Nursing diagnoses/outcomes and interventions for patients with COVID-19: a retrospective documentary study

Diagnósticos/resultados e intervenções de enfermagem para pacientes com COVID-19: estudo documental retrospectivo
Diagnósticos/resultados e intervenciones de enfermería para pacientes con COVID-19: estudio documental retrospectivo

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ABSTRACT
Objective: To elaborate Nursing Diagnoses/Outcomes and Interventions using the International Classification for Nursing Practice in patients with coronavirus infection. **Method:** An exploratory, descriptive, retrospective and documentary study, developed in emergency care units in the municipality of João Pessoa - Paraíba. The sample consisted of 187 medical records and data collection was carried out between June and August 2020. Data analysis was performed using descriptive statistics, mean, range and standard deviation. **Result:** A total of 12 Nursing Diagnoses/Outcomes (Dyspnea, Fever, Cough, Muscle Pain, Headache, Diarrhea, Impaired Smell, Impaired Taste, Lack of Appetite, Impaired Swallowing, Chest Pain and Vomiting) and 36 Nursing Interventions targeted at patients affected by coronavirus were identified. **Conclusion:** The identification of Nursing Diagnoses/Outcomes and Interventions is indispensable to support care, especially in the current scenario of the COVID-19 pandemic, contributing to the operationalization of the Nursing Process.
DESCRIPTORS: Nursing; Nursing Process; Nursing Diagnosis; Standardized Terminology in Nursing; Coronavirus Infections.

RESUMO
Objetivo: Construir Diagnósticos/Resultados e Intervenções de Enfermagem utilizando a Classificação Internacional para a Prática de Enfermagem em pacientes com infecção por coronavírus. **Método:** Estudo exploratório, descritivo, do tipo documental retrospectivo, desenvolvido em unidades de pronto atendimento do município de João Pessoa - Paraíba. A amostra foi composta por 187 prontuários e a coleta de dados foi realizada entre junho e agosto de 2020. A análise dos dados ocorreu por meio de estatística descritiva, média, amplitude e desvio padrão. **Resultado:** Foram identificados 12 Diagnósticos/Resultados de Enfermagem (Dispneia, Febre, Tosse, Dor Muscular, Dor na cabeça, Diarreia, Olfato prejudicado, Paladar prejudicado, Falta de apetite, Deglutição, prejudicada, Dor no tórax e Vômito) e 36 Intervenções de Enfermagem direcionadas aos pacientes acometidos por coronavírus. **Conclusão:** A identificação de Diagnósticos/Resultados e Intervenções de Enfermagem se faz indispensável para subsidiar a assistência, sobretudo no cenário atual da pandemia do COVID-19, contribuindo com a operacionalização do Processo de Enfermagem.
DESCRITORES: Enfermagem; Processo de Enfermagem; Diagnóstico de Enfermagem; Terminologia Padronizada em Enfermagem; Infecções por Coronavírus.

RESUMEN
Objetivo: Elaborar diagnósticos/resultados e intervenciones de enfermería utilizando la Clasificación Internacional para la práctica de enfermería en pacientes con infección por coronavirus. **Método:** Estudio exploratorio, descriptivo, del tipo documental retrospectivo, desarrollado en unidades de emergencia de la ciudad de João Pessoa, Paraíba. La muestra estuvo conformada por 187 historias clínicas y la recolección de datos se realizó entre junio y agosto de 2020. El análisis de los datos se realizó mediante estadística descriptiva, media, amplitud y desviación estándar. **Resultados:** Se identificaron 12 Diagnósticos /Resultados de Enfermería (Disnea, Fiebre, Tos, Dolor Muscular, Dolor de Cabeza, Diarrea, Deterioro del sentido del Olfato, Deterioro del sentido del Gusto, Falta de Apetito, Deterioro de la deglución, Dolor Torácico y Vómitos) y 36 Intervenciones de Enfermería dirigidas a pacientes afectados por coronavirus. **Conclusión:** Identificar Diagnósticos/Resultados e Intervenciones de Enfermería es fundamental para la atención, especialmente en el escenario actual de la pandemia de COVID-19, dado que contribuye a la operacionalización del Proceso de Enfermería.
DESCRIPTORES: Enfermería; Proceso de Enfermería; Diagnóstico de Enfermería; Terminología Estandarizada en Enfermería; Infecciones por Coronavirus.

