

# NURSING DIAGNOSES AND INTERVENTIONS FOR CHILDREN WITH RESPIRATORY SIGNS OF COVID-19 SEVERITY

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## DIAGNÓSTICOS E INTERVENÇÕES DE ENFERMAGEM A CRIANÇAS COM SINAIS RESPIRATÓRIOS DE GRAVIDADE DA COVID-19

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## DIAGNÓSTICOS E INTERVENCIONES DE ENFERMERÍA PARA NIÑOS CON SIGNOS RESPIRATORIOS DE GRAVEDAD COVID-19

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**Objective:** to describe nursing diagnoses and interventions to children with respiratory signs of COVID-19 severity. **Method:** exploratory, descriptive, narrative review study, conducted in June 2020, based on scientific evidence published in the PUBCOVID-19 database, for further preparation of diagnoses using the North American Nursing Diagnoses Association – International Taxonomy, and interventions anchored in the Nursing Interventions Classification. **Results:** dyspnea and respiratory distress were the most evident signs of severity in children with COVID-19. Three main diagnostic statements were elaborated: Impaired Gas Exchange, Ineffective Respiratory Pattern and Impaired Spontaneous Ventilation, with 24 Nursing Interventions corresponding in four domains: physiological, behavioral, safety, and family. **Conclusion:** the description of nursing diagnoses and interventions, anchored by NANDA and NIC taxonomies, respectively, presents innovation in the Brazilian scientific literature.

**Descriptors:** Pediatric Nursing. Nursing Care. Coronavirus infections. Nursing Diagnosis.

*Objetivo:* descrever diagnósticos e intervenções de enfermagem a crianças com sinais respiratórios de gravidade da COVID-19. *Método:* estudo exploratório, descritivo, do tipo revisão narrativa, realizado em junho de 2020, embasado pelas evidências científicas publicadas na base PUBCOVID-19, para posterior elaboração de diagnósticos utilizando

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*a Taxonomia North American Nursing Diagnoses Association – International, e intervenções ancoradas na Nursing Interventions Classification. Resultados: a dispnéia e o desconforto respiratório foram os sinais de gravidade mais evidenciados na criança com COVID-19. Foram elaboradas três principais afirmativas diagnósticas: Troca de Gases Prejudicada, Padrão Respiratório Ineficaz e Ventilação Espontânea Prejudicada, com 24 Intervenções de Enfermagem correspondentes em quatro domínios: o fisiológico, comportamental, de segurança, e o de família. Conclusão: a descrição dos diagnósticos e intervenções de enfermagem, ancorados pelas taxonomias NANDA e NIC, respectivamente, apresenta inovação na literatura científica brasileira.*

*Descritores: Enfermagem Pediátrica. Cuidados de Enfermagem. Infecções por Coronavírus. Diagnóstico de Enfermagem.*

*Objetivo: describir diagnósticos e intervenciones de enfermería a niños con signos respiratorios de gravedad COVID-19. Método: estudio exploratorio, descriptivo, de revisión narrativa, realizado en junio de 2020, basado en evidencia científica publicada en la base de datos PUBCOVD-19, para la preparación ulterior de diagnósticos utilizando la Taxonomía North American Nursing Diagnosis Association – International, e intervenciones ancladas en la Clasificación de Intervenciones de Enfermería. Resultados: la disnea y la dificultad respiratoria fueron los signos más evidentes de gravedad en niños con COVID-19. Se elaboraron tres declaraciones diagnósticas principales: Deterioro de Intercambio de Gases, Patrón Respiratorio Ineficaz y Deterioro de Ventilación Espontánea, con 24 Intervenciones de Enfermería correspondientes en cuatro ámbitos: fisiológica, conductual, seguridad y familia. Conclusión: la descripción de los diagnósticos e intervenciones de enfermería, anclados por taxonomías NANDA y NIC, respectivamente, presenta innovación en la literatura científica brasileña.*

*Descritores: Enfermería Pediátrica. Atención de Enfermería. Infecciones por Coronavirus. Diagnóstico de Enfermería.*

## Introduction

Coronavirus Disease-19 (COVID-19) is a newly identified disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)<sup>(1)</sup>. It is a Ribonucleic Acid (RNA) virus belonging to the Coronaviridae family group, which has a high transmissibility rate and is responsible for the growing number of cases of respiratory infections worldwide<sup>(2-3)</sup>.

