








ORIGINAL ARTICLE

NANDA-I, NOC, and NIC linkages to SARS-CoV-2 (COVID-19): Part 2. Individual response

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Abstract

Purpose: To provide guidance to nurses caring for individuals with COVID-19, we developed linkages using interoperable standardized nursing terminologies: NANDA International (NANDA-I) nursing diagnoses, Nursing Interventions Classification (NIC), and Nursing Outcomes Classification (NOC). We also identified potential new NANDA-I nursing diagnoses, NOC outcomes, and NIC interventions for future development related to nurses' role during a pandemic.

Methods: Using a consensus process, seven nurse experts created the linkages for individuals during the COVID 19 pandemic using the following steps: (a) creating an initial list of potential nursing diagnoses, (b) selecting and categorizing outcomes that aligned with all components of each nursing diagnosis selected, and (c) identifying relevant nursing interventions.

Findings: A total of 16 NANDA-I nursing diagnoses were identified as the foundation for the linkage work, organized in two dimensions, physiological and psychosocial. A total of 171 different NOC outcomes were identified to guide care based on the nursing diagnoses and 96 NIC interventions were identified as suggested interventions. A total of 13 proposed concepts were identified for potential future development across the three classifications.

Conclusions: The linkages of nursing diagnoses, outcomes, and interventions developed in this article provide a guide to enhance nursing practice and determine the effectiveness of nurses' contribution to patient outcomes for individuals at risk for or infected by COVID-19.

Implications for nursing practice: NANDA-I, NOC, and NIC linkages identified in this paper are an important example of the value of using standardized nursing terminologies to guide and document nursing care. When included in electronic health record databases and used widely, the data generated from the care plans can be used to create new knowledge about how to better improve outcomes for patients with COVID-19.

KEYWORDS

COVID-19, individuals, NANDA-I, NIC, NOC, standardized nursing terminology

1 | INTRODUCTION

Nursing strives to build the knowledge base to support its practice and improve the care of patients, which nurses provide in a variety of settings. Essential to the nursing profession is the knowledge of nursing diagnoses, patient outcomes, and nursing interventions (Lavin, Meyers, & Ellis, 2007). But at this time, the profession is experiencing patient care situations that very few of us have worked in. Thus, our experiences may be helpful to an extent, but this pandemic of COVID-19 demands expertise and the identification of new terms to supplement the nursing terminologies as they exist.

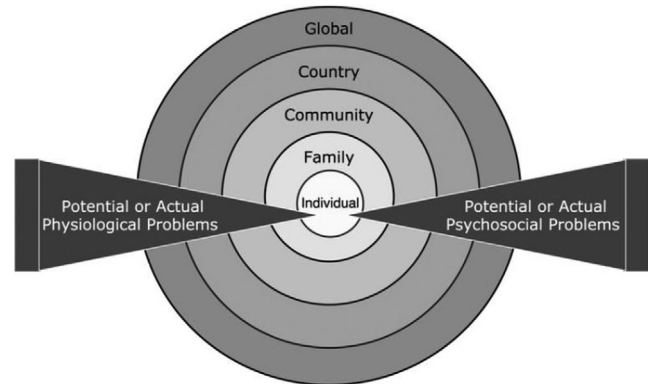
This work offers nurses guidance in this time of the pandemic. It demonstrates how the three terminologies of NANDA International (NANDA-I), Nursing Outcomes Classification (NOC), and Nursing Interventions Classification (NIC) can be linked together to facilitate the practice of nursing. These linkages facilitate critical thinking and reasoning skills needed to provide nursing caring for patients. Nurses are experiencing care challenges and perhaps are working in areas of nursing in which they are not familiar. Thus, guidance for the implementation of care for COVID-19 patients will be assistive in their practice, because these linkages cannot only be used to guide care but evaluate the effectiveness of nursing care for this select patient population.

Nurses can significantly change the disease's trajectory and are in a unique position to lead these efforts, considering they provide hospital care and are involved with assessment and monitoring in outpatient settings (Choi, Skrine Jeffers, & Logsdon, 2020). It is paramount that nursing care of those affected is focused on the whole individual. Concern about this pandemic and how nurses can participate led to part one of this work, which aimed to develop linkages of three standardized nursing terminologies, NANDA-I nursing diagnoses, NIC, and NOC for community nurses responses related to COVID-19 (Moorhead et al., 2020). In this second part in the series, we developed linkages of the three standardized nursing terminologies to guide decision-making for nurses caring for individuals in response to COVID-19.

2 | CONCEPTUAL MODEL

Given the multidimensional nature of patient care needs during the pandemic, we proposed an overarching conceptual model, The "Nursing Care in Response to Pandemics Model" (Figure 1) to guide our team's earlier work for community-level care (Moorhead et al., 2020) and this current work centers on patient care at the individual level. Our model was based on a social ecological framework (Lounsbury & Mitchell, 2009). Social ecological models are used extensively in public health (Baral, Logie, Grosso, Wirtz, & Beyrer, 2013; Golden & Earp, 2012); however, we were unable to identify a conceptual model that incorporated the multiple dimensions of nursing care during a worldwide infectious pandemic, thus this one was constructed.

The model is composed of five concentric circles beginning with the individual and then surrounded by families, communities, countries, and the global world. The links between the diagnoses, outcomes and interventions are represented by the arrows that cut across each of



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FIGURE 1 Nursing care in response to pandemics model

the model's layers. These arrows depict the nurses response during the pandemic to actual and potential health problems of a physiologic or psychosocial nature.

The model highlights the fluidness of the spread across the concentric circles. The COVID-19 pandemic is focused on individuals and communities adopting a set of actions to help slow the spread of the virus until a vaccine or treatments become available. But if this is not achieved, transmission of the virus can quickly spread across all the circles surrounding the individual.

3 | METHODS

We formed a team of seven nurse experts to identify linkages of valid and reliable NANDA-I nursing diagnoses, NOC outcomes, and NIC interventions focused on individuals during the COVID 19 pandemic. Each of these nurse experts has worked with the three languages for a range of 7–30 years in the roles of a practicing nurse, researcher, and/or language developer. These terminologies are referred to as NNN.

After the identification of the nursing diagnoses, the team decided to fully examine nursing care needed for patients with or without COVID-19, and patient scenarios were developed. The three scenarios we viewed as reflective of the care situations were as follows: (a) individuals who were sheltering in place and did not have COVID-19 symptoms, (b) individuals sheltering in place and did exhibit symptoms of COVID-19, and (c) individuals who were hospitalized with symptoms and/or a diagnosis of COVID-19 needing extensive care. This refinement of the care situations allowed the team to develop a more focused set of linkages to guide nurses in the care of their patients during this pandemic.

Once these decisions were made, using a consensus process, our team of seven nurses moved to draft the NNN linkages. The next step was to review the identified nursing diagnoses and select outcomes that aligned with measuring the occurrence of the diagnosis, its defining characteristics, related factors, at risk populations, and associated conditions. Once outcomes were selected, we identified relevant nursing interventions. In addition to the components identified above,

the review team also considered the risk factors for the appropriate diagnoses. Although all these previously mentioned components were reviewed, the major focus for the selection of NIC interventions was based on the related factors of the nursing diagnoses.

Review of the definitions of each nursing diagnosis, outcome, and intervention helped clarify the alignment of the concepts and determine whether there was a good fit among the three components of the linkages. Once a preliminary set of linkages was identified for the nursing diagnosis, we reviewed the work again and commented on the appropriateness of each of the outcomes and interventions selected and identified gaps where new terminologies may be needed.