INTRODUCTION

Coronavirus was first identified in December 2019 in a group of patients who presented pneumonia of unknown etiology in the city of Wuhan City, province of Hubei, China. Subsequently, due to the spread of similar cases, the virus strain that caused morbidity was successfully isolated by researchers[1-2], enabling the association of that clinical condition with the etiological agent responsible for the coronavirus outbreak, related to the severe acute respiratory syndrome (SARS-CoV), in 2003[3].

Thus, the International Virus Taxonomy Committee named the new severe acute respiratory syndrome virus as SARS-CoV-2 on February 11th, 2020. Concomitantly, the World Health Organization (WHO) proclaimed the official name of the disease caused by the new virus as coronavirus disease (COVID-19)[4].

Considered as a public health emergency of international concern, the COVID-19 outbreak was declared a global pandemic and has mobilized researchers in the search for information that can guide health care. As of March 2021, more than 123 million confirmed cases of COVID-19 were reported, including more than 2.7 million deaths worldwide[5], while in Brazil spread of the virus had already surpassed the number of 12 million accumulated cases, with more than 290,000 confirmed deaths[6].

Regarding the symptoms, the infected patients can present fever, high temperature (> 37.3°C), cough, myalgia, headache, hemoptysis, diarrhea, dyspnea and, in some more severe cases, acute respiratory distress syndrome (ARDS), acute cardiac injury or secondary infection[7-8]. The measurement of severity according to the symptoms presented by the infected patient is relevant to determine care complexity and, corroborating such fact, a study enabled the structuring of a scoring system to predict the severity of infection by COVID-19, considering age, white blood cell count and pre-existing conditions[9].

As this is an unknown disease, COVID-19 modified the health care scenario, demanding a new organization of the services but also the use of personal protective equipment and imposing an emotional burden on the health professionals, evidencing feelings of anxiety, stress, fear, depression and exhaustion. However, it is important to mention the relevance of the Nursing work in such a challenging context, especially with regard to implementing the Systematization of Nursing Care (SNC), since it represents an indispensable strategy in the coverage of health care in the different levels of attention.

Considering that the Systematization of Nursing Care (SNC) organizes professional work in terms of method, personnel and instruments, making it possible to operationalize the Nursing Process, which, in turn, constitutes a methodological instrument that guides professional Nursing care and documentation of the professional practice, carried out in five steps: Data Collection, Nursing Diagnosis, Nursing Planning, Nursing Implementation and Evaluation. Therefore, Nursing professionals are directly responsible for identifying the needs of patients infected with coronavirus, in addition to planning and providing care, ensuring care quality through

the application of all stages of the Nursing Process.

To make such process feasible, nurses must use Classification Systems as a subsidy to identify Nursing Diagnoses/Outcomes and Interventions. In such perspective, the International Classification for Nursing Practice (ICNP®) is a standardized terminology, extensive and with a high level of understanding, which is characterized as a technological information tool capable of enabling collection, storage and analysis of Nursing data in countless situations, contributing to the professional Nursing practice being effective and, consequently, to raising the visibility of the health data clustering[10].

However, the systematization of Nursing care, operationalized through the Nursing Process, proves to be essential in organizing the professional practice, enabling the organization of actions in coping with COVID-19, supporting the recording of clinical Nursing findings and enabling reflection on nurses' critical-reflective thinking. Therefore, the study is justified for considering the structuring of Nursing Diagnoses/Outcomes and Interventions for patients with COVID-19 as indispensable stages in achieving holistic care, directed towards basic human needs and aiming at care quality in the pandemic context. Therefore, the objective focuses on the perspective of elaborating Nursing Diagnoses/Outcomes and Interventions using the International Classification for Nursing Practice in patients with coronavirus infection.

