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DEVELOPMENT OF TERMINOLOGICAL SUBSET FOR PEOPLE WITH COVID-19 SEQUELAE

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ABSTRACT

Objectives: to develop a terminological subset of the International Classification for Nursing Practice (ICNP) for people with covid-19 sequelae.®
Method: methodological study, which followed the steps: Identification of the relevant terms contained in the literature related to Covid-19 sequelae; Cross-mapping of the terms identified in the review with the terms of the classification; Construction of the statements of diagnoses, outcomes and nursing interventions and mapping of the constructed statements; Content validation of the statements by specialist nurses; and Structuring of the subset based on Roy's Adaptation Model. For data analysis, the Content Validity Index was used, and the statements with Content Validity Index were validated ≥ 0.80. Content validation was performed by 28 specialist nurses.
Results: 178 statements of nursing diagnoses/outcomes were constructed, with 450 nursing intervention statements. After content validation, a quantity of 127 diagnoses/outcomes and 148 nursing interventions were obtained, which comprised the terminological subset proposed in the study.
Conclusion: the validated statements that make up the terminological subset with greater predominance were those outlines in the physiological adaptive mode. However, the repercussions on the spiritual, social and personal dimensions are also highlighted.

DESCRIPTORS: Covid-19. Standardized terminology in nursing. Validation study. Nursing theory. Nursing process.

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DESENVOLVIMENTO DE SUBCONJUNTO TERMINOLÓGICO PARA PESSOAS COM SEQUELAS POR COVID-19

RESUMO

Objetivos: desenvolver um subconjunto terminológico da Classificação Internacional para a Prática de Enfermagem (CIPE®) para pessoas com sequelas da Covid-19.
Método: estudo metodológico, que seguiu as etapas: Identificação dos termos relevantes contidos na literatura relacionados às sequelas da Covid-19; Mapeamento cruzado dos termos identificados na revisão com os termos da classificação; Construção dos enunciados de diagnósticos, resultados e intervenções de enfermagem e mapeamento dos enunciados construídos; Validação de conteúdo dos enunciados por enfermeiros especialistas; e Estruturação do subconjunto com base no Modelo de Adaptação de Roy. Para a análise dos dados utilizou-se o Índice de Validade de Conteúdo, sendo validados os enunciados com Índice de Validade de Conteúdo ≥ 0.80. A validação de conteúdo foi realizada por 28 enfermeiros especialistas.
Resultados: foram construídos 178 enunciados de diagnósticos/resultados de enfermagem, com 450 enunciados de intervenções de enfermagem. Após a validação de conteúdo, obteve-se um quantitativo de 127 diagnósticos/resultados e 148 intervenções de enfermagem, os quais compuseram o subconjunto terminológico proposto no estudo.
Conclusão: os enunciados validados que compõem o subconjunto terminológico com maior predominância foram os enquadrados no modo adaptativo fisiológico. Contudo, apontam-se também as repercussões nas dimensões espiritual, social e pessoal.

DESCRITORES: Covid-19. Terminologia padronizada em enfermagem. Estudo de validação. Teoria de enfermagem. Processo de enfermagem.

DESARROLLO DE UN SUBCONJUNTO TERMINOLÓGICO PARA PERSONAS CON SECUELAS POR COVID-19

RESUMEN

Objetivos: desarrollar un subconjunto terminológico de la Clasificación Internacional para la Práctica de Enfermería (CIPE®) para personas con secuelas de Covid-19.
Método: estudio metodológico, que siguió los pasos: Identificación de términos relevantes contenidos en la literatura relacionados con las secuelas de la Covid-19; Mapeo cruzado de los términos identificados en la revisión con los términos de clasificación; Construcción de diagnósticos de enfermería, enunciados de resultados e intervenciones y mapeo de enunciados construidos; Validación de contenido de declaraciones de enfermeros especialistas; y Estructurar el subconjunto basado en el Modelo de Adaptación de Roy. Para el análisis de los datos, se utilizó el Índice de Validez de Contenido y se validaron las declaraciones con Índice de Validez de Contenido ≥ 0,80. La validación de contenido fue realizada por 28 enfermeras especialistas.
Resultados: fueron construidos 178 enunciados de diagnósticos/resultados de enfermería, con 450 enunciados de intervenciones de enfermería. Después de la validación de contenido, se obtuvo un número de 127 diagnósticos/resultados y 148 intervenciones de enfermería, que integraron el subconjunto terminológico propuesto en el estudio.
Conclusión: los enunciados validados que componen el subconjunto terminológico más predominante fueron los enmarcados en el modo adaptativo fisiológico. Sin embargo, también se señalan las repercusiones en las dimensiones espiritual, social y personal.

