


RESEARCH ARTICLE

Validation of a manual of care plans for people hospitalized with COVID-19

Alexandra González Agaña^{1,2}  | Marta Fernández Batalla^{1,3} |
Javier Díaz-Tendero Rodríguez^{4,5} | Juan Antonio Sarrión Bravo⁶ |
Blanca Gonzalo de Diego^{1,7} | José María Santamaría García^{1,4,7}

¹Research Group MISKC, University of Alcalá, Madrid, Spain

²Henares University Hospital, Community of Madrid Health Service, Madrid, Spain

³Torres de la Alameda Health Centre, Community of Madrid Health Service, Madrid, Spain

⁴COVID-19 IFEMA Hospital, Community of Madrid Health Service, Madrid, Spain

⁵Madrid Emergency Medical Service (SUMMA 112), Community of Madrid Health Service, Madrid, Spain

⁶Eastern Area of Primary Care, Community of Madrid Health Service, Madrid, Spain

⁷Meco Health Centre, Community of Madrid Health Service, Madrid, Spain

Correspondence

Alexandra González AGaña, Research Group MISKC, Department of Computer Science, University of Alcalá. Polytechnic Building, University Campus, Barcelona Road Km. 33,6 Alcalá de Henares, Madrid, Spain 28871.

Email: alexandra.gonzalez@uah.es

Abstract

Aim: Validate a manual of care plans for people hospitalized for coronavirus disease, COVID-19.

Design: Validation study with a mixed-method design.

Methods: Design and validation of a care plans manual for people hospitalized by COVID-19. Care plans used standardized languages: NANDA-I, Nursing Outcomes Classification (NOC) and Nursing Intervention Classification (NIC). The design included external and internal validation with quantitative and qualitative analysis. Data collection was between March and June 2020. The study methods were compliant with the Good Reporting of a Mixed Methods Study (GRAMMS) checklist.

Results: The manual integrated 24 NANDA-I diagnoses, 34 NOC and 47 NIC different criteria. It was validated by experts of Scientific-Technical Commission, who recommended linking the diagnoses to an assessment. The internal validation validated 17 of 24 diagnoses, 56 of 65 NOC and 86 of the 104 NIC. During the discussion group, 6 new diagnoses proposed were validated and the non-validated diagnoses were linked to the baseline condition of the person.

KEYWORDS

diagnostic reasoning, knowledge, nursing care, triangulation research, validity

1 | INTRODUCTION

Coronavirus disease (COVID-19) has posed a global challenge for healthcare systems (World Health Organization, 2020a). Nursing professionals have proven to be the backbone of the healthcare system and to be in the forefront of the fight against the pandemic (World Health Organization, 2020b). In addition, currently we already have vaccines, but care continues to be the fundamental basis to face the contagion and the pandemic (World Health Organization, 2020c). In this sense, care is the object of knowledge and, therefore, the central

essence of the nursing discipline (Alligood, 2018). Care diagnoses stated by nurses are clinical judgements about the human response to situations such as COVID-19 disease (Herdman & Kamitsuru, 2017; Moorhead et al., 2020). These diagnoses, linked to the outcomes and the interventions, constitute the care plans that can be represented through standardized language (Østensen et al., 2020).

International regulations recognize the nursing diagnosis, and there is legislation in countries such as Spain that specify its registration in clinical history (European Ministerio de Sanidad y Política Social, 2010; Parliament, 2013). However, currently

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there are hardly any publications on care plans, nor in standardized language, nor originating from clinical practice (Moorhead et al., 2020). Research in this area favours sharing regional care experiences on COVID-19 to disseminate knowledge about care and strengthen nursing knowledge about its clinical value from a professional theoretical base.

2 | BACKGROUND

The coronavirus disease COVID-19 has reached more than 127 million people infected and 2.7 million deaths worldwide (World Health Organization, 2020d).

This infection is generally mild and does not require hospitalization. The most common symptoms are fever, dry cough and tiredness, as well as headache, sore throat, widespread pain in the body, diarrhoea or loss of taste and smell (World Health Organization, 2020e). Hospitalized cases are approximately 20% of the total and can go on to develop Acute Respiratory Distress Syndrome, coagulation disorders and shock (Huang et al., 2020; World Health Organization, 2020f; Zhu et al., 2020).