METHOD
Study design, period and locus
This is an exploratory, cross-sectional, retrospective and documentary study, which was developed from secondary data obtained through the analysis of medical records, guided by the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) tool, which consists of an initiative created with recommendations on the most complete and accurate description of observational studies. Data collection was carried out in two Emergency Care Units (ECUs) in the municipality of João Pessoa, PB, Brazil, by researchers and clinical nurses from that service, which serves as a reference for the care of patients affected by COVID-19 in that city. The information collection period comprised the months of June to August 2020, through the analysis of the medical records made available by the Medical Archive and Statistics Service of the researched units.

Population and sample, inclusion and exclusion criteria
The study population comprised all individuals with flu-like symptoms and diagnoses of COVID-19 hospitalized in the yellow and red sectors during the period from April to June 2020, totaling 314 individuals. Determination of the probabilistic sample was done through the simple sampling technique, considering the following formula: n = Z2 PQ/d2, where n = minimum sample size; Z = reduced variable; P = probability of finding the phenomenon under study; Q = 1-P; and d = desired precision. p = 50% was adopted, for being a multidimensional evaluation, as well

as a 5% sampling error parameter. After due calculations, the minimum sample to be defined was composed of 185 patients. For such purpose, individuals of both genders, aged 18 years old or over, and admitted to the yellow or red sectors of the aforementioned emergency unit were included in the research. However, medical records with a high amount of underreported information were excluded from this study, totaling a final sample of 187 participants.

Study protocol

For this purpose, a structured instrument was adopted, covering issues relevant to the objectives proposed for the study, such as sociodemographic data like age, gender, schooling level and race, the patient's clinical history, current complaints, laboratory tests and clinical outcome. The News-Fast-COVID score was included in the instrument, developed by the State Health Department of Paraíba with the main objective of directing clinical decision. The aforementioned score was adapted from the National Early Warning Score (NEWS) and assesses the presence of comorbidities, oxygen saturation index, vital signs such as heart rate, blood pressure, respiratory rate and temperature and age, as well as level of consciousness. The score can vary from zero to five, considering high risk scores greater than or equal to three[11]. Data collection in the medical records was performed by reading the evolutions and records of the patient's Nursing Process from admission to outcome, conducted by three researchers, two of whom are PhDs in Nursing with expertise in Nursing Diagnoses/Outcomes

and Interventions. In addition, there was prior training for data collection, with a pilot test that was later included in the study sample.

Analyses of the results and statistics

The data collected were compiled and stored in the Microsoft Office Excel software and later imported into the Statistical Package for Social Sciences – SPSS computer system, version 20.0, for being adequate to attain the study objectives and for enabling precision and generalization of its results. Data analysis was carried out using a quantitative approach by means of descriptive statistics of a univariate nature for all the variables. For such purpose, they were analyzed through distributions of absolute and percentage frequencies for categorical data and, as for the continuous variables, the mean, range and standard deviation were determined.

For the elaboration of the Nursing Diagnoses/Outcomes and Interventions, clinical and diagnostic reasoning was used, but also the recommendations set forth in ISO 18104:2014 and the terms contained in the International Classification for Nursing Practice (ICNP®), 2019/2020 version. According to that classification system, Nursing Diagnoses must be prepared using a term from the focus axis and another from the judgment axis, with addition of terms from other axes as needed, except for the middle and action axis. For the Nursing interventions, a term from the action axis and additional terms are used as needed[10]

Ethical aspects

It is to be noted that, throughout the research process, especially in the empirical information collection phase, the ethical aspects that regulate research involving human beings provided for in Resolution 466/2012 of CNS/MS/BRAZIL were observed, especially information secrecy and confidentiality. This research was appreciated and approved by the Ethics and Research Committee of the João Pessoa University Center, under opinion number 4,077,113.