DESCRIPTORES: Covid-19. Terminología estandarizada en enfermería. Estudio de validación. Teoría de enfermería. proceso de enfermeria.

INTRODUCTION

The construction of terminological subsets of the International Classification for Nursing Practice (ICNP®) has been consolidated as a valuable technological strategy for the documentation of the Nursing Process (NP). The subsets address the elements of clinical practice (diagnoses, outcomes and nursing interventions), allowing the use of a standardized language worldwide. They consider cultural, social, local and professional characteristics in the use of terminologies[1].

The terminological subsets created for a population can provide relevant contributions to the nursing care practice, since they must be based on an ideal and validated theoretical model, so that they become instruments capable of providing answers to care challenges[2]. Among the nursing theories most used by nursing researchers, Callista Roy's is highlighted, who created an adaptation model with the objective of collaborating with health, quality of life and a dignified death for the human being[3]. Roy's Adaptation Model(RAM) considers the individual as a biopsychosocial being with behavioral adaptation capacity regarding stimuli. Therefore, the central objective of nursing would be to promote this adaptation, both individual and collective, in the four existing adaptive modes: physiological, self-concept, inter-dependence and role function[3].

Thus, nursing can contribute to all health priorities/problems, including in current circumstances, such as Covid-19, a viral infectious disease that gained prominence in January 2020, being declared by the World Health Organization (WHO) as a global pandemic and health emergency, based on increasing rates of case notification in Chinese and international territories[4].

By August 2022, Brazil recorded 679,275 deaths from Covid-19, according to data from the Ministry of Health[5]. In addition, more than 30 million cases have been confirmed to date. Based on these data, it is noticed that a large proportion of people who recovered from Covid-19 may present sequelae after diagnosis and treatment of the disease. With the ongoing pandemic, the evidence has brought consequences in the clinical scope, having been called "post-COVID-19 sequelae" and/or "post-COVID-19 syndrome", expressions related to discomforts and dysfunctions presented by people, which reveal the appearance of new contexts of a clinical, symbolic and subjective nature to investigate[6–7].

Thus, nursing professionals need to prepare for the additional long-term care caused by Covid-19. This includes raising awareness of survivors' physical and mental health problems, early intervention, strengthening health monitoring, and improving physical and mental recovery capabilities[8].

In view of the facts presented, the present study is justified, given the imminent need to develop systematized nursing indicators with standardized language, as through such technological resources, it is possible to obtain better results of the health care provided, improve professional communication, make the contribution of nursing more visible in the care process, and to value actions based on scientific evidence.

Thus, the study aims to develop a terminological subset of the International Classification for Nursing Practice (ICNP®) for people with Covid-19 sequelae.

METHOD

Methodological study, based on the Brazilian method for the creation of terminological subsets of the ICNP® and operationalized by the following steps: 1) Identification of the relevant terms contained in the literature related to Covid-19 sequelae; 2) Cross-mapping of the terms identified in the review with ICNP®; 3) Construction of the statements of diagnoses, results and interventions; 4) Content validation by nurses selected in the Lattes Platform, of the subset elaborated; and 5) Structuring the subset based on Roy's Adaptation Model.

First step

For the first stage, in order to identify the empirical evidence for nursing practice for the person with Covid-19, a Scoping Review[9] was conducted using the PCC mnemonic strategy (Population, Concept and Context), which led to the following research question: What are the sequelae presented by the adult population after contracting Covid-19? The scientific articles were searched in the scientific databases of the Virtual Health Library (VHL): *Medical Literature Analysis and Retrieval System Online* (PUBMED/MEDLINE) and in the Latin American and Caribbean Health Sciences Information Literature (LILACS), as well as in *the Cumulative Index to Nursing and Allied Health Literature* (CINAHL), SCOPUS, *Web Of Science*, *Science Direct*, COCHRANE, PsycINFO, *Catalog of theses and dissertations of the* CAPES and Google® Scholar.