In children, this disease is manifested by classical clinical signs, such as fever above 37.8°C, cough, sore throat<sup>(4)</sup> or even other symptoms, such as respiratory dysfunctions, gastrointestinal or neurological disorders, shock and multisystemic inflammatory syndrome<sup>(5)</sup>. Although children are commonly affected by respiratory tract infections<sup>(6)</sup>, studies have shown that children represent 1 to 5% of diagnosed cases of COVID-19<sup>(7)</sup>. In the United States, 1.7% of the cases of patients with COVID-19 were under 18 years of age, while in mainland China and Italy, this number corresponded to 1.3% of cases<sup>(8-9)</sup>. In Brazil, according to Epidemiological Bulletin n. 17, of May 2020, 347,398 cases of COVID-19 were reported in the general population; of

these, 662 (5.25%) children from 0 to 12 years of age were reported with Severe Acute Respiratory Syndrome (ARS) confirmed for COVID-19<sup>(10)</sup>.

Although evidence shows that most children with COVID-19 are asymptomatic or have a less aggressive clinical course of the disease<sup>(11)</sup>, new findings indicate the possibility of complications that would lead to worsening of the disease<sup>(12)</sup>. In Brazil, of 219 children with ARS who required hospitalization in the Intensive Care Unit (ICU), 159 received ventilatory support and 62 progressed to death<sup>(10)</sup>. A study conducted at the Chinese Center for Disease Control and Prevention showed that, of the 731 children with virology confirmed for COVID-19, 12.9% were asymptomatic, 43.1% mild cases, 41% moderate, 2.5% severe and 0.4% critical cases, demonstrating the process of disease progression and the need for greater attention and care to this population<sup>(13)</sup>.

Given the magnitude evidenced, and understanding the need to monitor the progression of the disease with identification of signs and symptoms of risk for severity, so that the

care processes are systematized, the flowcharts of health care are relevant for consolidating the main evidence of the literature, besides assisting in the optimization of the care process. However, they need to be clear to the different processes of health care<sup>(14)</sup>, especially in the context of a new disease, with different clinical manifestations. To support health professionals in Brazil technically and scientifically in their respective behaviors towards children with signs of severity of SARS-Cov-2, the Ministry of Health (MH) elaborated and published, in March 2020, the flow of pediatric clinical management in Specialized Care<sup>(15)</sup>.

In view of these symptoms of severity of children with Coronavirus SARS-CoV-2 infection, there is an urgent need to perform adequate care for the recovery of children. In this context, nursing professionals play a relevant role in the process of caring for children with COVID-19, based on scientific evidence, whose nursing intervention is individualized and effective<sup>(16)</sup>. In this sense, it is necessary to understand the possible nursing diagnoses for an effective elaboration of interventions that can be applied, optimizing and qualifying the care practices of the nurse<sup>(17)</sup>.

The elaboration of nursing diagnoses and interventions are essential for the nurse's work process, as they provide indispensable elements for systematized care. In addition, these are part of the nursing process, facilitating the organization and implementation of nursing care, indispensable before pandemic situations<sup>(18)</sup>. In view of this scenario, we raise the following question: What are the nursing diagnoses and interventions for children with respiratory signs of COVID-19 severity?

Therefore, the present study aims to describe statements of nursing diagnoses and interventions to children with respiratory signs of COVID-19 severity.

## Method

This is an exploratory, descriptive, narrative review study, which allows understanding and

establishing relationships between productions in a given context, signaling recurrent aspects and new perspectives<sup>(19)</sup>. Data search was performed with Brazilian official documents and scientific articles on the signs of severity of SARS-CoV-2, COVID-19 in children.