4 | FINDINGS

The findings are organized and presented based on the model and its dimensions: physiological and psychosocial. There are nine nursing diagnoses and seven nursing diagnoses for each of the two dimensions of the model respectively.

The nine nursing diagnoses included in the physiological dimension were distributed in five NANDA-I domains. The domains were as follows: Domain 1. Health Promotion; Domain 3. Elimination and Exchange; Domain 4. Activity/Rest; Domain 11. Safety/Protection; and Domain 12. Comfort (Herdman & Kamitsuru, 2018). The next section presents the numerical counts of the respective outcomes and interventions for each diagnosis within the physiological dimension.

The nursing diagnosis *Impaired Gas Exchange* (00030) had 17 nursing outcomes and 11 nursing interventions included in the linkage. For *Activity Intolerance* (00092), 25 nursing outcomes and eight nursing interventions were selected; for *Dysfunctional Ventilatory Weaning Response* (00034), 31 nursing outcomes and 14 nursing interventions were selected; for *Impaired Spontaneous Ventilation* (00033), 20 nursing outcomes and 17 nursing interventions were selected; and for the *Ineffective Breathing Pattern* (00032), 14 nursing outcomes and 13 nursing interventions were selected. For the nursing diagnosis *Ineffective Airway Clearance* (00031), 19 nursing outcomes and 20 nursing interventions were selected; for the *Risk for Infection* (00004), 27 nursing outcomes and seven nursing interventions were selected. For the nursing diagnosis *Impaired Comfort* (00214), 25 nursing outcomes and 12 nursing interventions were selected. These linkages are presented in Table 1.

The seven nursing diagnoses included in the psychosocial dimension of the model were also distributed across four NANDA-I domains (Herdman & Kamitsuru, 2018). The next section presents the numerical counts of the respective outcomes and interventions for each diagnosis within the psychosocial dimension.

For the nursing diagnosis *Risk-Prone Health Behavior* (00188), 28 nursing outcomes and 13 nursing interventions were selected. For the nursing diagnosis *Anxiety* (00146), 36 outcomes and 13 nursing interventions were identified; for *Death Anxiety* (00147), 26 nursing outcomes and 15 nursing interventions were identified; for *Fear* (00148), 21 nursing outcomes and 10 nursing interventions were identified; and

for *Impaired Resilience* (00210), 43 nursing outcomes and 22 nursing interventions were identified. For the nursing diagnosis *Spiritual Distress* (00053), 26 nursing outcomes and 23 nursing interventions were selected. *Risk for Loneliness* (00054) diagnosis had 20 nursing outcomes and 21 nursing interventions.

Other findings of this work relate to the gaps in the terminologies. These identified gaps have led us to suggest new nursing diagnoses, new outcomes, and new interventions for future development. A total of 13 new concepts were identified across the three classifications. The two nursing diagnoses suggested are Loneliness (proposed) and Infection: Respiratory (proposed). The four nursing outcomes to be developed are Fever Severity (proposed), Knowledge: Infection Prevention (proposed), Self-Management: Liver Disease (proposed), and Self-Management: Treatment Regimen (proposed). The new interventions for development are as follows: Environmental Management: Infection Prevention (proposed), Infection Control: Quarantine Facilitation (proposed), Social Distancing Facilitation (proposed), Teaching: Infection Prevention (proposed), Teaching: Pandemic Precautions (proposed), Teaching: Personal Protective Equipment Use (proposed), and Triage: Pandemic (proposed). We are very aware other diagnoses, outcomes, and interventions could be created, but these initial ideas may empower others to propose new entities to support nursing practice during a pandemic.

5 | DISCUSSION

5.1 | Individual nursing diagnoses for patients during this pandemic

A total of 16 nursing diagnoses from NANDA-I were used as the foundation for the linkage work focused on individuals. The nursing diagnoses represented seven of the 12 NANDA-I domains, which highlight the extensiveness of the nursing care issues faced by nurses in this health care crisis. The NANDA-I domains reflected are as follows: Activity/Rest; Comfort; Coping/Stress Tolerance; Elimination and Exchange; Health Promotion; Life Principles; and Safety/Protection (Herdman & Kamitsuru, 2018). Eight of the 47 classes of NANDA-I are represented in the linkage work.

5.2 | NOC and NIC linkages to NANDA-I of the physiological dimension

The linkage of the nursing diagnosis *Impaired Gas Exchange* (00030) was the only one from NANDA-I Domain 3, Elimination and Exchange. Thus, it may be appropriate to reconsider a different domain assignment for the nursing diagnosis *Impaired Gas Exchange* (00030) because all other breathing-related nursing diagnoses are classified within Domain 4, Activity/Rest in Class 4 and not in the Domain 3, Elimination and Exchange. In addition, it may be relevant to reword the definition of the nursing diagnosis *Ineffective Breathing Pattern* (00032) as the definition of "...inspiration/expiration not providing adequate ventilation"

TABLE 1 Nine NANDA-I, NIC, and NOC Linkages in Physiological Dimension

Domain 1. Health Promotion		
NANDA-I diagnosis: Ineffective Protection (00043)		
Definition: Decrease in the ability to guard self from internal or external threats such as illness or injury.		
Outcomes to measure resolution of the nursing diagnosis		
Health Seeking Behavior (1603)	Risk Control: Infectious Process (1924)	Risk Detection (1908)
Outcomes to measure defining characteristics		
Appetite (1014)	Immune Status (0702)	Respiratory Status: Gas Exchange (0402)
Cognition (0900)	Immunization Behavior (1900)	Sleep (0004)
Discomfort Level (2109)	Mobility (0208)	Stress Level (1212)
Energy Conservation (0002)	Neurological Status (0909)	Tissue Integrity: Skin & Mucous Membranes (1101)
Fatigue Level (0007)	Respiratory Status: Airway Patency (0410)	Vital Signs (0802)
Outcomes associated with related factors		
Alcohol Abuse Cessation Behavior (1629)	Nutritional Status (1004)	Smoking Cessation Behavior (1625)
Drug Abuse Cessation Behavior (1630)	Nutritional Status: Nutrient Intake (1009)	
Outcomes linked to at-risk populations and associated conditions		
Chemotherapy: Disruptive Physical Effects (2116)	Knowledge: Treatment Regimen (1813)	
Knowledge: Medication (1808)	Physical Aging (0113)	
Suggested nursing interventions for problem resolution		
Energy Management (0180)	Infection Control (6540)	Risk Identification (6610)
Environmental Management: Safety (6486)	Infection Protection (6550)	Skin Surveillance (3590)
Health Coaching (5305)	Pressure Ulcer Prevention (3540)	Teaching: Disease Process (5602)
Immunization/Vaccination Management (6530)	Respiratory Monitoring (3350)	Vital Signs Monitoring (6680)
Domain 3. Elimination and Exchange		
NANDA-I diagnosis: Impaired Gas Exchange (00030)		
Definition: Excess or deficit in oxygenation and/or carbon dioxide elimination at the alveolar-capillary membrane.		
Outcome to measure resolution of the nursing diagnosis		
Respiratory Status: Gas Exchange (0402)		
Outcomes to measure defining characteristics		
Acute Respiratory Acidosis Severity (0604)	Neurological Status: Consciousness (0912)	Sensory Function: Vision (2404)
Agitation Level (1214)	Pain Level (2102)	Symptom Severity (2103)
Cognitive Orientation (0901)	Respiratory Status (0415)	Tissue Perfusion (0422)
Electrolyte & Acid/Base Balance (0600)	Respiratory Status: Ventilation (0403)	Tissue Perfusion: Pulmonary (0408)
Hydration (0602)	Rest (0003)	Vital Signs (0802)
Outcome linked to associated conditions		
Mechanical Ventilation Response: Adult (0411)		
Suggested nursing interventions for problem resolution		
Acid-Base Management: Respiratory Acidosis (1913)	Electrolyte Management (2000)	Oxygen Therapy (3320)
Acid-Base Management: Respiratory Alkalosis: (1914)	Mechanical Ventilation Management: Noninvasive (3302)	Respiratory Monitoring (3350)
Acid-Base Monitoring (1920)	Mechanical Ventilation Management: Pneumonia Prevention (3304)	Ventilation Assistance (3390)
Calming Technique (5880)		Vital Signs Monitoring (6680)
Domain 4. Activity/Rest		
NANDA-I diagnosis: Activity Intolerance (00092)		
Definition: Insufficient physiological or psychological energy to endure or complete required or desired daily activities.		
Outcomes to measure resolution of the nursing diagnosis		
Activity Tolerance (0005)	Endurance (0001)	Psychomotor Energy (0006)
Outcomes to measure defining characteristics		
Circulation Status (0401)	Energy Conservation (0002)	Respiratory Status (0415)
Cardiopulmonary Status (0414)	Fatigue Level (0007)	Symptom Severity (2103)
Discomfort Level (2109)	Fatigue: Disruptive Effects (0008)	Vital Signs (0802)