The following Descriptors in Health Sciences (DeCS) and *the Medical Subject Headings* (Mesh) were used for the search: "Adult" / "Adult"; "Signs and *Symptoms*"; " Clinical Manifestations" / "*Clinical Manifestations*"; " Clinical Observations" / "*Clinical Observations*"; " Covid-19" / "Covid-19"; "Coronavirus Disease 2019" / "*Coronavirus disease 2019*"; " COVID-19 virus infection" / "*COVID-19 virus infection*"; *Statistics on Sequelae and Disability/ Statistics on Sequelae and Disability.* The search strategy was defined with Boolean operators AND and OR, combined with uncontrolled terms related to Covid-19 sequelae.

The following inclusion criteria were used: being a complete article resulting from research, being published in the Portuguese, English or Spanish language; being available in full electronically; and presenting clinical indicators for the care of patients with COVID-19 sequelae. In order to assist the review, we also used official publications located on the homepage of the Brazilian Ministry of Health. Publications in the form of protocols, manuals or guiding documents for the care of people with COVID-19 published by October 2021 and that refer to the post-Covid sequelae were evaluated.

In addition, the search in the academic search engine "Google Scholar", used the same descriptors and pairs as above. The search was carried out by two researchers separately in order to ensure the blinding of the search. If there was divergence between the researchers, a third researcher was invited to participate. This stage occurred from September to October 2021.

Second stage

In the second stage, the publications analyzed in the previous stage were submitted to a process of subtracting sections with low potential for relevant terms (titles, information about authors, abstracts, footnotes, methodology, references and acknowledgments). The content was then grouped into a single file in Word®format, which was converted to a Portable Document Format (PDF).

For the extraction of the terms, the content was inserted in the computational tool PorOnto, which processes information using large-scale ontologies, being widely used in the health area due to the complexity of its knowledge[10]. The PorOnto analysis resulted in a list of terms organized in order of occurrence and was arranged in an Excel spreadsheet®. As it is a tool for the construction of ontologies from texts in Portuguese, the articles from other languages used were translated by specialized professionals hired by the authors.

Next, the terms were normalized and compared to the terms in the 2019/2020 version of ICNP®. Normalization occurred by the orthographic correction; uniformity of verbal tenses, grammatical genres and number; adequacy of acronyms; and exclusion of repetitions and pseudo terminological expressions. In this cross-mapping, each list of terms was submitted separately to a cross-referencing process with the terms contained in the ICNP® using the Access for Windows® Version 2013 tool, resulting in constant and non-constant terms in the ICNP®.

The analysis of the terms not included in the ICNP® from the literature occurred separately by the researcher himself regarding the degree of equivalence, which followed the guidelines of what is recommended in the International Organization For Standardization (ISO)12,300/2016[11].

Terms classified as similar were named as “constant” terms in the ICNP®, adopting the names and definitions that already exist in the 2019/2020 version, while the terms analyzed and classified as broader, more restricted and without agreement were named as terms “non-constant” in the system. Subsequently, these terms, constant and non- constant, were classified according to the ICNP® Axes and were part of the terminology of specialized nursing language, thus enabling the elaboration of nursing diagnoses, results and interventions for people with Covid-19 sequelae.

Third stage

In the third stage, the nursing diagnoses/results were elaborated based on ISO 18.104: 2014[12], including a term from the “Focus” Axis and a term from the Axis “Judgment” Axis, with a single descriptor equivalent to “Focus” and “Judgment”; or only a Clinical Finding that may represent altered state, altered function or even change in behavior. An operational definition was developed for each nursing diagnosis and outcome.

Subsequently, for each nursing diagnosis/result, statements of nursing interventions were developed, which occurred from the combination of terms of specialized nursing terminology, also obeying the ISO 18104:2014 standard, which determines that in every intervention there must be a descriptor for the action that will be performed and, at least, a descriptor related to the target of this action, which can be a term of any other axis except the “Judgment” Axis.

Fourth stage

At this stage, the content validation of the diagnoses/results and nursing interventions of the study was performed by selected specialist nurses and considered experts in this area of knowledge. For this selection, information was sought on the Lattes Platform of the National Council for Scientific and Technological Development (CNPq), and the following inclusion criteria were established: being a nurse, having experience with the use of standardized terminologies or infectious diseases and having at least a master’s degree. To calculate the number of specialists, the following formula was used: $n=Z^2\ 1-\alpha/2.\ p.(1-p)\ /e2$, where “$Z^2\ 1-\alpha/2$”=confidence level adopted; “p”=expected proportion of specialists; and “e”=difference in acceptable proportion from what would be expected.