RESULTS

In relation to the sociodemographic data, it was evidenced that the mean age among the patients was 63.29 years old (SD ± 17.09), with ages ranging from 21 to 110 years old. Most of the patients, 84 (48.3%), were diagnosed with the viral infection through the PCR test, while 83 (47.7%) of the individuals were diagnosed through the rapid test and only 07 (4.0%) underwent the serology test. The distribution of the sociodemographic characteristics can be seen in Table 1:

Table 1 – Distribution of the sociodemographic characteristics of the patients affected by COVID-19. João Pessoa, PB, Brazil, 2021 (n=187)

Variables	N	%
Gender		
Male	96	55.2
Female	78	44.8
Total	174	100
Marital status		
Married	71	54.2
Widowed	18	13.7
Single	39	29.8
Divorced	03	2.3
Total	131	100
Skin color		
Brown	70	87.5
White	07	4.0
Black	02	2.2
Asian	01	1.3
Total	80	100
Schooling		
Illiterate	05	8.9
Incomplete Elementary School	14	25.0
Complete Elementary School	13	23.2
Incomplete High School	02	3.6
Complete High School	15	26.8
Higher Education	07	12.5

Total	56	100

*The total number is lower than the sample size due to lack of information in the medical records
Source: Elaborated by the authors, 2021.

With regard to the health problems, the patients affected by COVID-19 presented a mean of 3.61 (SD ± 1.79), with a minimum of zero and a maximum of nine associated diseases. In relation to the presence of chronic morbidities, Arterial Hypertension stands out with 109 (17%), followed by Diabetes Mellitus with 75 (12%), as shown in Table 2:

Table 2 – Distribution of the main morbidities presented by the patients affected by COVID-19. João Pessoa, PB, Brazil, 2021 (n=187)

Variables	n	%
Arterial Hypertension	109	17.52
Diabetes Mellitus	75	12.06
Heart Disease	11	1.77
COPD	10	1.61
Asthma	04	0.64
Kidney Failure	05	0.80
Cancer	01	0.16
Smoking Habit	19	3.05
Obesity	15	2.41
Parkinson	02	0.32
Alzheimer	02	0.32
Total	253	100

*The total number is larger than the sample size as it was possible to present more than one morbidity
Source: Elaborated by the authors, 2021.

Considering the main clinical manifestations presented by the patients infected with COVID-19 and the period of symptoms onset, with a mean of 8.12 days (SD ± 4.31), it was possible to elaborate 12 Nursing Diagnoses/Outcomes supported by the ICNP®, with significant prevalence for the Dyspnea (23.15%), Fever (18.97%) and Dry Cough (18.97%) diagnoses/outcomes, shown in Table 3:

Table 3 – Distribution of the Nursing Diagnoses/Outcomes presented by the patients affected by COVID-19. João Pessoa, PB, Brazil, 2021 (n=187)

Variables	n	%
Dyspnea	144	23.15
Fever	118	18.97
Dry Cough	118	18.97

Muscle Pain	48	7.72
Headache	46	7.40
Diarrhea	36	5.79
Impaired Smell	36	5.79
Impaired Taste	29	4.66
Lack of Appetite	16	2.57
Impaired Swallowing	11	1.71
Chest Pain	10	1.61
Vomiting	10	1.61
Total	622	100

* The total number is larger than the sample size as it was possible to present more than one clinical manifestation

Source: Elaborated by the authors, 2021.

Based on these findings, 36 Nursing Interventions were elaborated targeted at the patients affected by COVID-19, based on the Nursing Diagnoses/Outcomes, as well as the health care reality of the team in the pandemic context, as shown in Chart 1:

Chart 1 - Main nursing diagnoses/outcomes and interventions using the International Classification for Nursing Practice for patients affected by COVID-19. João Pessoa, PB, Brazil, 2021

Nursing Diagnoses/Outcomes	Nursing Interventions
Dyspnea	1. Assess hemodynamic condition (saturation, heart and respiratory rate, level of consciousness); 2. Listen to breathing sounds, identifying presence of adventitious noises. 3. Administer oxygen, if necessary.
Fever	1. Monitor body temperature every four hours; 2. Apply cold compresses on the frontal, axillary and inguinal regions; 3. Administer antipyretic as prescribed.
Cough	1. Pay attention to positioning with an elevated headboard to reduce the risk of bronchoaspiration; 2. Monitor cough frequency and characteristics; 3. Collect tracheobronchial secretions for examinations when prescribed.
Muscle Pain	1. Assess pain in terms of frequency, location and duration; 2. Identify, together with the patient, the factors that relieve pain; 3. Advise the patient regarding rest, so as not to stimulate muscle or joint contractions.
Headache	1. Assess pain using pain scales instituted by the service; 2. Assess the efficacy of the pain control measures through a constant survey of the pain experience; 3. Administer analgesic, according to medical prescription.