To achieve the objective proposed in this research, two moments were followed:

- a) identification of the signs of severity of SARS-CoV-2, COVID-19, present in the pediatric clinical management flow recommended by the Ministry of Health<sup>(15)</sup>, followed by the search, in June 2020, for scientific evidence in the PUBCOVID19 database, before its representativeness in the consolidation of national and international scientific information;
- b) construction of statements of nursing diagnoses and interventions, focusing on the pediatric population with respiratory signs of COVID-19 severity.

The study analyzed the flow of pediatric clinical management in COVID-19 Specialized Care, published by the Ministry of Health, since it is a document guiding the clinical behavior of these cases in the Brazilian context<sup>(15)</sup>, the notes published by the Brazilian Society of Pediatric Nurses and the Brazilian Society of Pediatrics, reference bodies in the area of pediatrics in Brazil, in addition to articles selected in the COVID-19 database. In all searches, the signs of severity for Severe Acute Respiratory Syndrome in pediatrics were considered, and the most relevant was selected for the discussion, among the signs present in the Pediatric Management Flow. According to scientific evidence, respiratory signs of severity are the most evidenced in the literature<sup>(20-21)</sup>.

After selecting respiratory signs of severity, the Nursing Diagnoses (N.E.) were created, defined as judgment, before the phenomenon presented by the individual or by the collectivity, which need to have a clinical sense and a taxonomy with universal language<sup>(21)</sup>. For the formulation of the N.E., the North American Nursing Diagnosis Association – International

(NANDA-I)<sup>(22)</sup> taxonomy was used. The Defining Characteristics were selected in NANDA-I to justify the preparation of the diagnoses.

For the diagnoses elaborated, Nursing Interventions were selected, understood as “[...] treatment, based on judgment and clinical knowledge, performed by a nurse to improve the results of the patient/client”<sup>(23;20)</sup>. The titles of the selected interventions were anchored in the Nursing Interventions Classification (NIC)<sup>(24)</sup>.

The findings were organized in a chart and analyzed in the light of the national and international scientific literature on child care in order to bring elements that justify the definition of the domains used in the construction of the titles of nursing interventions selected in the present study, and can support the decision-making of the nurse in the context of care for children with respiratory signs of COVID-19 severity.

## Results

In view of the main signs of severity of ARS, “dyspnea” and “respiratory distress”, in children with COVID-19, it was possible to select the defining characteristics using the taxonomy of NANDA-I, which resulted in the elaboration of three diagnostic statements. Then, based on the NIC taxonomy, the titles of nursing interventions corresponding to each diagnosis were selected.

Chart 1 shows the defining characteristics and NANDA-I Nursing Diagnoses for pediatric patients with signs of severity for COVID-19, focusing on Class 4 – Cardiovascular/Pulmonary Responses. The diagnoses elaborated belong to two domains, that is, two areas of interest for nursing, namely: Domain 3 – Elimination/exchange. Diagnosis: Impaired gas exchange. Domain 4 – Activity/rest. Diagnoses: Ineffective Respiratory Pattern; Impaired Spontaneous Ventilation.

Then, 24 Nursing Interventions were elaborated, by the NIC Taxonomy (Chart 1), located in 4 Domains:

- a) Domain 2: Physiological Complex, contemplating Class G – Electrolyte and Acid-Basic Control, with one Intervention; Class H – Drug Control, with one Intervention; Class I – Neurological Control, with one Intervention and Class K – Respiratory Control, with ten Interventions;
- b) Domain 3: Behavioral, contemplating Class R – Coping Assistance, with two Interventions; Class S – Patient Education, with two Interventions and Class T – Promotion of Psychological Comfort, with one Intervention;
- c) Domain 4: Safety, contemplating Class V – Risk Control, with five Interventions;
- d) Domain 5: Family, contemplating Class X – Lifelong Care, with one Intervention.