(Continues)

TABLE 1 (Continued)

Domain 1. Health Promotion		
Outcomes associated with related factors		
Ambulation (0200)	Respiratory Status: Airway Patency (0410)	Self-Care Status (0313)
Mobility (0208)	Respiratory Status: Gas Exchange (0402)	
Outcomes linked to at-risk populations and associated conditions		
Infection Severity (0703)	Self-Management: Chronic Obstructive Pulmonary Disease (3103)	Self-Management: Dysrhythmia (3105)
Self-Management: Asthma (0704)		Self-Management: Heart Failure (3106)
Self-Management: Cardiac Disease (1617)	Self-Management: Coronary Artery Disease (3104)	Self-Management: Pneumonia (3122)
Suggested nursing interventions for problem resolution		
Activity Therapy (4310)	Fall Prevention (6490)	Self-Care Assistance (1800)
Energy Management (0180)	Functional Ability Enhancement (1665)	Vital Signs Monitoring (6680)
Environmental Management: Safety (6486)	Respiratory Monitoring (3350)	
Domain 4. Activity/Rest		
NANDA-I diagnosis: Dysfunctional Ventilatory Weaning Response (00034)		
Definition: Inability to adjust to lowered levels of mechanical ventilator support that interrupts and prolongs the weaning process.		
Outcome to measure resolution of diagnosis		
Mechanical Ventilation Weaning Response: Adult (0412)		
Outcomes to measure defining characteristics		
Agitation Level (1214)	Mechanical Ventilation Response: Adult (0411)	Rest (0003)
Comfort Status (2008)	Metabolic Function (0804)	Symptom Severity (2103)
Discomfort Level (2109)	Neurological Status: Consciousness (0912)	Tissue Perfusion (0422)
Electrolyte & Acid/Base Balance (0600)	Respiratory Status (0415)	Vital Signs (0802)
Fatigue Level (0007)	Respiratory Status: Airway Patency (0410)	
Infection Severity (0703)	Respiratory Status: Gas Exchange (0402)	
Outcomes associated with related factors		
Anxiety Level (1211)	Health Beliefs (1700)	Pain Level (2102)
Client Satisfaction: Technical Aspects of Care (3013)	Hope (1201)	Self-Esteem (1205)
Energy Conservation (0002)	Hydration (0602)	Sleep (0004)
Fear Level (1210)	Knowledge: Diagnostic & Therapeutic Procedures (1867)	Social Support (1504)
Fear Level: Child (1213)	Nutritional Status (1004)	
Outcomes linked to associated conditions		
No outcomes to address the conditions.		
Suggested nursing interventions for problem resolution		
Acid-Base Management (1910)	Calming Technique (5880)	Respiratory Monitoring (3350)
Airway Suctioning (3160)	Emotional Support (5270)	Teaching: Procedure/Treatment (5618)
Anxiety Reduction (5820)	Endotracheal Extubation (3270)	Vital Signs Monitoring (6680)
Artificial Airway Management (3180)	Fluid Monitoring (4130)	Ventilation Assistance (3390)
Aspiration Precautions (3200)	Mechanical Ventilatory Weaning (3310)	
Domain 4. Activity/Rest		
NANDA-I diagnosis: Impaired Spontaneous Ventilation (00033)		
Definition: Inability to initiate and/or maintain independent breathing that is adequate to support life.		
Outcome to measure resolution of the nursing diagnosis		
Mechanical Ventilation Response: Adult (0411)		
Outcomes to measure defining characteristics		
Acute Respiratory Acidosis Severity (0604)	Metabolic Acidosis Severity (0619)	Risk Control: Pressure Injury (1942)
Agitation Level (1214)	Metabolic Alkalosis Severity (0620)	Respiratory Status (0415)
Comfort Status (2008)	Neurological Status: Consciousness (0912)	Risk Control: Thrombus (1932)
Electrolyte & Acid/Base Balance (0600)	Risk Control: Infectious Process (1924)	Symptom Severity (2103)
Mechanical Ventilation Weaning Response: Adult (0412)	Rest (0003)	Vital Signs (0802)

(Continues)

TABLE 1 (Continued)**Domain 1. Health Promotion****Outcomes associated with related factors**

Fatigue Level (0007) Energy Conservation (0002)

Outcomes linked to associated conditions

Infection Severity (0703) Metabolic Function (0804)

Suggested nursing interventions for problem resolution

Acid-Base Management (1910)	Artificial Airway Management (3180)	Mechanical Ventilation Management:
Acid-Base Management: Respiratory Acidosis (1913)	Calming Technique (5880)	Pneumonia Prevention (3304)
Acid-Base Management: Respiratory Alkalosis: (1914)	Electrolyte Management (2000)	Oxygen Therapy (3320)
Acid-Base Monitoring (1920)	Mechanical Ventilation Management:	Respiratory Monitoring (3350)
Airway Insertion and Stabilization (3120)	Invasive (3300)	Ventilation Assistance (3390)
Airway Management (3140)	Mechanical Ventilation Management:	Vital Signs Monitoring (6680)
	Noninvasive (3302)	
	Mechanical Ventilatory Weaning (3310)	

Domain 4. Activity/Rest**NANDA-I diagnosis: Ineffective Breathing Pattern (00032)**

Definition: Inspiration and/or expiration that does not provide adequate ventilation

Outcomes to measure resolution of diagnosis:

Respiratory Status (0415) Respiratory Status: Ventilation (0403)

Outcomes to measure defining characteristicsHypotension Severity (2114) Respiratory Status: Gas Exchange (0402)
Respiratory Status: Airway Patency (0410) Vital Signs (0802)**Outcomes associated with related factors**Anxiety Level (1211) Pain Level (2102)
Fatigue Level (0007) Weight: Body Mass (1006)**Outcomes linked to associated conditions**Neurological Status (0909) Neurological Status: Cranial Sensory/Motor Skeletal Function (0211)
Neurological Status: Central Motor Control (0911) Function (0913)**Suggested nursing interventions for problem resolution**Acid-Base Monitoring (1920)
Airway Management (3140)

