) for the ND IGE were: decrease in carbon dioxide (p=0.000), abnormal arterial blood gases (p=0.000) and hypoxemia (p=0.000). Decrease in carbon dioxide, abnormal arterial blood gases, and hypoxemia presented, respectively, 45, 33 and seven chances higher to manifest the ND IGE. It is important to note that the diaphoresis indicator was not described in Table 4 because it was not observed in the studied sample.

Table 4: Association between Impaired gas exchange and its clinical indicators. Fortaleza, CE, Brazil, 2017.

Impaired Gas Exchange				
Clinical indicators	**Present**	**Absent**	**Total**	**Statistics**
Nasal Flaring				
Present	2	134	136	*p* = 1.000**
Absent	0	18	18	OR = -
Total	**2**	**152**	**154**	**CI 95%: -**
Cyanosis				
Present	4	132	136	*p* = 0.468**
Absent	1	17	18	OR = 0.515
Total	**5**	**149**	**154**	**CI 95%: 0.054-4.882**
Abnormal skin color				
Present	115	21	136	*p* = 1.000**
Absent	15	3	18	OR = 1.095
Total	**130**	**24**	**154**	**CI 95%: 0.291-4.116**
Dyspnea				
Present	125	11	136	*p* = 0.651**
Absent	16	2	18	OR = 1.42
Total	**141**	**13**	**154**	**CI 95%: 0.289–6.993**
Decrease in carbon dioxide				
Present	99	37	136	*p* = 0.000*
Absent	1	17	18	OR = 45.486
Total	**100**	**54**	**154**	**CI 95%: 5.845-353.98**
Abnormal arterial blood gas				
Present	90	46	136	*p* = 0.000*
Absent	1	17	18	OR = 33.261
Total	**91**	**63**	**154**	**CI 95%: 4.291-257.80**
Hypoxemia				
Present	81	55	136	*p* = 0.001*
Absent	3	15	18	OR = 7.364
Total	**84**	**70**	**154**	**CI 95%: 2.035-26.644**
Hypoxia				
Present	6	130	136	*p* = 0.589**
Absent	1	17	18	OR = 0.785
Total	**7**	**147**	**154**	**CI 95%: 0.089-6.917**
Hypercapnia				
Present	21	115	136	*p* = 0.473**
Absent	1	17	18	OR = 3.104
Total	**22**	**132**	**154**	**CI 95%: 0.392-24.595**
Irritability				
Present	31	105	136	*p* = 0.765**
Absent	3	15	18	OR = 1.476
Total	**34**	**115**	**154**	**CI 95%:0.401-5.431**
Abnormal breathing pattern				
Present	72	64	136	*p* = 0.814*
Absent	9	9	18	OR = 1.125
Total	**81**	**83**	**154**	**CI 95%: 0.421-3.008**
Abnormal arterial Ph				
Present	88	48	136	*p* = 0.448*
Absent	10	8	18	OR = 1.467
Total	**98**	**56**	**154**	**CI 95%: 0.543-3.963**
Tachycardia				
Present	41	95	136	*p* = 0.234*
Absent	3	15	18	OR = 2.158
Total	**44**	**110**	**154**	**CI 95%: 0.592-7.859**

Footnotes: *Pearson's X^2 test; ** Fisher's exact test; OR – odds ratio; CI – Confidence Interval

DISCUSSION

It was evident in the present study the predominance of male newborns (61.7%). A nursing diagnostic study in newborns in a Neonatal Intensive Care Unit identified that 53.7% were also males[15].

The majority of newborns had an Apgar score equal or higher to 7 in the fifth minute of life, representing good vitality. The birth condition is an important factor for neonatal mortality, in addition, it can worsen basic pathologies as the RDS[16].

Prematurity was the most frequent medical diagnosis together with the respiratory distress syndrome and neonatal infection, justifying the invasive mechanical ventilation as the main offer of oxygen to this population. It can be explained due to the surfactant deficiency, which causes an increase of the superficial alveolar tension, decrease the pulmonary complacency, culminating with the alveolar atelectasis thus creating the need for the NB to use invasive mechanical ventilation[17].

Besides, premature newborns breathe with little effectiveness right after the birth, resulting in respiratory distress. It occurs due to the structural immaturity of the lungs, muscles, and ribcage, accompanied by the immaturity of the central nervous system, responsible for the respiratory rhythm. Therefore, the triggering of the clinical condition causes the frequent and high manifestation of respiratory nursing diagnosis, as the ones identified in this study[17].

Most studies found with specific diagnoses focus on the pediatric population suffering from asthma, acute respiratory insufficiency and, congenital cardiopathy. In these, the ISV prevalence was 5.9%. Yet, for IGE, it was present with percentages between 28.8 and 42.6. For IBP, it varied from 26.2 to 74.4%[4-7].

The high prevalence of ISV in this study, refuting the majority of previously cited findings, can be related to the fact that it was conducted in an Intensive Care Unit and most patients were using invasive mechanical ventilation due to disorders of the relationship ventilation/perfusion. Additionally, there are anatomical and physiological particularities in the studied population because the premature NB with RDS cannot sustain adequate breathing to keep the respiratory function[8].