The confidence level of 95% (Z^2 1-α/2=1.96) was adopted, with an expected proportion of 85% of the specialists and a sampling error of 15%, obtaining an ideal sample of 22 specialists (n=1.96; 0.85; 0.15/0.152=22). Considering the difficulty in obtaining feedback from specialists, which is common in validation studies, 42 specialists were invited, who met the inclusion criteria, obtaining a response of 28.

For the validation of the content of the terminological subset, the Content Validity Index (CVI) was used, which mediated the proportion or percentage of judges who agree on certain aspects of the instrument and its items, and is determined by the sum of the agreements of items 3 and 4[13].

The CVI is defined in the formula: CVI=Σ answers "3" and "4"/ Σ answers. In the validation result, the CVI cut-off point ≥ 0.80 was taken into account for the consensus of the statements of diagnoses and nursing outcomes and interventions. This stage took place from November to December 2021.

Fifth stage

The fifth stage involved structuring the terminological subset, with the statements classified according to Roy's adaptive modes (physiological mode, self-concept, role function and interdependence)[14] and organized into a data collection instrument to be submitted to the content validation process, configuring the last step. The present study was approved by the Research Ethics Committee in accordance with Resolution 466/12 of the National Health Council.

RESULTS

In the first stage, a total of 2146 publications were identified in the databases. After reading the title and abstract, 71 publications were selected. Of this amount, 63 were eligible for further reading, leaving 45 studies that were examined in full.30,659 terms were extracted and, after the process of excluding repetitions, normalization and standardization in relation to the ICNP® 2019/2020, there were 511 remaining and relevant terms. These terms were classified as follows: Constant Terms: 187 - Focus Axis, 21 - Judgment Axis, 29 - Means Axis, 57 - Action Axis, 11 - Time Axis, 31 - Location Axis and nine - Client Axis; Non-Constant Terms: 61 - Focus Axis, 17 - Judgment Axis, 35 - Means Axis, 27 - Action Axis, six - Time Axis, 11 - Location Axis and nine - Client Axis.

After mapping, the diagnostics process was processed. In total, 178 statements of nursing diagnoses/outcomes were developed, based on the constant and non-constant terms in the ICNP®, with 450 statements of nursing interventions, which were subsequently submitted to content validation. Then, when considering CVI≥0.80, a number of 127 diagnoses/results and 148 interventions were obtained, which comprised the terminological subset proposed in the study, as presented in Charts 1 and 2, respectively.

Regarding the classification of these statements, according to the adaptive modes of MAR, the physiological adaptive mode predominated (73%), followed by the self-concept mode (22.1%), interdependence mode (2.8%) and paper function mode (2.1%).

Chart 1 – Distribution of ICNP diagnostic statements and results organized® according to Adaptive Modes for people with COVID-19 sequelae - Natal/RN, Brazil, 2022.