Anxiety Reduction (5820)	Cough Enhancement (3250)	Respiratory Monitoring (3350)
Calming Technique (5880)	Energy Management (0180)	Ventilation Assistance (3390)
Chest Physiotherapy (3230)	Oxygen Therapy (3320)	Vital Signs Monitoring (6680)
	Positioning (0840)	
	Relaxation Therapy (6040)	

Domain 11. Safety/Protection**NANDA-I diagnosis: Ineffective Airway Clearance (00031)**

Definition: Inability to clear secretions or obstructions from the respiratory tract to maintain a clear airway

Outcome to measure resolution of the nursing diagnosis

Respiratory Status: Airway Patency (0410)

Outcomes to measure defining characteristics

Anxiety Level (1211)	Respiratory Status: Ventilation (0403)	Tissue Perfusion: Pulmonary (0408)
Respiratory Status (0415)	Symptom Severity (2103)	Vital Signs (0802)
Respiratory Status: Gas Exchange (0402)	Tissue Perfusion: Peripheral (0407)	

Outcome associated with related factors

Smoking Cessation Behavior (1625)

(Continues)

TABLE 1 (Continued)

Domain 1. Health Promotion		
Outcomes linked to associated conditions		
Infection Severity (0703)	Risk Control: Obesity (1941)	Self-Management: Chronic Obstructive Pulmonary Disease (3103)
Neurological Status: Central Motor Control (0911)	Self-Management: Asthma (0704)	Self-Management: Infection (3118)
Neurological Status: Cranial Sensory/Motor Function (0913)	Self-Management: Chronic Disease (3102)	Self-Management: Pneumonia (3122)
Suggested nursing interventions for problem resolution		
Acid-Base Monitoring (1920)	Calming Technique (5880)	Oxygen Therapy (3320)
Airway Management (3140)	Chest Physiotherapy (3230)	Positioning (0840)
Airway Suctioning (3160)	Circulatory Precautions (4070)	Respiratory Monitoring (3350)
Artificial Airway Management (3180)	Cough Enhancement (3250)	Smoking Cessation Assistance (4490)
Anxiety Reduction (5820)	Environmental Management: Comfort (6482)	Ventilation Assistance (3390)
Aspiration Precautions (3200)	Energy Management (0180)	Vital Signs Monitoring (6680)
Asthma Management (3210)	Fluid Monitoring (4130)	
Domain 11. Safety/Protection		
NANDA-I diagnosis: Risk for Infection (00004)		
Definition: Susceptible to invasion and multiplication of pathogenic organisms, which may compromise health.		
Outcomes to assess and measure actual occurrence of the nursing diagnosis		
Infection Severity (0703)	Infection Severity: Newborn (0708)	
Outcomes associated with risk factors		
Health Beliefs: Perceived Threat (1704)	Knowledge: Health Behavior (1805)	Smoking Cessation Behavior (1625)
Health Promoting Behavior (1602)	Nutritional Status (1004)	Tissue Integrity: Skin & Mucous Membranes (1101)
Immune Status (0702)	Nutritional Status: Nutrient Intake (1009)	Weight: Body Mass (1006)
Knowledge: Disease Process (1803)	Risk Control: Infectious Process (1924)	
Outcomes linked to at-risk populations and associated conditions		
Chemotherapy: Disruptive Physical Effects (2116)	Self-Management: Chronic Obstructive Pulmonary Disease (3103)	Self-Management: Hypertension (3107)
Self-Management: Asthma (0704)	Self-Management: Coronary Artery Disease (3104)	Self-Management: Inflammatory Bowel Disease (3119)
Self-Management: Cancer (3114)	Self-Management: Diabetes (1619)	Self-Management: Kidney Disease (3108)
Self-Management: Cardiac Disease (1617)	Self-Management: Heart Failure (3106)	Self-Management: Multiple Sclerosis (1631)
Self-Management: Chronic Disease (3102)	Self-Management: Human Immunodeficiency Virus (3117)	
Suggested nursing interventions for problem resolution		
Health Screening (6520)	Smoking Cessation Assistance (4490)	Weight Management (1260)
Infection Protection (6550)	Social Marketing (8750)	
Risk Identification (6610)	Teaching: Disease Process (5602)	
Domain 12. Comfort		
NANDA-I diagnosis: Impaired Comfort (00214)		
Definition: Perceived lack of ease, relief, and transcendence in physical, psychospiritual, environmental, cultural, and/or social dimensions.		
Outcomes to measure resolution of the nursing diagnosis		
Comfort Status (2008)	Comfort Status: Psychospiritual (2011)	
Comfort Status: Physical (2010)	Comfort Status: Sociocultural (2012)	
Outcomes to measure defining characteristics		
Agitation Level (1214)	Fatigue Level (0007)	Sleep (0004)
Anxiety Level (1211)	Fear Level (1210)	Symptom Severity (2103)
Depression Level (1208)	Fear Level: Child (1213)	
Discomfort Level (2109)	Rest (0003)	
Outcomes associated with related factors		
Comfort Status: Environment (2009)	Psychosocial Adjustment: Life Change (1305)	
Health Beliefs: Perceived Control (1702)	Social Anxiety Level (1216)	

(Continues)

TABLE 1 (Continued)

Domain 1. Health Promotion		
Outcomes linked to associated conditions		
Infection Severity (0703)	Respiratory Status (0415)	Vital Signs (0802)
Medication Response (2301)	Suffering Severity (2003)	
Pain Level (2102)	Symptom Control (1608)	
Suggested nursing interventions for problem resolution		
Anxiety Reduction (5820)	Environmental Management: Comfort (6482)	Progressive Muscle Relaxation (1460)
Calming Technique (5880)	Medication Management (2380)	Relaxation Therapy (6040)
Coping Enhancement (5230)	Meditation Facilitation (5960)	Respiratory Monitoring (3350)
Emotional Support (5270)	Pain Management: Acute (1410)	Vital Signs Monitoring (6680)

does not appear to support breathing “patterns” (Herdman & Kamituru, 2018, p. 230).

The evidence of COVID-19 symptomatology effects on the respiratory system cannot be understated. Individuals who exhibit respiratory symptoms can rapidly develop shortness of breath, fatigue, perhaps confusion, chest pressure, and cyanotic lips (Casella, Rajnik, Cuomo, Dulebohn, & Di Napoli, 2020). Because an oxygen deficiency leads to other signs and symptoms, additional outcomes were selected: *Agitation Level* (1214), *Respiratory Status* (0415), *Respiratory Status: Ventilation* (0708), *Symptom Severity* (2103), *Tissue Perfusion: Pulmonary* (0408), and *Vital Signs* (0802) (Moorhead et al., 2018). There is a dire need for nurses to be attentive and quickly intervene with NIC interventions such as *Calming Technique* (5880), *Mechanical Ventilation Management: Noninvasive* (3302), *Mechanical Ventilation Management: Pneumonia Prevention* (3304), *Oxygen Therapy* (3320), *Respiratory Monitoring* (3350), *Ventilation Assistance* (3390), and *Vital Signs Monitoring* (6680). Consistent within the placement of the conceptual model, these interventions are classified mostly within the Physiological: Complex Domain of NIC (Butcher et al., 2018).