Diarrhea	1. Monitor the intestinal eliminations, regarding frequency, consistency, volume, color and odor; 2. Watch for signs of dehydration; 3. Offer oral re-hydration therapy, if needed.
Impaired Smell	1. Reassure the patient, informing that it is a reversible condition; 2. Advise on the risks of domestic accidents (for example: fire). 3. Encourage the patient to express their feelings about impaired smell.
Impaired Taste	1. Encourage food intake for nutritional maintenance; 2. Reassure the patient, clarifying doubts; 3. Reinforce about the transitory condition, encouraging the patient to express their feelings.
Lack of Appetite	1. Talk about eating habits, preferences, food intolerances and aversions; 2. Advise on the importance of adequate nutrient intake; 3. Weigh the patient daily.
Impaired Swallowing	1. Assess the patient's oral mucosa conditions; 2. Advise the patient regarding a comfortable position to eat; 3. Investigate the need for another route for food intake.
Chest Pain	1. Describe pain characteristics, including onset, duration, frequency, quality, intensity and triggering factors; 2. Assess the relationship between pain and respiratory impairment conditions; 3. Monitor pain after drug administration.
Vomiting	1. Assess the characteristics of the vomits in terms of volume, color and odor; 2. Identify environmental or biological factors capable of stimulating vomiting; 3. Maintain venous hydration with drip control.

Source: Elaborated by the authors, 2021.

DISCUSSION

The data point to a clinical characterization with predominance of patients with the following previous morbidities: arterial hypertension and diabetes mellitus, chronic diseases with significant prevalence among the Brazilian population. This fact was observed in a systematic review study and meta-analysis carried out with patients hospitalized with COVID-19, showing the prevalence of arterial hypertension and diabetes mellitus, but also the relationship of diseases of the respiratory system and cardiovascular diseases as prevalent comorbidities in the aforementioned population[12].

Regarding the clinical manifestations presented at admission, it was possible to identify predominance of dyspnea, fever and dry cough, characteristic symptoms of patients with COVID-19, also identified in a research study conducted in the Aachen University Hospital, Germany. This study performed a comparative analysis of the clinical symptoms presented by 50 COVID-19 patients with and without ARDS, revealing that both showed the reported symptoms and required complementary oxygen[13].

Considering that the symptoms presented by the hospitalized patients provide support to identify the problem and, consequently, to plan care, it becomes necessary to highlight the relevance of the Systematization of Nursing Care towards the operationalization of the care measures for patients with COVID-19. The nurse's performance is essential in the organization of the professional practice and, in this sense, the Nursing Process makes it possible to guide care, with interrelated stages that contribute to satisfactory responses regarding care quality, in addition to enabling visibility, appreciation, autonomy and protagonism in the profession[14].

In this context, identifying the Nursing Diagnoses, the second stage of the Nursing Process, becomes indispensable for the development of care. It is worth noting that the use of classification systems to structure the Nursing Diagnoses/Outcomes and Interventions is fundamental, as it allows for a standardized language for the professional practice. In this study, it was decided to use the ICNP®, a broad and complex terminology that represents the Nursing practice domain worldwide but is also considered as an information technology that provides collection, storage and analysis of Nursing data in a variety of scenarios[10].

In the identification of the Nursing Diagnoses, dyspnea stands out, which has been strongly associated with a poor prognosis in the general population, especially in patients with chronic obstructive pulmonary disease and acute respiratory failure. Thus, a research study carried out in the Geneva University Hospital, Switzerland, emphasized the importance of monitoring clinical signs of respiratory distress in patients unable to self-report dyspnea, since its underreporting in patients with COVID-19 can lead to fatal consequences[15].

With regard to the identification of the "fever" and "cough" Nursing Diagnoses, it is possible to highlight similarities with a study carried out in Beijing, which aimed at analyzing the clinical and epidemiological characteristics of COVID-19. It was identified that fever was the most prevalent symptom among the 262 patients in the sample, occurring in 82.1% of them. Allied to this, it was possible to identify cough as the second most prevalent symptom, corresponding to 45.8% of the infected patients, corroborating the high prevalence of these symptoms in that population[16].

