Correlation between diagnoses, outcomes and nursing interventions in inpatient care of the patient with COVID-19

EDITORIAL

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As confirmed by the World Health Organization (WHO) in 2020, COVID-19 is an infectious respiratory disease caused by a new virus belonging to the family Coronoviridae. It has a large ribonucleic acid (RNA) genome and helical symmetry. Spikes found on their viral envelope are the main feature of these viruses, giving them a crown shape appearance. In addition, these spikes along with envelope proteins allow to anchor themselves to host cell receptors[1].

Various coronaviruses such as Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS) and current COVID-19 have been known to cause common colds and more severe illnesses which have led to complications and the death of thousands of people. The 2002 SARS outbreak caused 8,300 reported cases and 785 deaths, while the 2012 MERS outbreak caused 1,879 reported cases at a mortality rate of 39%[2].

The WHO has carried out close monitoring to make daily reports of confirmed COVID-19 cases and deaths in different regions of the world[3]. Considering that this disease has a reproduction rate of R0=2.28 caused by its rapid spread in comparison with other coronaviruses[4], the virus is easily transmitted via respiratory droplets (aerosols) and direct/indirect contact by contaminated fomites of those aerosols[5], together with the lack of compliance to biosafety protocols in the population, which have ultimately resulted in an uncontrolled spread of the virus.

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the WHO issued some infection prevention guidelines, each country decided to arrange its own control measures to prevent the virus' rapid spread and hospital collapse. While some people may be asymptomatic, others may present mild or moderate symptoms that require home care or hospitalization in non-critical care areas, a large number of people presents a significant deterioration requiring ICU care, where ICU are deemed as areas with limited capacity due to the requirements of adequate equipment and trained staff, which ultimately lead to high costs related to patients' stay[4].

In light of this situation, nursing has been taking up the challenge in different fields of work such as the community field where self-care measures have been promoted to empower the population. However, these measures largely depend on the adherence that each individual has to social distancing, hand washing, use of face masks, avoiding crowded places, among others[6]. In addition, specific social isolation measures have been implemented for vulnerable populations who are at higher risk of dying from the disease such as the elderly, patients with chronic diseases, people with immunocompromising conditions due to secondary comorbidities[1], all of who have been subjected to mandatory preventive isolation measures to avoid complications. Regarding hospital areas, care dynamics vary depending on patient complexity as the infection can progress to severe disease, including dyspnea and chest discomfort, consistent with pneumonia in 75% of cases[7]. The time period from the onset of COVID-19 symptoms to death ranges between 6-41 days with a 14-day median. This time period depends on the patient's immune system and age[8]. All these variables are aimed at critical care, in which healthcare professionals and patients face great challenges and vulnerabilities.

In this complex context, the role of nursing is full of challenges with a focus on dignified care across all healthcare areas. However, the greatest challenges lie in the transition towards inpatient care of patients with COVID-19. Firstly, there is a constant need for healthcare professionals to expand their knowledge in response to a virus that is evolving and transforming the way healthcare is usually perceived. Secondly, uncertainty and discomfort are present in patients, which makes it imperative to provide comprehensive care in line with this new reality, in which safeguarding lives and restoring health are paramount[9].

This situation has revealed the leading role that nursing plays through individualized and planned care, supported through the production and validation of nursing knowledge and professional practice in all areas, which aims at relevant quality care for patients, families, caregivers and communities[9].

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From this perspective, nursing care is organized and guided by the Nursing Process (NP)[10], which was developed as a response to the need to guide nursing practice around critical thinking and clinical judgment in order to achieve the expected results, so that nursing professionals provide appropriate care and develop rational decision-making[11]. Although the NP is structured through different paths, sometimes healthcare professionals can only make it mentally. However, this process is supported by IT systems in some institutions, which provide a complete articulation to the Standardized Language Systems (SLS): NANDA-I nursing diagnoses[12], Nursing Outcomes Classification (NOC)[13] and Nursing Interventions Classification (NIC). Each of these taxonomies has a defined and organized participation with NP[6].

Integrating SLSs provides better visibility of care since diagnoses facilitate the consolidation of clinical judgment, outcomes lead to measure the impact of care and interventions are focused

on prioritizing healthcare demanded by patients, thus achieving greater synergy that results in a practice focused on addressing needs, which also benefits the quality of care. A close relationship among SLSs is further outlined during planning, as shown in Table 1, through main nursing diagnoses, outcomes and interventions in inpatient care of patients with COVID-19.

Table 1. ***Diagnoses, outcomes and nursing interventions identified in inpatient care of the patient with COVID-19***