The high occurrence of the clinical indicators found in this study can be attributed to the clinical status which is characteristic of the more prevalent respiratory diseases in the studied population, as these findings are frequently identified in NBs with RDS[8].

The indicator dyspnea, defined as lack of air or strenuous or difficult breathing, is frequently associated with the indicator increased in accessory muscle use because the additional effort demands compensatory mechanisms to breathe. Beyond these, the indicator abnormal breathing pattern was determined by changes in the breathing rhythm, frequency and/or depth, as tachypnea, hyperventilation, bradypnea, and hypoventilation. These signs and symptoms manifest in premature newborns with respiratory distress, as the musculoskeletal development of the ribcage is incomplete, making apnea episodes more frequent due to the fatigue of respiratory muscles[18].

Decrease in partial pressure of oxygen/hypoxemia, designed as the presence of partial pressure of oxygen in the arterial blood lower than 80 mmHg, is related to the decrease of the pulmonary complacency and the increase of the complacency of the thoracic wall, causing disorder in the ventilation/perfusion relationship, making the hypoventilation resulting in hypoxemia[19].

Abnormal blood gases are characterized by the manifestation of the partial pressure of oxygen lower or higher between 80-100 mmHg, the partial pressure of carbon dioxide lower or higher between 35-45 mmHg and oxygen saturation with lower or higher values between 90-95%. The presence of this indicator is due to the hypercapnia and hypoxemia caused by hyperventilation. Additionally, it is important to verify the oxygen saturation to monitor the oxygenation of the NB and to complement the analysis of blood gases[20].

The abnormal indicator of arterial pH, defined as the concentration of the hydrogen ion (H^+) in the arterial blood lower or higher to 7.35-7.45, has hypoxemia and hypercapnia as a trigger, causing respiratory and/or metabolic acidosis[18].

The decrease in carbon dioxide, defined as the partial pressure of carbon dioxide in the arterial blood lower than 35 mmHg, was highly prevalent in this study. It is related to the complications associated with the use of prolonged use of mechanical ventilation. Besides, we emphasize the surfactant used in the first hours of life increases the pulmonary mechanics and can cause quick changes in the pulmonary complacency, and it can manifest hypocapnia in the gasometry exam[19], which can justify the high presence of the indicator in the study population.

The indicator abnormal skin color is characterized by changes in the pink coloration of the newborn, which can be darkened or pale. It indicates the hemodynamic compromise due to vasodilation. Abnormal skin color was very frequent, and it is related to atelectasis, which increases the intrapulmonary shunt leading to hypoxemia, hypercapnia, and acidosis. With hypoxemia and acidosis, vasoconstriction and smaller pulmonary perfusion occur, increase of pressure in the pulmonary arteries and, consequently, extrapulmonary right-left shunt through the arterial channel and/or oval foramen, causing cyanosis[18]. However, the most observed skin change was related to icteric skin, very frequent in premature newborns and with neonatal infection, both highly prevalent medical diagnosis in this study.

Studies with respiratory nursing diagnosis in children with asthma, acute respiratory insufficiency and with congenital cardiopathy presented the indicators previously cited as prevalent in their research[4-7].

According to the results found, few clinical indicators increased the chances for occurrence of respiratory nursing diagnoses. Other studies also found statistical significance or high prevalence in the presence of ISV, considering the same indicators of this study: dyspnea and increase in accessory muscle use[4]. For IGE, few studies have only the hypoxemia as a common indicator with statistical significance[4,5]. For IBP, they also found the same indicators: dyspnea, accessory muscle use, tachypnea and, abnormal breathing pattern[6,7,21].

Despite the studies found were in populations with medical diagnoses, severe conditions and different age groups, the indicators with statistical significance were the same. It results from the fact that both studied diseases compromise the ventilation/perfusion relationship.

As a limitation of the study, its design can be mentioned as it was a cross-sectional study, the data collection was conducted in only one moment, and it could have influenced the prevalence of diagnoses. It occurs because there are signs and symptoms (clinical indicators) that can be compensatory mechanisms to normalize the respiratory function.

CONCLUSION

ISV, IGE, and IBP presented prevalence higher than 87% Dyspnea, increase in accessory muscle use, and abnormal skin color were the most prevalent indicators. ISV and IGE were significantly statistically associated with three of their indicators and IBP was significantly statistically associated with five clinical indicators.

It is noted that the profile of the clinical indicators for respiratory diagnoses is influenced by particularities of the studied population, such as age, pathology, severe condition of the disease, within others. Therefore, generalizations should be seen with caution.

Studies involving the prevalence of respiratory nursing diagnoses in individuals with different types of diseases are relevant for nursing care because the respiratory system has a vital function and, therefore, there is a need for the nurse to create adequate, quick and resolutive evidence-based interventions. Therefore, there is an improvement in the clinical practice, which can reduce morbidity and mortality of high-risk neonates.

Emphasis is given to the occurrence of few studies involving the neonatal population and the respiratory nursing diagnoses. Besides, there is scarce literature of studies with ISV diagnosis. Thus, studies addressing these diagnoses should be stimulated.

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