Again, due to the overarching respiratory impact of COVID-19 on patients, the nursing outcomes to measure resolution of the four nursing diagnoses from NANDA-I Domain 4, Activity/ Rest are all from NOC Domain II Physiologic Health (Moorhead et al., 2018). The outcomes selected relate to energy expenditure and conservation (Moorhead et al., 2018). It is significant that the NOC outcomes selected were more prevalent in domains and classes related to physiological and pulmonary issues. For example, these outcomes “describe an individual’s cardiac, pulmonary, circulatory, tissue perfusion status” (Moorhead et al., 2018, p. 58).

It is important for nurses to observe for and prevent potential complications because patients may be very dependent and experience an extended recovery period. Simpson and Robinson (2020) predict that many individuals will need rehabilitation after COVID-19. Although the recovery process does relate to the level of severity of the disease contracted, there is the expectation that high levels of physical, cognitive, and psychosocial impairments will occur. From this perspective, *Ambulation* (0200), *Client Satisfaction: Technical Aspects of Care* (3013), *Health Beliefs* (1700), *Mobility* (0208), *Self-Care Status* (0313), *Sleep* (0004), and *Social Support* (1504) were some of the NOC

outcomes included in the linkages (Moorhead et al., 2018). The NIC interventions included were *Environmental Management: Safety* (6486), *Fall Prevention* (6490), *Functional Ability Enhancement* (1665), *Positioning* (0840), *Self-Care Assistance* (1800), and *Teaching: Procedure/Treatment* (5618) (Butcher et al., 2018).

Naturally, this pandemic causes individuals to experience negative feelings and has a potential profound impact on mental health (Holmes et al., 2020). Thus, it was relevant to include *Agitation Level* (1214), *Anxiety Level* (1211), *Comfort Status* (2008), *Fear Level* (1210), *Hope* (1201), and *Self-Esteem* (1205) as NOC outcomes (Moorhead et al., 2018), accompanied by the suggested NIC interventions *Anxiety Reduction* (5820), *Calming Technique* (5880), and *Relaxation Therapy* (6040) (Butcher et al., 2018).

With respect to the linkages for the nursing diagnoses from NANDA-I Domain 11, Safety/Protection, the nursing outcome to measure resolution of the nursing diagnosis *Ineffective Airway Clearance* (00031) is *Respiratory Status: Airway Patency* (0410). This outcome like the nursing diagnosis focuses on pulmonary problems (Moorhead et al., 2018).

For the nursing diagnosis *Risk for Infection* (00004), *Infection Severity* (0703) and *Infection Severity: Newborn* (0708) were the nursing outcomes selected to measure resolution of the diagnosis. We understand although hospitalized patients may present or may not present with the COVID-19 symptomatology, it is important to highlight that nurses from clinical practice conduct assessments and evaluations of these patients. In addition, they make the final decisions of what diagnoses, outcomes, and interventions are applicable to the patients they provide care. For these reasons, we chose to include *Immune Status* (0702) and *Risk Control: Infectious Process* (1924) (Moorhead et al., 2018) as outcomes associated with risk factors, and *Infection Protection* (6550) and *Risk Identification* (6610) as suggested nursing interventions (Butcher et al., 2018).

Additionally, many discussions are occurring about the individuals at increased risk for COVID-19 infection, including disease progression and negative outcomes. So far, there is evidence that supports the finding that individuals with asthma, diabetes, and hypertension and who are obese and/or exhibit smoking behaviors are more likely to develop COVID-19 (Douglas, Katikireddi, Taulbut, McKee, & McCartney, 2020; Fang, Karakiulakis, & Roth, 2020; Simonnet et al., 2020;

TABLE 2 Seven NANDA-I, NIC, and NOC Linkages in Psychosocial Dimension

Domain 1. Health Promotion		
NANDA-I diagnosis: Risk-Prone Health Behavior (00188)		
Definition: Impaired ability to modify lifestyle and/or actions in a manner that improves level of wellness.		
Outcomes to measure resolution of the nursing diagnosis		
Health Orientation (1705)	Lifestyle Balance (2013)	Risk Control: Infectious Process (1924)
Outcomes to measure defining characteristics		
Acceptance: Health Status (1300)	Health Beliefs (1700)	Patient Engagement Behavior (1638)
Adherence Behavior (1600)	Health Beliefs: Perceived Threat (1704)	Participation in Health Care Decisions (1606)
Alcohol Abuse Cessation Behavior (1629)	Health Beliefs: Perceived Control (1702)	Personal Health Screening Behavior (1634)
Compliance Behavior (1601)	Health Promoting Behavior (1602)	Personal Safety Behavior (1911)
Drug Abuse Cessation Behavior (1630)	Health Seeking Behavior (1603)	Smoking Cessation Behavior (1625)
Outcomes associated with related factors		
Client Satisfaction: Technical Aspect of Care (3013)	Knowledge: Healthy Lifestyle (1855)	Social Support (1504)
Health Beliefs: Perceived Ability to Perform (1701)	Knowledge: Treatment Procedure (1814)	Stress Level (1212)
Knowledge: Health Behavior (1805)	Social Anxiety Level (1216)	
Outcomes linked to at-risk populations and associated conditions		
Financial Literacy Behavior (2014)	Health Beliefs: Perceived Resources (1703)	
Suggested nursing interventions for problem resolution		
Behavior Management (4350)	Learning Facilitation (5520)	Self-Responsibility Facilitation (4480)
Behavior Modification (4360)	Life Skills Enhancement (5326)	Smoking Cessation Assistance (4490)
Decision-Making Support (5250)	Risk Identification (6610)	Substance Use Treatment (4510)
Health Coaching (5305)	Self-Efficacy Enhancement (5395)	
Infection Protection (6550)	Self-Modification Assistance (4470)	
Domain 9. Coping/Stress Tolerance		
NANDA-I diagnosis: Anxiety (00146)		
Definition: Vague, uneasy feeling of discomfort or dread accompanied by an autonomic response (the source is often non-specific or unknown to the individual); a feeling of apprehension caused by anticipation of danger. It is an alerting sign that warns of impending danger and enables the individual to take measures to deal with that threat.		
Outcomes to measure resolution of the nursing diagnosis		
Anxiety Level (1211)	Anxiety Self-Control (1402)	
Outcomes to measure defining characteristics		
Agitation Level (1214)	Fatigue Level (0007)	Rest (0003)
Appetite (1014)	Gastrointestinal Function (1015)	Sleep (0004)
Bowel Elimination (0501)	Hyperactivity Level (0915)	Stress Level (1212)
Cognition (0900)	Information Processing (0907)	Urinary Elimination (0503)
Concentration (0905)	Memory (0908)	Vital Signs (0802)
Decision-Making (0906)	Nausea & Vomiting Severity (2107)	
Discomfort Level (2109)	Panic Level (1217)	
Outcomes associated with related factors		
Grief Resolution (1304)	Personal Well-Being (2002)	Self-Care Status (0313)
Health Beliefs: Perceived Threat (1704)	Psychosocial Adjustment: Life Change (1305)	Substance Addiction Consequences (1407)
Personal Health Status (2006)	Role Performance (1501)	
Outcomes associated with at-risk populations		
Acceptance: Health Status (1300)	Development: Young Adulthood (0123)	Social Support (1504)
Development: Late Adulthood (0121)	Family Health Status (2606)	
Development: Middle Adulthood (0122)	Social Interaction Skills (1502)	

(Continues)

TABLE 2 (Continued)