Diagnoses - NANDA-I	Outcomes - NOC	Interventions - NIC
Domain 2: Nutrition		
Class 1: Ingestion		
00002 - Imbalanced nutrition: less than body requirements	1004 - Nutritional status 1014 - Appetite	1160 - Nutritional monitoring 1120 - Nutrition therapy
00103 - Impaired swallowing	1010 - Swallowing status 1008 - Nutritional status: food and fluid intake	1803 - Self-care assistance: feeding 1860 - Swallowing therapy
Class 4: Metabolism		
00178 - Risk for impaired liver function	0803 - Liver function	2380 - Medication management
Domain 3: Elimination and exchange		
Class 2: Gastrointestinal function 00013 - Diarrhea	1015 - Gastrointestinal function 0501 - Bowel elimination	0460 - Diarrhea management 0430 - Bowel management
Class 4: Respiratory function 00030 - 00030 - Impaired gas exchange	0402 - Respiratory status: gas exchange	3140 - Airway management
Domain 4: Activity/Rest		
Class 1: Sleep/Rest 00198 - Disturbed sleep pattern	0004 - Sleep 1208 - Depression level	1850 - Sleep enhancement 5820 - Anxiety reduction 5330 - Mood management
Class 2: Activity/Exercise 00085 - Impaired physical mobility	0208 - Mobility	0200 - Exercise promotion 0221 - Exercise therapy: ambulation 6486 - Environmental management: safety
Class 3: Energy balance 00093 - Fatigue	0007 - Fatigue level	0180 - Energy management
Class 4: Cardiovascular/Pulmonary responses 00032 - Ineffective breathing pattern	0415 - Respiratory status 0403 - Respiratory status: ventilation	3350 - Respiratory monitoring 3390 - Ventilation assistance 3320 - Oxygen therapy
00033 - Impaired spontaneous ventilation	0402 - Respiratory status: gas exchange 0412 - Mechanical ventilation weaning response: adult	3350 - Respiratory monitoring 3300 - Mechanical ventilation management: invasive 3310 - Mechanical ventilatory weaning 6650 - Surveillance
00092 - Activity intolerance	0414 - Cardiopulmonary status 0002 - Energy conservation 0005 - Activity tolerance	6680 - Vital signs monitoring 4310 - Activity therapy
Domain 5: Perception/cognition		
Class 4. Cognition 00128 - Acute confusion	0901 - Cognitive orientation	4820 - Reality orientation 4720 - Cognitive stimulation
Class 5. Communication 00051 - Impaired verbal communication	0903 - Communication: expressive	4976 - Communication enhancement: Speech deficit

Diagnoses - NANDA-I	Outcomes - NOC	Interventions - NIC
Domain 6: Self-perception		
Class 1: Self-concept 00124 - Hope lessness	1201 - Hope 1206 - Will to live	5420 - Spiritual support 5310 - Hope inspiration 8340 - Resiliency promotion 5230 - Coping enhancement 4740 - Journaling
Class 2: Self-esteem 00120 - Situational low self-esteem	1205 - Self-esteem 1215 - Self-awareness	5400 - Self-esteem enhancement 5440 - Support system enhancement 4390 - Milieu therapy
Domain 7: Role relationship		
Class 2: Family Relationships 00060 - Interrupted family processes	2608 - Family resiliency 2609 - Family support during treatment	8340 - Resiliency promotion 7130 - Family process maintenance 7140 - Family support 7110 - Family involvement promotion
Domain 9: Coping/Stress tolerance		
Class 1: Post-trauma responses 00114 - Relocation stress syndrome	1311 - Relocation adaptation 1302 - Coping 1203 - Loneliness severity	5230 - Coping enhancement 4420 - Patient contracting 5270 - Emotional support 7110 - Family involvement promotion
Class 2: Coping responses 00147 - Death anxiety 00241 - Impaired mood regulation	1211 - Anxiety level 2001 - Spiritual health 1300 - Acceptance: health status 1204 - Mood equilibrium	5270 - Emotional support 5330 - Mood management 5820 - Anxiety reduction 4920 - Active listening 5460 - Touch 5602 - Teaching: disease process
Domain 10: Life principles		
Class 3: Value/belief/action congruence 00066 - Spiritual distress	2003 - Suffering severity 2011 - State of comfort: psycho-spiritual	5420 - Spiritual support 5426 - Spiritual growth facilitation 5880 - Calming technique
00242 - Impaired emancipated decision-making	1606 - Participation in health care decision 0906 - Decision making	5250 - Decision-making support 7110 - Family involvement promotion
Dominio 11: Safety/protection		
Class 2: Physical injury 00249 - Risk for pressure ulcer	1101 - Tissue integrity: skin and mucous membranes	3590 - Skin surveillance 3540 - Pressure ulcer prevention 0840 - Positioning
00205 - Risk for shock	0416 - Tissue perfusion: cellular	6680 - Vital signs monitoring 1910 - Acid-base management
Clase 6: Thermoregulation 00008 - Ineffective thermoregulation	0800 - Thermoregulation 1922 - Risk control: hyperthermia 0802 - Vital signs	3740 - Fever treatment 3900 - Temperature regulation 1380 - Heat/cold application
Domain 12: Comfort		
Class 1: Physical comfort 00132 - Acute pain	2102 - Pain level 1605 - Pain control	2210 - Analgesic administration 0840 - Positioning 6650 - Surveillance
00214 - Disconfort	2008 - State of comfort	6482 - Environmental management: comfort
00134 - Náuseas	2107 - Nausea and vomiting severity 2301 - Medication response	1450 - Nausea management 1100 - Nutrition management 2300 - Medication administration

NANDA-I. NOC and NIC linkages in inpatient care of patients with COVID-19 consist of data collection showing the coordination of disciplinary knowledge with nursing classification in practice, thus making visible how useful these are in a systematic approach in providing care to this population in order to monitor the evolution of patient care through outcomes and interventions[11].

The correspondence among classifications reveals the need for consistent care based on critical judgment and supported by philosophical, conceptual, theoretical and research production of the nursing profession.

Classification linkage shows that a large number of NANDA-I domains have been altered, suggesting that the presence of one or more diagnoses can be determined based on the patient's commitment, which in turn leads to the selection of NOC outcomes and NIC interventions. The correspondence among classifications reveals the need for consistent care based on critical judgment and supported by philosophical, conceptual, theoretical and research production of the nursing profession.

In conclusion, although the evidence of NP-driven care based on classifications[12-15] provides support for health care and work of nursing professionals, it also promotes quality and optimization of time, indicators, resources and the needs of individuals, which is ultimately at the heart of the profession where nurses aim to guide inpatient care of patients with COVID-19 from a critical thinking perspective, taking up-to-date information about the disease and contributing to the management of the pandemic impact for both healthcare staff and patients, from a physical, psychological and social point of view that will ultimately impact the overall health and well-being of the population.

Conflict of interest: The authors declare that there is no conflict of interest.

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