The "muscle pain", "headache" and "chest pain" Nursing Diagnoses, identified by the report of patients hospitalized with COVID-19, deserve attention with regard to health care. It is worth noting that, especially when it comes to chronic pain, ensuring continuity of care and medication for pain, use of Telemedicine consultations and maintenance of biopsychosocial management are valid measures in order to monitor pain intensity and its relationship with COVID-19[17].

In addition to respiratory impairment, it was possible to identify the "diarrhea" and "vomiting" Nursing Diagnoses, which reflects the gastrointestinal involvement due to COVID-19 infection. In parallel, a study highlights the occurrence of these symptoms associated with other conditions such as anorexia, nausea, abdominal pain and gastrointestinal bleeding, highlighting diarrhea

as the most frequent symptom in children and adults, and vomiting with higher prevalence in children[18].

In addition, Impaired Smell and Impaired Taste, elaborated through complaints of anosmia and ageusia, reflect their occurrence in patients with COVID-19 and arouse attention in the professionals, since they are very specific manifestations. A research study conducted in the Sassari University Hospital, Italy, which aimed at evaluating the taste and olfactory functions through tests in 72 patients with COVID-19, evidenced that 73.6% of the patients reported chemosensitive disorders, varying from hyposmia (60) to anosmia (2) for the olfactory evaluation and from hypogeusia (33) to ageusia (1) for the taste evaluation[19].

Such clinical conditions are associated with the identification of the "lack of appetite" Nursing diagnosis, since ageusia directly contributes to disinterest in eating. Another relationship can be made with the "impaired swallowing" Nursing Diagnosis, considering that the inflammatory process from COVID-19 can culminate in odynophagia and dysphagia. Similar data were identified in a study conducted with older adults, showing that this group is more susceptible to nonspecific manifestations of COVID-19 and, therefore, demand even more attentive care[20].

Given the above, it is indispensable to highlight the importance of the nurses caring for patients with COVID-19, with an emphasis on identifying clinical conditions that support structuring the Nursing Diagnoses/Outcomes but, above all, of specific interventions aimed at that population. To such end, the study herein presented has elaborated interventions designed in the COVID-19 context, whose objective is to minimize the negative consequences of the patients' hospitalization process and contribute to their well-being and recovery.

In this scenario, this study contributes to the advancement of scientific knowledge in the health area, especially for Nursing, as it allows elucidating systematization of care with the identification of Nursing Diagnoses/Outcomes and Interventions, subsidized by the ICNP® and targeted at patients with COVID-19.

CONCLUSION

The study allowed listing the main Nursing Diagnoses/Outcomes and Interventions for patients with COVID-19 using the International Classification for Nursing Practice (ICNP®), 2019 version. For such purpose, the clinical manifestations of these patients were considered, as well as the nurses' critical-reflective thinking from the perspective of care in the pandemic context.

It was possible to identify 12 Nursing Diagnoses/Outcomes (Dyspnea, Fever, Cough, Muscle Pain, Headache, Diarrhea, Impaired Smell, Impaired Taste, Lack of Appetite, Impaired Swallowing, Chest Pain and Vomiting) and 36 Nursing Interventions, based on the specifics of care for patients hospitalized with COVID-19. Based on the above, it is estimated to support the operationalization of the Nursing Process and, in this way, generate information and knowledge that can support qualified care for patients affected by this infection, as well as for research and teaching.

It is worth noting that this study has limitations related to the geographic delimitation of its conduction, which may restrict data interpretation from the COVID-19 perspective in a local context. However, it is believed that the clipping herein presented illustrates the reality of health care for patients in the pandemic context, with an emphasis on the role of Nursing and on implementing systematization of care.

It is believed that the Systematization of Nursing Care, operationalized through the Nursing Process, constitutes the framework for professional care and, therefore, identifying Nursing Diagnoses/Outcomes and Interventions is relevant as a way to support care. In addition, it is pertinent to highlight the importance of developing other studies in this context, contributing to elucidating the quality of Nursing care in the light of COVID-19 but, above all, to contribute to the advancement of science in the profession.

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