**Chart 1** – Description of the defining characteristics of Nursing Diagnoses (NANDA-I) Impaired Gas Exchange, Ineffective Breathing Pattern and Impaired Spontaneous Ventilation, followed by the corresponding Nursing Intervention Titles (NIC), focusing on pediatric patients with signs of severity for COVID-19

<b>DEFINING CHARACTERISTICS</b>	<b>NURSING DIAGNOSES</b> <i>North American Nursing Diagnosis Association</i>	<b>NURSING INTERVENTION TITLES</b> <i>Nursing Interventions Classification</i>
<ul style="list-style-type: none"> <li>-Dyspnea</li> <li>-Nose wing flaring</li> <li>-Decreased vital capacity</li> <li>-Use of accessory muscles to breathe</li> <li>-Altered chest excursion</li> <li>-Abnormal breathing pattern</li> <li>-Decreased arterial oxygen saturation (SaO<sub>2</sub>)</li> <li>-Decreased cooperation</li> <li>-Increased use of accessory muscles</li> </ul>	<ul style="list-style-type: none"> <li>Impaired Gas Exchange (Cod.00030)</li> <li>Ineffective Breathing Pattern (Cod.00032)</li> <li>Impaired Spontaneous Ventilation (Cod.00033)</li> </ul>	<ul style="list-style-type: none"> <li>-Acid-base monitoring (Cod. 2G-1920)</li> <li>-Medication control (Cod. 2H-2380)</li> <li>-Neurological monitoring (Cod. 2I-2620)</li> <li>-Control of the airways (Cod. 2K-3140)</li> <li>-Airway aspiration (Cod. 2K-3160)</li> <li>-Control of artificial airways (Cod. 2K-3180)</li> <li>-Respiratory physiotherapy (Cod. 2K-3230)</li> <li>-Control of mechanical ventilation: invasive (Cod. 2K-3300)</li> <li>-Control of mechanical ventilation: non-invasive (Cod. 2K-3302)</li> <li>-Weaning from mechanical ventilation (Cod. 2K-3310)</li> <li>-Oxygen therapy (Cod. 2K-3320) *</li> <li>-Respiratory monitoring (Cod. 2K-3350) *</li> <li>-Ventilatory assistance (Cod. 2K-3390)</li> <li>-Advanced guidance (Code 3R-5210)</li> <li>-Emotional support (Cod. 3R-5270) *</li> <li>-Teaching: disease process (Code 3S-5602)</li> <li>-Teaching: procedure / treatment (Code 3S-5618)</li> <li>-Anxiety Reduction (Cod. 3T-5820)</li> <li>-Environmental control: safety (Cod. 4V-6486) *</li> <li>-Environmental control: worker safety (Cod. 4V-6489)</li> <li>-Infection control (Cod. 4V-6540)</li> <li>-Supervision (Cod. 4V-6650) *</li> <li>-Monitoring of vital signs (Cod. 4V-6680) *</li> <li>-Family support (Cod. 5X-7140)</li> </ul>

Source: Created by the authors.

\*Nursing interventions presented by the NIC as essential for the pediatric nursing specialty.

## Discussion

The Pediatric Management Flow of the Ministry of Health Coronavirus COVID-19, published in March 2020, presents as signs of severity to be

observed: dyspnea, respiratory distress, oxygen saturation below 95%, worsening in the clinical conditions of preexisting disease and cutaneous pallor<sup>(15)</sup>. The literature presents dyspnea and difficulty breathing as the most cited in studies

with children, symptoms that are also frequently verified in patients in China, for example<sup>(24-26)</sup>. The Brazilian Society of Pediatrics adds as signs to classify the severe condition of children with COVID-19, according to a note published in April 2020, the inability to breastfeed or drink, lethargy or convulsions<sup>(27)</sup> – signs not described in the Pediatric Management Flow.

Recognizing the respiratory signs of severity present in the Pediatric Management Flow and in the literature, the nurse is responsible for interpreting them, in order to understand the real needs of the patients. The search for problem resolution through specific actions by the nurse requires the elaboration of diagnoses that are useful in planning interventions that help in the qualification of childcare<sup>(28)</sup>. For this, the identification of Defining Characteristics is necessary so that the nurse can build individualized diagnoses, which exceed the prescriptions derived from protocols focused on models that reduce basic human needs<sup>(17)</sup>. In general, for a nursing diagnosis to be confirmed safely, it is necessary to recognize a set of defining characteristics, and not only a single clinical datum, which can be related to possible diagnoses related to the specific clinical situation<sup>(29)</sup>.