Domain 1. Health Promotion		
Suggested nursing interventions for problem resolution		
Animal-Assisted Therapy (4320)	Counseling (5240)	Meditation Facilitation (5960)
Anxiety Reduction (5820)	Crisis Intervention (6160)	Relaxation Therapy (6040)
Behavior Management (4350)	Decision-Making Support (5250)	Telephone Consultation (8180)
Calming Technique (5880)	Emotional Support (5270)	
Coping Enhancement (5230)	Hope Inspiration (5310)	
Domain 9. Coping/Stress Tolerance		
NANDA-I diagnosis: Death Anxiety (00147)		
Definition: Vague, uneasy feeling of discomfort or dread generated by perceptions of a real or imagined threat to one's existence.		
Outcomes to measure resolution of the nursing diagnosis		
Anxiety Level (1211)	Anxiety Self-Control (1402)	
Outcomes to measure defining characteristics		
Comfort Status: Psychospiritual (2011)	Fear Level (1210)	Sleep (0004)
Coping (1302)	Fear Level: Child (1213)	Spiritual Health (2001)
Depression Level (1208)	Fear Self-Control (1404)	Stress Level (1212)
Depression Self-Control (1409)	Hope (1201)	
Discomfort Level (2109)	Rest (0003)	
Outcomes associated with related factors		
Comfort Status: Physical (2010)	Health Beliefs: Perceived Threat (1704)	Suffering Severity (2003)
Decision-Making (0906)	Pain Control (1605)	Symptom Severity (2103)
Dignified Life Closure (1307)	Pain: Disruptive Effects (2101)	
Outcomes linked to at-risk populations and associated conditions		
Acceptance: Health Status (1300)	Comfortable Death (2007)	Social Support (1504)
Suggested nursing interventions for problem resolution		
Anxiety Reduction (5820)	Decision-Making Support (5250)	Presence (5340)
Calming Technique (5880)	Emotional Support (5270)	Relaxation Therapy (6040)
Coping Enhancement (5230)	Hope Inspiration (5310)	Religious Ritual Enhancement (5424)
Counseling (5240)	Medication Management (2380)	Spiritual Support (5420)
Crisis Intervention (6160)	Mood Management (5330)	Support System Enhancement (5440)
Domain 9. Coping/Stress Tolerance		
NANDA-I diagnosis: Fear (00148)		
Definition: Response to perceived threat that is consciously recognized as a danger.		
Outcomes to measure resolution of the nursing diagnosis		
Fear Level (1210)	Fear Level: Child (1213)	Fear Self-Control (1404)
Outcomes to measure defining characteristics		
Agitation Level (1214)	Discomfort Level (2109)	Panic Level (1217)
Anger Self-Restraint (1410)	Fatigue Level (0007)	Panic Self-Control (1412)
Cognition (0900)	Gastrointestinal Function (1015)	Stress Level (1212)
Concentration (0905)	Information Processing (0907)	Vital Signs (0802)
Outcomes associated with related factors		
Coping (1302)	Psychosocial Adjustment: Life Change (1305)	
Health Beliefs: Perceived Threat (1704)	Social Support (1504)	
Outcomes linked to associated conditions		
Neurological Status (0909)	Sensory Function (2405)	

(Continues)

TABLE 2 (Continued)

Domain 1. Health Promotion		
Suggested nursing interventions for problem resolution		
Behavior Management (4350)	Crisis Intervention (6160)	Self-Awareness Enhancement (5390)
Calming Technique (5880)	Emotional Support (5270)	Vital Signs Monitoring (6680)
Coping Enhancement (5230)	Meditation Facilitation (5960)	
Counseling (5240)	Relaxation Therapy (6040)	
Domain 9. Coping/Stress Tolerance		
NANDA-I diagnosis: Impaired Resilience (00210)		
Definition: Decreased ability to recover from perceived adverse or changing situations, through a dynamic process of adaptation.		
Outcomes to measure resolution of the nursing diagnoses		
Personal Resiliency (1309)	Psychosocial Adjustment: Life Change (1305)	
Outcomes to measure defining characteristics		
Coping (1302)	Mood Equilibrium (1204)	Self-Awareness (1215)
Depression Level (1208)	Motivation (1209)	Self-Esteem (1205)
Guilt Resolution (1310)	Personal Health Status (2006)	Social Involvement (1503)
Hope (1201)	Role Performance (1501)	
Outcomes associated with related factors		
Acceptance: Health Status (1300)	Family Functioning (2602)	Risk Control: Infectious Process (1924)
Alcohol Abuse Cessation Behavior (1629)	Family Integrity (2603)	Self-Management: Infection (3118)
Caregiver-Patient Relationship (2204)	Family Social Climate (2601)	Smoking Cessation Behavior (1625)
Caregiver Stressors (2208)	Financial Literacy Behavior (2014)	Social Support (1504)
Decision-Making (0906)	Health Beliefs: Perceived Threat (1704)	Spiritual Health (2001)
Drug Abuse Cessation Behavior (1630)	Impulse Self-Control (1405)	Stress Level (1212)
Family Coping (2600)	Parenting Performance (2211)	Substance Addiction Consequences (1407)
Outcomes linked to at-risk populations and associated conditions		
Anxiety Level (1211)	Panic Level (1217)	Self-Management: Diabetes (1619)
Family Health Status (2606)	Self-Management: Chronic Disease (3102)	Self-Management: Hypertension (3107)
Family Support During Treatment (2609)	Self-Management: Chronic Obstructive Pulmonary Disease (3103)	
Fear Level (1210)		
Suggested nursing interventions for problem resolution		
Anticipatory Guidance (5210)		
Anxiety Reduction (5820)	Emotional Support (5270)	Role Enhancement (5370)
Behavior Management (4350)	Guilt Work Facilitation (5300)	Self-Esteem Enhancement (5400)
Coping Enhancement (5230)	Hope Inspiration (5310)	Spiritual Support (5420)
Counseling (5240)	Life Skills Enhancement (5326)	Substance Use Treatment (4510)
Crisis Intervention (6160)	Mood Management (5330)	Support Group (5430)
Culture Brokerage (7330)	Recreation Therapy (5360)	Values Clarification (5480)
Decision-Making Support (5250)	Relaxation Therapy (6040)	
	Resiliency Promotion (8340)	
Domain 10. Life Principles		
NANDA-I diagnosis: Spiritual Distress (00053)		
Definition: A state of suffering related to the impaired ability to experience meaning in life through connections with self, others, the world, or a superior being.		
Outcomes to measure resolution of the nursing diagnosis		
Comfort: Psychospiritual (2011)	Spiritual Health (2001)	

(Continues)

TABLE 2 (Continued)