NURSING DIAGNOSES/OUTCOMES
Physiological/Oxygenation Adaptive Mode
Dyspnea; Function of the Respiratory System, Impaired; Hypoxia; Respiratory System Process, Impaired; Risk of Respiratory Failure; Risk of Aspiration; Risk of Respiratory System Function, Impaired; Circulatory System, Impaired; Cough.
Physiological/Nutrition Adaptive Mode
Appetite, Negative/Absent; Swallowing, Impaired; Malnutrition; Lack of Appetite; Nutritional Intake, Impaired; Taste, Impaired; Weight, Impaired; Body Weight Problem; Risk of Nutritional Deficit.
Physiological/Elimination Adaptive Mode
Diarrhea; Nausea; Urinary Retention.
Physiological/Activity and Rest Adaptive Mode
Agitation; Psychomotor Activity, Impaired; Intense Tiredness; Leg Cramp; Body Energy, Reduced; Fatigue; Hypoactivity; Insomnia; Motricity, Impaired; Movement, Impaired; Paralysis; Mobility Risk, Impaired; Risk of Fall; Vital Signal, Altered; Sleep, Impaired.
Physiological/Protection Adaptive Mode
Arrhythmia; Skin Layer, Impaired; Cardiovascular Condition, Ineffective; Erythema; Exposure to Contamination; Infection; Inflammation; Hematoma; Risk of Death; Risk of Skin Integrity, Impaired; Risk of Deep Vein Thrombosis; Sign of Infection; Symptom of Infection; Circulatory System, Impaired; Tachycardia.
Physiological/Senses Adaptive Mode
Attention, Impaired; Verbal Communication, Impaired; Pain; Smell, Impaired; Sensory Perception, Impaired; Sensory System, Impaired.
Physiological/Fluids and Electrolytes Adaptive Mode
Pulmonary Congestion; Dehydration; Peripheral Edema; Transudative Edema; Fever; Heart Rate, High; Hypotension; Blood Pressure, Altered; Risk of Dehydration; Risk of Embolism.
Physiological/Neurological Function Adaptive Mode
Amnesia; Headache; Cognition, Impaired; Consciousness, Impaired; Convulsion; Concentration, Impaired; Reasoning Deficit; Deficit in the execution of common day-to-day tasks; Delirium; Delirium, Hyperactive; Delirium, Hypoactive; Disorientation; Lack of Consciousness (or Cognition) of Symptoms; Weakness; Memory, Reduced; Memory, Impaired; Perception of Reality, Impaired; Problem with Understanding; Emotional Problem; Nervous System Process, Impaired; Psychological Response, Impaired.
Physiological/Endocrine Function Adaptive Mode
Lymphatic Edema; Hypoglycemia; Regulatory System Process, Impaired.
Role Function Adaptive Mode
Adhering to the Therapeutic Regimen; Family Process, Impaired; Social Process, Impaired.
Self-concept Adaptive Mode
Anguish; Spiritual Anguish; Moral Distress; Separation Anxiety; Anxiety Against Death; Anxiety; Self-image, Negative; Self-mutilation; Self-care deficit; Hopelessness; Lack of Confidence; Lack of Knowledge about Disease; Lack of Knowledge about Drug Regimen; Lack of Knowledge about Diagnostic Testing; Humor, Depressed; Mood, Decreased; Suicidal Ideation; Body Image, Impaired; Fear of Death; Fear of Contagion; Risk of Spiritual Distress; Mood Risk, Depressed; Risk of Loneliness; Suicide Risk; Stress Overload; Suffering; Solitude; Sadness; Death.
Inter-dependence Adaptive Mode
Concern; Sexual Behavior, Committed; Relationship Problem.

Chart 2 – Distribution of the statements of nursing interventions organized according to adaptive modes for people with COVID-19 sequelae - Natal/RN, Brazil, 2022.

NURSING INTERVENTIONS
Physiological/Oxygenation Adaptive Mode
Monitor the occurrence of dyspnea and events that improve or worsen it; Keep the airways clear; Position the patient aiming at the relief of dyspnea; Monitor frequency and respiratory pattern; Auscultate respiratory sounds; Monitor the tissue perfusion; Interpret the result of arterial blood gas; Offer oxygen therapy if necessary; Prevent aspiration; Assess risk of aspiration; Investigate cause of cough; Monitor blood oxygen saturation using pulse oximeter.
Physiological/Nutrition Adaptive Mode
Identify the prescribed diet; Give opportunity for food to be smelled to stimulate appetite; Ask the patient about food preferences to be requested; Guide the patient to chew food well; Keep the environment quiet; Observe swallowing and emptying of the mouth; Help the patient to feed; Investigate chewing problems; Guide the patient and/or companion regarding the nutrients needed for health recovery; Monitor the patient for anorexia, nausea, vomiting, changes in taste, esophagitis and diarrhea, as appropriate; Determine the patient's perception of changes in taste, swallowing, voice quality and comfort; Monitor weight daily; Monitor trends of increase and weight loss; Administer nutritional supplement if necessary; Obtain data on attitude towards nutritional condition.
Physiological/Elimination Adaptive Mode
Obtain data on diarrhea; Guide on management (control) of diarrhea; Manage diarrhea; Manage nausea; Get data on nausea; Guide on management (control) of nausea; Obtain data on urinary retention; Assess psychological response; Monitor psychological response.
Physiological/Activity and Rest Adaptive Mode
Determine causes of agitation; Monitor agitation; Evaluate psychomotor impairment; Monitor the patient's tolerance to activity; Observe occurrence of clinical manifestations of hypercalcemia; Obtain data on insomnia; Reassess the need for auxiliary devices at regular intervals together with the physiotherapist, occupational therapist and recreational; Determine the patient's commitment to learn and use a correct posture; Determine how much the patient understands body mechanics and exercises; Demonstrate prevention of falls; Identify cognitive or physical deficits of the patient, capable of increasing the potential for falls in a given environment; Identify behaviors and factors that affect the risk of falls; Establish predictable routines to promote regular sleep/wake cycles; Monitor/record the patient's pattern and amount of sleep hours.
Physiological/Protection Adaptive Mode
Determine with the patient and family the history of heart disease and arrhythmias; Monitor extremities for areas of heat, pain or edema; Observe the appearance of signs of infection; Monitor vital signs; Assess risk of fall; Adopt fall prevention measures; Adopt skin care; Obtain data on susceptibility to infection; Select the appropriate injection site; Examine the skin for bruising, inflammation, edema, lesions or discoloration; Stimulate the change of position; Monitor the occurrence of thrombophlebitis and deep vein thrombosis; Monitor the occurrence of signs of infection; Change the position of the patient every two hours, or walk as tolerated.
Physiological/Senses Adaptive Mode
Provide a structured and physically secure environment; Use a calm and reassuring approach; Listen carefully to the patient and/or companion; Stimulate communication; Identify barriers to communication; Assess pain in terms of location, frequency and duration; Evaluate the effectiveness of pain control measures; Favor adequate rest/sleep for pain relief; Assess impaired smell; Ask one question at a time; Monitor the level of perception and sensory/motor function; Stimulate the use of resources that increase sensory input; Assess mental status, understanding, motor function, sensory function, duration of attention and affective responses.
Physiological/Fluids and Electrolytes Adaptive Mode
Control liquids; Fill out water balance; Evaluate edema and peripheral pulses; Examine skin for ulcers and skin tears; Observe signs and symptoms of congestion; Observe signs of dehydration; Evaluate water and food intake; Measure urine output; Guide the patient and/or companion on voiding techniques; Get data on edema; Guide on fever management (control); Monitor temperature at the appropriate frequency; Monitor heart rate; Monitor blood pressure; Monitor the occurrence of pain in the affected area.