Thus, analyzing NANDA-I, it was identified that the defining characteristics, dyspnea, nose wing flaring, decreased vital capacity, use of accessory muscles to breathe, altered thoracic excursion, abnormal respiratory pattern, decreased arterial oxygen saturation and decreased cooperation justify the construction of three diagnostic nursing statements, focused on respiratory signs of severity. The identification of nursing diagnoses for people with respiratory tract disorders is particularly important and a priority, as they directly affect a vital function<sup>(29)</sup>.

The N.D. “Impaired Gas Exchange” is defined as excess or deficit in oxygenation and/or elimination of carbon dioxide in the alveolocapillary membrane<sup>(22)</sup>. The nurse’s concern with the exchange of gases in pediatrics with respiratory signs of severity can lead to this diagnosis<sup>(22)</sup>. Factors like imbalanced ventilation

and perfusion, respiratory status and vital signs may be related to diagnosis. The N.D. “Ineffective Breathing Pattern” is defined as inspiration and/or expiration that does not provide adequate ventilation<sup>(22)</sup>. Such N.D. may have as a factor related to pain, anxiety and respiratory fatigue, and as a possible condition associated with neurological immaturity and neurological impairment, as described in NANDA-I. On the other hand, the N.D. “Impaired Spontaneous Ventilation” is defined as the inability to start and/or maintain independent breathing and adequate for life support<sup>(22)</sup>. Additionally, NANDA-I shows that respiratory muscle fatigue can be considered a related factor and changes in metabolism, an associated condition, may be present in children with respiratory signs of severity for COVID-19<sup>(30)</sup>.

The N.D. “Ineffective Respiratory Pattern” suggests Nursing Interventions aimed at severe pediatric patients, who did not receive invasive oxygen support, while the diagnosis Impaired Spontaneous Ventilation, as well as Impaired Gas Exchange, favor interventions aimed mainly at patients severely on mechanical ventilation<sup>(31)</sup>. The two conditions listed in this study can be observed in pediatric patients with ARS, as demonstrated in a North American study, which characterized, through a retrospective cohort, performed with nine children hospitalized by COVID-19, that about 89% of children who were in severe condition required some respiratory support, and about 44% required mechanical ventilation<sup>(21)</sup>.

The scientific literature reveals that the use of invasive mechanical ventilation was evidenced mainly in cases of children who had some preexisting disease such as hydronephrosis, leukemia, encephalopathy or congenital heart disease, and progressed to the most severe course of COVID-19 or died. This possible association was also verified in a systematic review and meta-analysis study that sought to raise all aspects understood thus far, through 46 scientific materials that reported 551 cases of COVID-19 in laboratory-confirmed children, published in countries such as China, Malaysia, Italy, Spain

and the United States<sup>(32)</sup>. These findings converge with the retrospective study conducted in a pediatric intensive care unit of a Paris hospital, with 27 children admitted with confirmed laboratory diagnosis or highly suspected by radiological findings, which sought to describe severe forms of coronavirus, evidencing that, of the 19 who presented preexisting diseases, 9 used mechanical ventilation<sup>(33)</sup>.

Based on the scientific evidence reported, it was possible to include 24 proposals for NIC Nursing Interventions, comprised of 4 domains of the nurse's practice, complex physiology, safety, behavior and family, each covering their classes. Both the domains and the classes of the NIC taxonomy help nurses locate and select the most appropriate interventions for patients. The domain level helps the professional to make the first choice for the intervention, and the classes provide a greater focus on the care to be provided<sup>(23)</sup>. Each intervention title described in the NIC presents 10 to 30 nursing activities. Based on these activities, the nurse lists the care to be provided individually to each child or his/her family, and can add new activities, if desired<sup>(34)</sup>. According to the NIC, of the 24 intervention proposals presented in this study, 23 need to be performed by the assistant nurse; and only the Anxiety Reduction intervention can be performed by the professional with a training of nursing assistant or technician<sup>(23)</sup>.