Domain 1. Health Promotion		
Outcomes to measure defining characteristics		
Depression Level (1208)	Health Beliefs: Perceived Control (1702)	Social Involvement (1503)
Coping (1302)	Hope (1201)	Social Support (1504)
Fatigue Level (0007)	Mood Equilibrium (1204)	
Guilt Resolution (1310)	Sleep (0004)	
Outcomes associated with related factors		
Comfort: Sociocultural (2012)	Quality of Life (2000)	Will to Live (1206)
Family Social Climate (2601)	Self-Esteem (1205)	
Psychosocial Adjustment: Life Change (1305)	Stress Level (1212)	
Outcomes linked to at-risk populations and associated conditions		
Acceptance: Health Status (1300)	Grief Resolution (1304)	Psychosocial Adjustment: Life Change (1305)
Comfortable Death (2007)	Personal Resiliency (1309)	
Dignified Life Closure (1307)	Personal Well-Being (2002)	
Suggested nursing interventions for problem resolution		
Active Listening (4920)	Emotional Support (5270)	Reminiscence Therapy (4860)
Anticipatory Guidance (5210)	Forgiveness Facilitation (5280)	Self-Esteem Enhancement (5400)
Calming Technique (5880)	Grief Work Facilitation (5290)	Socialization Enhancement (5100)
Commendation (4364)	Guided Imagery (6000)	Spiritual Growth Facilitation (5426)
Coping Enhancement (5320)	Guilt Work Facilitation (5300)	Spiritual Support (5420)
Counseling (5240)	Hope Inspiration (5310)	Support System Enhancement (5440)
Crisis Intervention (6160)	Music Therapy (4400)	Values Clarification (5480)
Dying Care (5260)	Religious Ritual Enhancement (5424)	
Domain 12. Comfort		
NANDA-I diagnosis: Risk for Loneliness (00054)		
Definition: Susceptible to experiencing discomfort associated with a desire or need for more contact with others, which may compromise health.		
Outcome to assess and measure actual occurrence of the nursing diagnosis		
Loneliness Severity (1203)		
Outcomes associated with risk factors		
Comfort Status (2008)	Family Integrity (2603)	Personal Resiliency (1309)
Communication (0902)	Family Resiliency (2608)	Psychosocial Adjustment: Life Change (1305)
Communication: Expressive (0903)	Family Social Climate (2601)	Quality of Life (2000)
Communication: Receptive (0904)	Grief Resolution (1304)	Social Anxiety Level (1216)
Coping (1302)	Lifestyle Balance (2013)	Social Support (1504)
Family Coping (2600)	Mood Equilibrium (1204)	
Family Health Status (2606)	Motivation (1209)	
Suggested nursing interventions for problem resolution		
Activity Therapy (4310)	Distraction (5900)	Music Therapy (4400)
Animal-Assisted Therapy (4320)	Emotional Support (5270)	Presence (5340)
Behavior Modification: Social Skills (4362)	Family Integrity Promotion (7100)	Recreation Therapy (5360)
Consultation (7910)	Family Support (7140)	Socialization Enhancement (5100)
Coping Enhancement (5230)	Grief Work Facilitation (5290)	Support Group (5430)
Counseling (5240)	Meditation Facilitation (5960)	Support System Enhancement (5440)
Crisis Intervention (6160)	Mood Management (5330)	Telephone Consultation (8180)

Vardavas & Nikitara, 2020). Thus, the identification of outcomes and interventions of these disease conditions were included, because these comorbidities are associated with worsening clinical outcomes. Although there are concerns about myocardial injury, the mechanisms causing this injury are unclear. According to Guzik et al. (2020), it is still not known whether cardiovascular damage is due to the primary infection or secondary to lung disease. The authors continue by stating

there are several unanswered questions related to COVID-19 and the disease impact on organs of the body.

As nurses, it is our role to be attentive and implement preventive measures for these groups of patients. Thus, we have selected NOC outcomes related to the personal actions of disease self-management and smoking cessation. Nurses may want to consider these outcomes for their patients related to preventive measures. For example, *Health*

Beliefs: Perceived Threat (1704), *Health Promoting Behavior* (1602), *Knowledge: Health Behaviors* (1805), *Nutritional Status* (1004), *Smoking Cessation Behavior* (1625), *Self-Management: Asthma* (0704), *Self-Management: Diabetes* (1619), and *Self-Management: Hypertension* (3107) (Moorhead et al.,). We have also included NIC interventions of *Health Screening* (6520), *Smoking Cessation Assistance* (4490), *Teaching: Disease Process* (5602), and *Weight Management* (1260) (Butcher et al.,).

The NOC outcomes to measure resolution of the nursing diagnoses *Ineffective Protection* (00043) and *Risk-Prone Health Behavior* (00188) are classified in Domain IV, Health Knowledge & Behavior, except for *Lifestyle Balance* (2013). It is in Domain V, Perceived Health, and Class U, Health & Life Quality. Domain IV is identified as Health Knowledge & Behavior and defined as “attitudes, comprehension and actions with respect to health and illness” (Moorhead et al., 2018, p.64), and the three classes of the selected outcomes relate to the individual’s perceptions, ideas, and actions to promote or restore health and to deal with health threats (Moorhead et al., 2018).

As a part of the linkage development, we selected two nursing diagnoses that indicate individuals may have trouble in protecting self from illness or injury, or in modifying or improving their level of wellness (Herdman & Kamitsuru, 2018). Evidence indicates some people expose themselves more often to risk situations and exhibit risky behaviors. They are also individuals who can be adversely influenced by social and cultural contexts and emotions (Bavelet et al., 2020), leading them to participate in risk behaviors.

In this current COVID-19 climate, selected social influences contribute to individuals exhibiting negative behaviors. For example, officials are noting the current riots and demonstrations of the past weeks potentially increase the likelihood of more COVID-19 cases. As well as large social crowds gathering for fun, public interactions after a long period of social isolation have phased reopening taking place in some states and cities (Levenson & Jackson, 2020; Mix, 2020). These risk-taking behaviors may contribute to the resurgence of the virus, and individuals need to be educated related to the risk of those behaviors.

A recent study showed that reliable information and knowledge about the COVID-19 pandemic is associated with positive attitudes and appropriate practices, which suggests that trustworthy health education encourages safer attitudes (Zhong et al., 2020). Therefore, some of the nursing outcomes selected are aimed at achieving this goal, such as *Acceptance: Health Status* (1300), *Adherence Behavior* (1600), *Compliance Behavior* (1601), *Energy Conservation* (0002), *Health Beliefs: Perceived Control* (1702), *Health Beliefs: Perceived Threat* (1704), *Health Promoting Behavior* (1602), *Health Seeking Behavior* (1603), *Immunization Behavior* (1900), and *Personal Safety Behavior* (1911) (Moorhead et al., 2018).

Following the same reasoning, some of the NIC interventions included in the linkages were *Behavior Management* (4350), *Behavior Modification* (4360), *Decision-Making Support* (5250), *Energy Management* (0180), *Environmental Management: Safety* (6486), *Health Coaching* (5305), *Immunization/Vaccination Management* (6530), *Life Skills Enhancement* (5326), *Self-Efficacy Enhancement* (5395), *Self-Modification Assistance* (4470), and *Self-Responsibility Facilitation* (4480) (Butcher et al., 2018).

The final nursing diagnosis focused on the Physiological Dimension of the model is *Impaired Comfort* (00214), from NANDA-I Domain 12, Comfort. The NOC outcomes linked to measure resolution of this diagnosis are *Comfort Status* (2008), *Comfort Status: Physical* (2010), *Comfort Status: Psychospiritual* (2011), and *Comfort Status: Sociocultural* (2012). The outcomes selected relate to the perception of an individual’s health status. Recent events indicate it is important to perform a holistic assessment on COVID-19 patients, with care management focusing on that perspective (Hetland, Lindroth, Guttormson, & Chlan, 2020).

5.3 | NOC and NIC linkages to NANDA-I of the psychosocial dimension

Individual psychosocial responses associated with this pandemic include manifestations that are emotionally negative such as depression, anxiety, panic, disappointment, fear, sleep disorder, headache, and body pain (Wang, Di, Ye, & Wei, 2020), in addition to a concrete fear of death (Ornell, Schuch, Sordi, & Kessler, 2020). Concerns have been noted that social restrictions to stop the spread of the coronavirus may increase the incidence of violence within the family (Douglas et al., 2020). Due to this concern, nursing outcomes for the nursing diagnoses of *Anxiety* (00146) *Death Anxiety* (00147), and *Fear* (00148) are needed. Accordingly, nursing outcomes selected for their resolution are *Anxiety Level* (1211), *Anxiety Self-Control* (1402), *Fear Level* (1210), *Fear Level: Child* (1213), and *Fear Self-Control* (1404). These outcomes are found mainly in NOC Domain III, Psychosocial Well-Being, and in the classes of Psychological Well-Being, and Self-Control. Because the family attention and support are essential (Wang et al., 2020) for the NANDA-I diagnosis *Impaired Resilience* (00210), two of the outcomes from Family Health are included.