The impact of this disease led to the declaration of a pandemic and has forced the introduction of care measures (World Health Organization, 2020a). General action measures for the entire population include social distance, isolation of cases and suspicions, hand disinfection, use of masks and strict hygiene of the environment (World Health Organization, 2020f). In addition, the most affected countries approved measures ranging from quarantine periods for regions to the declaration of a state of alarm and confinement of the entire population (Chaudhry et al., 2020).

The magnitude and severity of the problem have forced health systems to adapt their infrastructures. In this reorganization, human resources are a fundamental piece and, consequently, all countries have had to prepare health workers to face this emergency demand for professional care (World Health Organization, 2020a, 2020b).

Currently, there is no specific treatment for this disease. The pharmacological treatments used have shown disparate outcomes and without supporting evidence (Mahase, 2020; La Roche, 2020). Some vaccines have already been approved, and the most vulnerable population or those facing the highest risk are being vaccinated (World Health Organization, 2020c). However, care measures are the basis of intervention from the first outbreak and will prevail for healthy, at-risk and infected populations.

Moreover, the common focus of attention for all nurses is the care needs of people, at any stage and vital circumstance, whether with or without disease. These needs are represented by nursing diagnosis. A nursing diagnosis is a clinical judgement concerning human responses (individual, family, group or community) to health conditions or life processes (Herdman & Kamitsuru, 2017).

The nursing diagnoses together with the outcome criteria and intervention criteria make up the care plans (Thoroddsen et al., 2011). The care plans have a legal function that represents the care service that the patient receives (Østensen et al., 2020).

Nursing care plans and diagnoses are internationally recognized, there is legislation that regulates their professional use and university study plans and reference manuals include content on this topic (Allgood, 2018). In Europe, Directive 2005/36/CE recognizes nursing professionals the ability to “competence to independently diagnose the nursing care required using current theoretical and clinical knowledge” (European Parliament, 2013). This regulation is reflected in Spain in the Law 44/2003 on the Organisation of Health Professions when it is stated that nurses are in charge of “management, evaluation and provision of nursing care aimed at the promotion, maintenance and recovery of health, as well as the prevention of diseases and disabilities” (translated from the original in Spanish). In this sense, nurses are the leading professionals responsible for the care of people with conditions such as COVID-19 disease. The registration of the care provided is regulated in Spanish regulations by Royal Decree 1093/2010 on the minimum set of data for clinical reports. This state regulation specifies that nurses must record the assessment, nursing diagnoses, outcomes and interventions in their medical records. Care plans of clinical records must use the standardized languages NANDA-I, NOC and NIC (Ministerio de Sanidad y Política Social, 2010).

NANDA-I is the standard language for diagnostic labels, and NOC is the language for outcome criteria and NIC for intervention criteria (Butcher et al., 2018; Herdman & Kamitsuru, 2017; Moorhead et al., 2018).

The assessment does not have a recognized standardized language, although the regulations include specifying the reference model used to collect this information. In this sense, NOC taxonomy can be used to record the valuation phase. NOC outcomes are not designed for assessment, but their indicators can be used because they represent people's states, behaviours or perceptions. The indicators must correspond to the defining characteristics and, therefore, assessment and planning share a set of data collected at the beginning and that will be evaluated after the intervention (Moorhead et al., 2018).

The entire set of information recorded in standardized language in clinical records makes nursing work visible and allows for research studies in care (Østensen et al., 2020).

On 14 March 2020, Spain declared a state of alarm for the health crisis by COVID-19 (Ministerio de la Presidencia, Relaciones con las Cortes y Memoria Democrática, 2020). A week later, even without reaching the peak of the contagion curve, the COVID-19 IFEMA Hospital in the Community of Madrid was opened to provide health coverage to saturated hospitals (Gobierno de España, 2020; IFEMA Feria de Madrid, 2020).