In the context of the "complex physiological domain", the choice of the Neurological Control Class was considered, since infection by SARS-CoV-2 in children may manifest neurological, musculoskeletal and level of consciousness alterations. The neurological damage of the potential invasion of SARS-CoV-2 may be partially responsible for respiratory failure, as envisioned in a Chinese study, since the brain stem and neuronal sensory signals of the central nervous system control, in a coordinated way, the frequency, depth and pattern of breathing, with the contraction of the diaphragm muscle and muscles of the chest, abdomen and surrounding structures<sup>(35)</sup>.

Considering that COVID-19 is a new disease, and that, to date, there are no authorized medications based on scientific evidence to be used in its treatment<sup>(27)</sup>, the Drug Control Class becomes relevant in the process of nursing care to children with respiratory signs of severity, to enable intervention directed to the safe and effective use of medications.

Respiratory Control is also present in the physiological domain. Understanding that children with COVID-19, classified as severe, have psychobiological oxygenation needs, characterized mainly by signs such as dyspnea, respiratory distress, oxygen saturation below 95%<sup>(15)</sup>, this domain becomes essential. In this sense, two interventions are considered by the NIC as essential for the pediatric nursing specialty, Respiratory Monitoring and Oxygen Therapy<sup>(23)</sup>.

In this context, acid-base monitoring is an important intervention, within the Electrolyte and Acid-Basic Control Class. Among the possible activities, there stands out the measurement levels of arterial blood gas, whose obtained data, such as the inability of the respiratory system to capture oxygen and/or remove carbon dioxide from the blood, help define and/or adjust the type of ventilatory support to be instituted in patients with altered respiratory pattern, as well as the development of new nursing diagnoses related to respiratory function<sup>(36)</sup>.

When considering the "safety domain", the focus of care provided by the nurse is on the control of infections that may emerge during the child's stay in the hospital environment, since admission to a pediatric unit is necessary when the child is affected by the severe form of COVID-19, a reality shared in the study conducted in Spain, which describes pediatric treatment for Coronavirus 2019, where 60% of the children evolved to hospitalization<sup>(20)</sup>. Based on this context, a study on the treatment of children with COVID-19 in a pediatric intensive care unit in Singapore proposed special measures to optimize the control of the exposure of the child, the family member and the professional and minimize the spread of the

virus and the development of the disease, also considering contamination by other nosocomial infections<sup>(37)</sup>. Some of the cited measures were the permanence of only one health professional with each child, usually to provide nursing care, who should wear a surgical mask and remain in the room with the child full time; preferably, the rooms should be negatively pressured and have private bathrooms, to minimize the movement of parents and children in the pediatric ward, besides adopting hygiene actions and the use of other personal protective equipment<sup>(37)</sup>.

Also in relation to the safety domain, the three interventions: “environmental control: safety”, “monitoring of vital signs” and “supervision”, are considered by the NIC as essential for the pediatric nursing specialty<sup>(23)</sup>. In this case, environmental control is focused on monitoring and manipulating the physical environment to promote safety. The monitoring of vital signs is important for children with respiratory infection, because it contributes to clinical improvement, sometimes temporary, when on ventilatory support, as demonstrated by the study that sought to describe the use of high-flow nasal cannula in children in the pediatric emergency department<sup>(38)</sup>. In the case of children in a severe picture, the monitoring of vital signs and supervision to obtain patient data for clinical decision making help the nursing team in observing the clinical evolution of the disease, which requires the continuity of care practices already used when it evolves positively or in change before negative physiological responses of the child.

The “behavioral domain” was contemplated with actions aimed at the process of orientation to the patient, and whenever possible, to parents/caregivers in relation to the processes of the disease, the situation envisaged, as well as the performance of care that helps in the process of treatment of the child. The guidance practices of parents/caregivers of hospitalized children are pointed out in studies as of paramount importance, since they are considered an extension of nursing professionals, since they promote the care recommended by the nursing team, facilitating

the child’s treatment adherence<sup>(39)</sup>. Furthermore, the family involvement in this care facilitates the establishment of communication and the relationship among the team, the hospitalized child and the family caregiver.