Chart 2 – Cont.

NURSING INTERVENTIONS
Physiological /Neurological Function Adaptive Mode
Evaluate the patient's memory; Stimulate cognitive exercises; Monitor level of consciousness; Consult the family to establish the cognitive level of the patient before trauma; Offer environmental stimuli through contact with various professionals; Monitor the size, shape, symmetry and reaction of the pupils; Observe and record the signs and symptoms in the seizure; Remove objects that can hurt the patient; Assess ability to perform daily activities; Manage (control) delirium; Guide in the recognition of signs/symptoms of tolerance/intolerance to exercises during and after the sessions; Monitor energy level, malaise, tiredness and weakness; Use simple language; Provide (provide, provide) emotional support.
Physiological /Endocrine Function Adaptive Mode
Control the fluid intake; Observe edemas; Evaluate response to fluid infusion; Evaluate blood glucose tests.
Role Function Adaptive Mode
Adopt therapies; Assess the need for a therapeutic regimen; Evaluate the results of the adopted therapeutic regimen; Promote positive relationships; Manage relationships; Evaluate relationships; Assist the patient to identify interpersonal problems resulting from deficits in social skills; Encourage the patient to verbalize feelings associated with interpersonal problems; Help the patient identify the desired results of problematic interpersonal relationships or situations.
Self-concept Adaptive Mode
Request psychological support; Determine probable causes of distress; Stimulate expressions of feelings about sexuality, self-image and self-esteem; Communicate the expectations and consequences of behaviors to the patient; Promote self-care; Investigate causes of hopelessness; Establish trust; Obtain data on family knowledge regarding the disease; Monitor and regulate the level of activity and stimulation in the environment according to the patient's needs; Obtain data on exposure to contagion; Guide on contagion; Be open to individual expressions of loneliness and impotence; Encourage participation in interactions with family, friends and others; Treat the person with dignity and respect; Implement precautions against suicide; Promote stress reduction; Use therapeutic communication to establish trust and care with empathy; Use the instruments to monitor and assess individual well-being, as appropriate; Provide post-mortem care; Allow the family to see the body after death when possible.
Inter-dependence Adaptive Model
Guide on normal development and behavior, as appropriate; Inform about realistic expectations regarding patient behavior; Determine the patient's common methods for solving problems; Demonstrate an attitude of acceptance of the condition/state of health; Communicate, verbally, empathy or understanding of the patient's experience; Listen to the patient's concerns; Monitor family coping, impaired; Obtain data on family process; Guide on family process.

DISCUSSION

In this study, the statements of diagnoses/outcomes and nursing interventions of the ICNP® elaborated for people with Covid-19 sequelae were organized according to Roy's adaptive modes. The highest concentration of these statements formulated in the study was in the Physiological Adaptive Mode, which were distributed both in relation to the basic needs of physiological integrity (oxygenation, nutrition, elimination, activity and rest, and protection), as well as the more complex processes (sensory, fluid and electrolytes, neurological function and endocrine function).