The COVID-19 IFEMA Hospital is a reference monographic hospital that opened on 21 March 2020 at the “IFEMA Fairground” and closed on 2 May 2020. The purpose of this centre was to serve adults (older than 18 years, age of majority in Spain) affected by COVID-19 of any severity and socio-sanitary field of origin. Among the admission criteria, people with a high level of dependency prior to admission, pregnant women and minors were excluded because the characteristics of the people required a more appropriate

infrastructure, with services from other specialties or continuous accompaniment of parents or legal guardian. The sanitary complex used a total of more than 70,000 m² distributed in four pavilions (three for health care and one as a warehouse), changing rooms, offices and rest areas. The planned potential capacity was 5,500 beds, and more than 3,800 people were attended (Dirección de Enfermería, 2020; Gobierno de España, 2020).

The patients presented a mostly mild severity, although critically ill people were also treated in the Intensive Care Unit (ICU) (Dirección de Enfermería, 2020).

The health professionals came from Primary Care (first level of care that includes family and community care), the Community Medical Emergency Service of Madrid (SUMMA 112), the Municipal Emergency and Rescue Assistance Service (SAMUR - Civil Protection) and other professionals from hospitals with ICU experience. In this sense, the COVID-19 IFEMA Hospital had to face a challenge for nursing. In addition to the pandemic emergency, the centre was made up of nurses of different healthcare levels and clinical experience.

In addition, coronavirus disease mainly affects the respiratory system but also has a much broader impact on people's physical and social health. In this sense, the disciplinary and professional object of nursing is the holistic care of the person that includes the attention of all the care needs, both respiratory and any other that derives from this alteration.

In order to unify the quality of care criteria as far as possible, the design of a care plan manual was proposed to serve as a guide for all the nursing professionals at the hospital.

2.1 | Research question

The aim of the study is to validate a manual of care plans for people hospitalized with COVID-19.

Research question were:

What care problems do adults hospitalized for COVID-19 have?
What standardized care plans can be applied to adults hospitalized for COVID-19?

3 | THE STUDY

3.1 | Design

The design was based on a mixed-method study for the development and validation of a manual of care plans focussed on people hospitalized with COVID-19. The methods include text analysis and validation by a panel of experts with quantitative and qualitative techniques. The study methods were compliant with the Good Reporting of a Mixed Methods Study (GRAMMS) checklist.

The object of research was the care plans for adults and elders, with COVID-19 and who are admitted to the hospital with

mild-moderate severity. The study did not include care plans aimed at children or pregnant women. These care plans used the nursing taxonomies: NANDA for diagnoses, NOC for outcomes and NIC for nursing interventions.

The study setting was the COVID-19 IFEMA Hospital, but the participation or use of data from a patient sample was not necessary. The study methodology used focus group techniques with text analysis and triangulation, external validation by experts and internal validation with quantitative and qualitative analysis.

3.2 | Procedure: Method and analysis

The study applied three phases that combine properties of different methods. This combination of methods, from the design of the manual to the validation on which the study focuses, sought to obtain the benefits of different techniques, while reducing the limitations that appear when using only one method.

In this sense, the design of the manual applied text analysis and focus group of experts to cover the published knowledge with the clinical experience of experts who know the context of the study. The validation study used two groups and two techniques: an external group and an internal group to contrast two visions of the same manual; and a quantitative and a qualitative technique in the internal validation panel of experts to determine what content is approved and, in addition, to know the reasons that support each quantitative result and seek to improve the understanding of care plans.

3.2.1 | Phase 1. Construction of a care plan manual

The design of the manual consisted of determining the diagnoses, outcomes and interventions that represent professional care for adults hospitalized by COVID-19.

The proposal was made by three experts (two male and one female) based on the information contained in national and international reference clinical guides, together with the clinical experience of clinical care (Ministerio de Sanidad, 2020a; World Health Organization, 2020f).

An expert participated on behalf of the COVID-19 IFEMA Hospital. The expert was a Nursing supervisor, with a Doctor's degree, experience of more than twenty years in teaching and research with standardized nursing languages. The other two experts were external to the hospital. An expert specialist in Family and Community Nursing, with a Master's level and more than seven years of clinical experience, representing the Madrid Scientific Care Society (SoCMAc) and the other expert was specialized in Critical Care, with a Master's level and more than ten years of clinical experience, on behalf of the Research Group MISKC (Sociedad Científica Madrileña del Cuidado, 2020; University of Alcalá, 2020). All three met the criteria to be considered experts, based on academic and clinical merit according to other studies that use a panel of experts in standardized languages (Vega-Escano et al., 2020).