This involvement between family and nurse facilitates professional perception of the signs of emotional exhaustion, and with the other team members, contributes to the development of strategies to reduce the anxiety that emerges before the hospitalization of children, especially when the cause is a serious disease, as can happen in COVID-19. Thus, emotional support intervention is considered by NIC as essential for pediatric nursing<sup>(23)</sup>. According to the scientific literature, the hospitalization of a child in severe condition, associated with the uncertainties of cure, emerges in the family members a feeling of sadness and anguish, resulting in psychological symptoms such as anxiety<sup>(40)</sup>. In this context, the nurse, with other health professionals, can act in an integrated way to reduce these feelings by offering emotional support. A study conducted in São Paulo, with 20 companions of hospitalized children, revealed that psychoemotional support through conversations, advice and clarification regarding the child’s health status alleviated the suffering during child’s hospitalization and treatment<sup>(41)</sup>.

Another aspect is addressed in the “family domain”, whose nursing intervention was directed to the promotion of family values, interests and goals. In this perspective, it is essential to provide the necessary knowledge to family members, to use strategies such as telephone calls consented by caregivers and guardians with the purpose of guiding and monitoring the child’s condition, as reinforced by a study that sought to contextualize the experiences lived in coping with the COVID-19 pandemic by a multidisciplinary team of residents in Child-Adolescent Mental Health, in a Specialized Rehabilitation Center of the Federal District<sup>(42)</sup>. Moreover, it is essential to respect and support adaptive coping mechanisms used by the family. As seen, severe respiratory involvement in children with COVID-19 goes

beyond the clinical dimensions, and reinforces the importance of following the care necessary for their biopsychosocial well-being in the family context after discharge.

Nevertheless, the present study is limited to nursing diagnoses and interventions to children with respiratory signs of severity in COVID-19 most cited in the literature, however, other signs/symptoms of severity should be considered for the integrality of nursing care to this public.

## Conclusion

Even though most children with COVID-19 do not evolve into severity, they require individualized, effective and systematized care from nursing, through a unified and universal language, to meet their basic human needs and to contribute to their recovery process. Thus, the nurse needs to anticipate and be prepared for it.

Thus, this study could contribute to the nurse's understanding of the signs of severity present in flowcharts established in their daily practices, even if they do not contemplate all the signs of severity to be observed in pediatrics, but to the professional's ability, based on these guiding assessment instruments, to identify in children with COVID-19 the defining characteristics that effectively justify their diagnoses and, consequently, interventions, which contemplate the child and his/her family in the whole context of their real needs.

The importance of the three nursing diagnoses and the 24 nursing interventions presented in this study is evidenced, mainly due to the fact that interventions aimed at diagnoses often require their execution by the care nurse, which demonstrates the need for training and technical-scientific support for planning the care of children with respiratory signs of COVID-19 severity, mainly because it is a new disease whose knowledge is still under construction.

In view of the current approach and respecting the methodological process of scientific construction for nursing, the description of nursing diagnoses and interventions, anchored by NANDA and NIC taxonomies, respectively,

presents innovation in the Brazilian scientific literature.

Thus, it brings visibility to the profession, conferring scientificity in the daily routine of nursing care and strengthening the articulation of teaching, with research and with the nursing work process, which reverberates in the quality and responsibility of the professional in pediatric care.

Furthermore, for the validation of nursing diagnoses and interventions for children with COVID-19, we recommend other studies with observational approach, case studies and clinical trials.

## Collaborations:

1 – conception, design, analysis and interpretation of data: Renise Bastos Farias Dias, Luana Cavalcante Costa Ferraz, Nirliane Ribeiro Barbosa, Rita de Cássia Batista de Oliveira Peixoto, Maria Betânia Monteiro de Farias, Larissa Tenório Andrade Correia and Andrey Ferreira da Silva;

2 – writing of the article and relevant critical review of the intellectual content: Renise Bastos Farias Dias, Luana Cavalcante Costa Ferraz, Nirliane Ribeiro Barbosa, Rita de Cássia Batista de Oliveira Peixoto, Maria Betânia Monteiro de Farias, Larissa Tenório Andrade Correia and Andrey Ferreira da Silva;

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