The statements listed in the basic need “Oxygenation” proved to be fundamental to indicate respiratory sequelae, since, in the face of infection, there are high possibilities for impairment in gas exchange and in the supply and distribution of oxygen to cells, tissues and organs, even after treatment. Most of the affected people, especially at the beginning of the pandemic, presented respiratory sequelae, which culminated in the need for ventilatory support, which made use of the most diverse resources, such as nasal catheter, mask with high oxygen concentration, invasive mechanical ventilation, and even the use of home oxygen[15]. Among the most prevalent respiratory sequelae promoted are dyspnea and pulmonary hemorrhage, especially in the most severe cases, which reflects the impairment of respiratory function[16].

In relation to the statements in the basic need “Nutrition”, it was found that people’s eating patterns can also be impaired, which opens the opportunity for nutritional sequelae during the coping of the disease, therefore requiring specific dietary strategies. Some of the main sequelae presented were of olfactory-gustatory origin, which were present even without nasal obstruction/ringing and beginning even before the clinical signs/symptoms of COVID-19. The recovery of smell/taste, when it occurs, can usually occur in the first two weeks after the infections resolves[17].

On the other hand, attention is drawn to people who are seriously ill and hospitalized in intensive care units, who may present nutritional sequelae related to low protein levels, which is justified by poor nutritional status and impaired liver and kidney function[18].

Regarding the statements of diagnoses/outcomes and nursing interventions in the basic need “Eliminations”, it was found in the study that gastrointestinal sequelae can also occur, therefore, strict monitoring by health professionals, including nurses is required, since sequelae such as diarrhea and intense vomiting can lead to severe dehydration. This statement is reinforced, as research shows that, in relation to the gastrointestinal tract, sequelae such as nausea, vomiting and diarrhea may be present, and still be accompanied by abdominal pain[19]. However, the disease has the potential to cause a greater impairment in such a system, since there is the possibility of causing ischemic sequelae.

In the basic need “Activity and Rest”, statements were also established, since the disease can affect the individual’s energy level, therefore leading to sequelae related to impairment/impairment of mobility and body balance. In order to confirm this finding, a systematic review conducted with studies published between 2019 and 2021 reveals that, in most people affected by Covid-19, there are sequelae such as impairment in general functioning, decline in mobility and reduced tolerance for exercises[20]. A cohort study on active aging found that the Covid-19 pandemic promoted a greater impairment/sequelae for those who previously had some degree of motor impairment, therefore having greater difficulties in dealing with the restrictions promoted by the disease[21].

In the basic need “Protection”, the diagnoses/outcomes and nursing interventions established in the study revealed the existence of sequelae related to skin involvement, such as impaired skin integrity, skin lesions and higher risks of infection regarding Covid-19. The relationship between skin sequelae and Covid-19 can be observed in a study [22] that highlights that the presence of skin alterations or lesions is increasingly common in people with Covid-19, although it is not exclusive to viral disease, which has contributed as an auxiliary information in the diagnoses. Among the main cutaneous sequelae presented are: eruptions (erythema/maculopapular, urticariform, papulovesicular, non-palpable purpuric/petechial); perniosis type lesions, livedoide and acroisque lesions.

Therefore, skin changes need to be continuously evaluated by nursing in order to mitigate risks and carry out the differential diagnosis of lesions resulting from the virus or hospitalization process. In this regard, attention to the patient's integral needs and the availability of material and human resources are relevant, since nursing interventions need to be well monitored and helped through the evaluation, documentation and adequacy of treatment.

About the complex system "Senses", the diagnoses/outcomes and nursing interventions established in the study alert to the possibility of sequelae in the sensory system. One study[23] shows that the most affected senses are smell and taste, and such sequelae are considered the eighth and ninth, respectively, more common in people with said infection. Thus, it is necessary that nursing professionals are attentive to these changes, since they may be present for an indefinite period, thus conferring the need for professional follow-up based on previously presented evidence.

Regarding the complex system "Fluids and Electrolytes", the diagnoses/outcomes and nursing interventions revealed in the study reveal that the accumulation of body fluid and even changes in cardiac function may be present, which demonstrates that they are relevant changes and deserve attention from the health team. It is consistent that people with Covid-19, especially those who seek care in the emergency room, present electrolyte alterations such as hyponatremia and hypokalemia. With regard to severely-ill hospitalized people, they most commonly presented hyponatremia[24]. Therefore, nurses must evaluate the patient's main clinical and laboratory indicators daily and promoting preventive care for these changes.