The technique used to prepare the manual was Taxonomic Triangulation. This technique acquires knowledge to determine the implicit care diagnoses in a data set that is analysed from three axes: the clinical information on the assessment of a person, the therapeutic goals to be achieved and the professional interventions to be carried out regarding a situation of health or problem (González Aguña, 2021a). This technique allows to acquire the approved knowledge (by scientific societies and governmental entities) but it needs to be adapted to the specified characteristics of the field of study. This limitation is remedied by reviewing the proposed care plans and receiving an initial unanimous approval from the group of three experts.

3.2.2 | Phase 2. External validation

The proposal for a care plan manual was presented to the Director of Nursing and she forwarded it to external validation through the Scientific-Technical Commission of the Nursing College of Madrid (CODEM), the highest professional representation of nursing in the region where the study is carried out. Among other functions, this commission is an advisory body in aspects related to research for the generation of clinical evidence, which underpins the scientific and technical quality of documents related to professional nursing work (Colegio Oficial de Enfermería de Madrid, 2020).

The Scientific-Technical Commission is made up of experts from different health centres and nursing teachers from the Community of Madrid. The commission's experts are independent research professionals who are exclusively involved in this external validation and do not derive any benefit from their evaluation. All the members of the commission participated in the manual analysis and approval session, except for one member who did not participate alleging a conflict of interest because he was part of the group of researchers. This expert did not intervene at any time in the evaluation of the manual. The commission may request the participation of external experts on some topics. The conclusion of the analysis is signed as a commission, without individual reference to the people who have participated in its evaluation.

This validation brings approval focussed on the consistency and quality of the content. The committee assesses whether the manual conforms to the regulations, whether the content is internally and externally consistent with other sources and, furthermore, whether the methodology and sources are of enough evidence.

On 20 April 2020, the approval of the manual was received and, subsequently, it was implanted in the hospital. This validation was the first because it gave approval from nursing institution to a document designed for its implementation in a public hospital. If the document was not approved at this stage, the initial experts would have to thoroughly review the content and start the process again.

3.2.3 | Phase 3. Internal validation

Once the external validation was approved, the internal validation was carried out in two ordered phases. None of the panel participants

had participated in the research in any of the previous phases. After two weeks of implementation of the manual of care plans in the hospital, internal validation was performed through an expert panel. All participants received a project presentation session.

The panel consisted of twelve nurses in management positions at the health centre. The participants were selected by criteria of convenience, as responsible for professionals and care, and all fulfilled the eligibility criteria as experts established based on previous studies (Vega-Escano et al., 2020).

The recruitment process considered two conditions. On the one hand, the country's regulations during confinement did not allow large group meetings to avoid contagion. On the other hand, the professionals came from different centres and the work shift days could not be managed, so their continuity could not be ensured. Faced with these conditions, the researchers looked for professionals who were continuously in the hospital and had access to a global vision of all the professionals. In this sense, the panel of experts was raised by nursing supervisors if they met eligibility criteria.

The characteristics of the expert panel are summarized in Table 1. All the participants had more than ten years of clinical experience, having a position of responsibility (director, supervisor or person in charge) for the care of the pandemic, teaching experience in undergraduate or graduate nursing, postgraduate studies and experience in the use of standardized languages.

The study applied a first quantitative validation using the Delphi technique with a self-administered questionnaire to assess with a Likert scale of 1–5 points (1 = not representative and 5 = fully representative) each diagnosis, outcomes and intervention proposed. Each expert assessed the diagnoses under the question "Do you consider each diagnosis appropriate for the care situation of a person hospitalized by COVID-19?" For their part, the outcome criteria were assessed according to "Do you consider each proposed NOC outcome adequate for each of the diagnoses?" That is, the NOC in relation to the care problem proposed for people hospitalized by COVID-19. Likewise, the NIC intervention criteria were assessed according to "Do you consider each proposed NIC intervention adequate for each of the diagnoses?" That is, its suitability as an intervention to solve the care problem proposed for people hospitalized by COVID-19. In addition, the experts were offered the opportunity of adding other diagnostic labels that they considered for the analysed situation.