Depression Level (1208), *Depression Self-Control* (1409), *Family Support During Treatment* (2609), *Mood Equilibrium* (1204), *Motivation* (1209), *Panic Level* (1217), *Rest* (0003), *Role Performance* (1501), and *Sleep* (0004) are other outcomes considered appropriate (Moorhead et al., 2018), given the importance of an individual’s psychological state, and the need for nurses to provide mental health care and ensure mental health (Wang et al., 2020). Suggested nursing interventions include *Anticipatory Guidance* (5210), *Anxiety Reduction* (5820), *Calming Technique* (5880), *Coping Enhancement* (5230), *Counseling* (5240), *Crisis Intervention* (6160), *Emotional Support* (3270), *Life Skills Enhancement* (5326), *Mood Management* (5330), *Presence* (5340), *Relaxation Therapy* (6040), *Resiliency Promotion* (8340), and *Support System Enhancement* (5440) (Butcher et al., 2018).

Other changes this pandemic has led to are the breakdown of the social and institutional arrangements we routinely participate in or expect (Douglas et al., 2020). For example, there have been closings or modifications in the following: family organizations, social services, church services, school, work, shopping malls, theatres, public and private sports events, coupled with the need to be isolated all lead to feelings of helplessness and abandonment (Ornell et al., 2020). The nursing diagnoses *Spiritual Distress* (00053) and *Risk for Loneliness* (00054), even

though placed in different NANDA-I Domains, are both directed to the individual who needs to feel more connected to life's meaning with self and others (Herdman & Kamitsuru, 2018). The outcomes to measure resolution of these diagnoses are *Comfort: Psychospiritual* (2011), *Loneliness Severity* (1204), and *Spiritual Health* (2001) (Moorhead et al., 2018).

A research study indicated the predominant need for this symptomatology is spiritual well-being and that isolation and loneliness are major predictors of depression, anxiety, and posttraumatic stress disorder, thus highlighting the need to provide psychological support (González-Sanguino et al., 2020). Nursing outcomes such as *Comfort: Sociocultural* (2012), *Communication* (0902), *Hope* (1201), *Lifestyle Balance* (2013), *Personal Resiliency* (1309), *Quality of Life* (2000), *Social Anxiety Level* (1216), *Social Involvement* (1503), and *Social Support* (1504) are selected to address these care issues (Moorhead et al., 2018). These outcomes are linked to the nursing interventions *Active Listening* (4920), *Behavior Modification: Social Skills* (4362), *Coping Enhancement* (5230), *Counseling* (5240), *Crisis Intervention* (6160), *Distraction* (5900), *Emotional Support* (5270), *Family Integrity Promotion* (7100), *Hope Inspiration* (5310), *Religious Ritual Enhancement* (5424), *Socialization Enhancement* (5100), *Spiritual Growth Facilitation* (5426), and *Spiritual Support* (5420) (Butcher et al., 2018).

As with expert opinion reviews of this nature, there are limitations to the work. It is a study that proposed to describe links between nursing diagnoses, outcomes, and interventions, which have some degree of application in clinical practice, considering the most frequent signs and symptoms of COVID-19, according to the opinion of these seven nurses. The focus of the work on the respiratory status of the patients with COVID-19 may have limited the selection of other diagnoses, outcomes, and interventions helpful to practicing nurses in the care of this unique population of patients. In addition, the team did not describe the observed complications during the care period but addressed them only during the recovery period, thus this needs to be acknowledged. Another limitation of this work relates the co-morbidities these patients with COVID-19 may be experiencing. It has become apparent the presence of prolonged symptom duration and disability are very common, especially in the young adult population. They are being referred to as the long haulers of COVID-19 (Rubin, 2020). Thus, there were complications during treatment and posttreatment and the corresponding linkages, which could add to the body of work.

Nurses possess the knowledge and expertise through their assessments and critical thinking to provide the assistance needed in the COVID-19 illness trajectory. We reassure, inform, and support individuals who desire to stay well, by creating innovative solutions for problems and challenges. Everywhere in the world, nurses are where they have always been—at the front line (Jackson et al., 2020).

6 | CONCLUSION

This paper provides NNN linkages to guide nurses in their problem solving and critical thinking skills to conduct their practice to address an individual's needs and responses to COVID-19. These linkages reflect patient care problems nurses likely assess and need to treat,

when taking care of patients who (a) are sheltering in place to avoid the virus, (b) are sheltering in place due to exhibiting symptoms of COVID-19, and (c) are hospitalized with symptoms and/or diagnosis of COVID-19 with or without ventilator support to combat the infection. Although to date there are no curative medical treatments or a vaccine to prevent COVID-19, nurses (and other healthcare providers) need to provide the best care available to help patients survive COVID-19 infections and/or the sequelae.

6.1 | Implications for nursing practice, research, policy, and/or education and knowledge

This article is an important example of the value of using standardized nursing terminologies to guide and document nursing care. During the COVID-19 crisis, many nurses are being cross-trained to provide care in areas where they do not routinely work, and they are expected to assess and define outcomes and interventions for care problems for patients they have not cared for in the past. The NNN linkages can be used to help nurses in the decision-making process when providing care in unfamiliar territory.

In addition to supporting nurses in practice, the linkages described in this paper are a valuable resource for nursing researchers. The implementation of standardized terminologies in practice generates interoperable nursing data that can be easily amenable to analysis in order to determine the impact of nursing care in this unique pandemic. The findings from research focused on measuring the contribution of nursing care to patient outcomes can be translated to practice, helping improve care for our diverse populations in several different settings.

This work also raises the importance of standardized nursing terminologies for policy makers. Although physicians in the United States are required to document their practice using terminologies, such as the International Classification of Diseases (ICD), no such requirement is currently in place for nursing documentation. Without policies, health systems will continue to document nursing practice with sets of terms that are used only locally by each institution, precluding nursing data that are interoperable and analyzable. The importance and value of nurses will remain elusive if we cannot measure its impact on patient outcomes.

Finally, nursing educators can use the information provided as an example of using the nursing process to address a patient's actual and potential physiologic and psychosocial health problems based on the model. Educating the next generation of nurses on the value of documentation using standardized nursing terminologies provides promise for changing clinical documentation practices over time.

AUTHOR CONTRIBUTIONS

Elizabeth Swanson prepared the first draft of manuscript, reviewed linkages, and helped with critical review of the final draft of the manuscript. Vanessa Monteiro Mantovani assisted with writing, reviewed linkages, and contributed with critically review of the final draft of the manuscript. Cheryl Wagner assisted with writing, reviewed

linkages, and contributed with critical review of the final draft of the manuscript. Sue Moorhead reviewed linkages and helped with critical review of the final draft of the manuscript. Karen Dunn Lopez developed the model, assisted with writing, and helped with critical review of the manuscript and linkages. Tamara Gonçalves Rezende Macieira developed the model development, assisted with writing, and contributed with critical review of the manuscript and linkages. Noriko Abe formatted the tables and references, reviewed linkages, and helped with critical review of the manuscript.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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