Diagnoses/outcomes and nursing interventions related to the complex "Neurological" system were also addressed in the study, demonstrating that sequelae related to this system, such as headache, reasoning problems and difficulties in performing day-to-day activities, may arise. One study[25] reveals that people who are diagnosed may not only have neurological sequelae such as delirium, encephalopathy, altered mental status, but are also more susceptible to longer hospital stay, greater functional decline, and a higher number of deaths caused by the disease.

The involvement of the neurological system in the SARS-CoV-2 infection is real and constantly addressed in the literature, although such a relationship still needs more clarifying data, thus, health professionals must have this knowledge in order to observe that some neurological manifestations may continue, and understand that these symptoms are useful to predict the prognosis of patients[26].

The study also developed statements in the complex "Endocrine" system, which demonstrated important metabolic sequelae such as hypoglycemia, edema and even impaired body regulatory process. The endocrine and/or metabolic sequelae related to Covid-19 are also evidenced in the literature, which can cause a possible fatal consequence in the pancreas and interconnected metabolic disorders, but makes it clear that knowing the mechanism of action or pathophysiology of the disease is fundamental to determine the susceptibility of pancreatic cells to the virus in question, as well as defense strategies for protecting cells that are vulnerable to the most severe form of Covid-19[27].

Roy's second Adaptive Mode that most focused on the study was self-concept, demonstrating that psychological and emotional sequelae can be identified, so this should not be underestimated by the health team. "Anguish" and "Humor, Decreased", for example, were nursing diagnoses classified in this adaptive mode, which represents, at the same time, psychological/emotional sequelae. Reinforcing this idea, one in three adults has presented psychological distress related to Covid-19 and, thus, health interventions are necessary in high-risk populations[28]. Thus, it is important that nursing professionals evaluate the individual potential of each individual, bringing means capable of encouraging the promotion of mental health.

The study also evidenced statements of diagnoses/outcomes and nursing interventions grouped in Adaptive Mode Interdependence, emphasizing sequelae related to "Concern" regarding the consequences of the disease. This fact demonstrates that the provision of concrete and truthful information, in the face of a global health emergency, has become fundamental to assist in the process of coping with the disease. Thus, in this process of health education, the role of nurses and the nursing team is essential, considering their proximity to people and capacity as a science of care.

Finally, the study presented statements gathered in the Role Function Adaptive Mode, which revealed that the pandemic and diagnosis also caused social repercussions in infected individuals. A study conducted in the United Kingdom states that the isolation caused by the Covid-19 pandemic led to changes in the patterns of thoughts in people's daily lives, which consequently decreased resolutions of current and medium- to long-term personal problems[29].

As seen, this study was able to accommodate adaptation needs of people who experience immediate and late Covid-19 sequelae and who may be of interest to nursing. The adoption of the ICNP demonstrated® a relevant role in directing the construction of possible statements to support the Nursing Process. The ICNP® has shown promise in expanding the clinical judgment of nurses and by inserting new elements originated from practice in several areas, including Covid-19. Thus, it is shown as a powerful technology for current aspects and, once again contributes by documenting nursing care standards[30–31].

Further studies are needed to seek clinical evidence in order to improve its applicability and specificity, thus configuring a limitation of this study.

CONCLUSION

The construction of the terminological subset for people with Covid-19 sequelae, supported by Roy's Adaptation Model, was composed of 127 statements of nursing diagnoses/outcomes and 148 nursing interventions, which were validated for content, with CVI ≥ 0.80.

Most of the diagnoses statements, results and nursing interventions elaborated in the study were concentrated in the "Physiological Adaptive Mode". Through this study, it was still possible to establish statements in psychosocial modes, which demonstrates that nursing needs to transcend the "biological horizons" when caring for the person with Covid-19, since the disease also has high potential to generate sequelae related to existential issues or related to the spiritual dimension, due to its high impact on the life/daily life of individuals who survived the infection.

Finally, it is emphasized that the construction of the terminological subset of the ICNP® of Covid-19 sequelae can contribute to the clinical reasoning and decision-making of the nursing professional regarding such patients. This strengthens safe and holistic care through the application of a specialized language terminology and the theoretical model used, besides enabling the implementation of the Nursing Process using everyday life phenomena.

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NOTES

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