The analysis of the responses of each of the three parts was performed using a content validation index (VCI) criterion. Each item (diagnosis, outcome or intervention) included the number of positive responses on the Likert scale. A positive evaluation was a score of 4 or 5. The number of responses obtained was a score divided by the total number of participants. An item obtained "approved" when its index was greater than 0.78 and "revised" when its index was equal to or <0.78. The diagnoses, outcomes and interventions with a score >0.78 were considered with good validation and did not go to the second round, while the rest were analysed qualitatively to be approved or to know the reasons for their non-validation (Frank-Stromborg & Olsen, 2003; Polit & Beck, 2017).

TABLE 1 Characteristics of expert panel

Characteristics (total responding)	N	(%)
Gender (N = 12)		
Male	4	33.33
Female	8	66.67
Age (N = 12)		
30–39	5	41.67
40–49	3	25.00
50–59	2	16.67
>60	2	16.67
Years of NP practice (N = 12)		
10–19	5	41.67
20–29	3	25.00
30–39	2	16.67
>40	2	16.67
Clinical position (N = 12)		
Nurse practitioner	5	41.67
Supervisor	5	41.67
Others	2	16.67
Level of Nursing education (N = 12)		
Master	10	83.33
Specialist	1	8.33
PhD	2	16.67
Teaching experience (N = 12)		
Continuing Education	12	100.00
Grade	6	50.00
Master	3	25.00
Doctorate	2	16.67
Others	4	33.33
Research experience (N = 12)		
Master	7	58.33
Doctorate	2	16.67
Research Group	5	41.67
Clinical research	9	75.00

The second part of the validation carried out a qualitative study through a discussion group with all the experts on the panel. The session was in person at the COVID-19 IFEMA Hospital and lasted an hour and a half. The content of the session was divided into half an hour of presentation of the global results obtained and one hour of discussion based on the results obtained in the VCI, the contributions of new diagnoses proposed by the group of experts and the contributions made by the Scientific-Technical Commission of CODEM. Data were collected by recording audio and annotations by one of the researchers who made an observer. This person did not intervene at any time during the meeting. Subsequently, the content was analysed, and the results were sent to the group, which approved the conclusions drawn.

4 | RESULTS

4.1 | Phase 1. Design of the care plan manual

The first group of experts developed a Manual of care plans for people hospitalized with COVID-19. The manual contains 24 NANDA-I diagnoses, 34 NOC outcome criteria and 47 different NIC intervention criteria, after duplicates have been removed. The approach considered that patients at COVID-19 IFEMA Hospital were adults or elders and were mostly of mild or medium severity. A minority of COVID-19 cases require admission to intensive care units. The care plan manual is shown in Table 2.

4.2 | Phase 2. External validation

The Scientific-Technical Commission of CODEM reviewed the manual, considered the use of the NANDA-I, NOC and NIC taxonomies a success and approved the identified diagnoses, along with their corresponding criteria for outcomes and intervention.

The Commission indicated that in the introduction "it would be interesting to explain that, in addition to these diagnoses, patients may present others. We understand that those proposed are the most prevalent (and priority to detect and solve) in the proposed environment." Other diagnoses they raised are from the psychosocial or social sphere. The Commission considered it interesting to reflect on this type of care problem and clarify that these needs may exist, although the manual does not include them because the problems set out in the manual are a priority and prevalent. Likewise, the experts indicated that these social problems could be dealt with at other levels of care or moments of the process. As future improvements, the Commission proposed linking the diagnoses "to functional patterns or another option for nurse evaluation."

4.3 | Phase 3. Internal validation

The results obtained for the validation index of the diagnoses are shown in Table 3. 17 of the 24 diagnoses were validated with a CVI between 0.83–1.00. The CVI for the NOC outcome criteria are shown in Table 4. In total, 65 NOC relationships to NANDA-I were assessed. The 34 outcome criteria were linked to each diagnosis and may appear one or more times. In total, 56 of the 65 NOC to NANDA-I relationships established were validated.

The CVI for the NIC intervention criteria appear in Table 5. In total, the validation of 104 relationships of NIC to diagnosis from the 47 NIC identified was analysed. The experts validated 86 of the 104 relationships established with a CVI between 0.83–1.00.

The experts added other possible diagnoses for the described situation. Five experts agreed to propose *Anxiety* (00146) and three added *Diarrhea* (00013) and *Risk of falls* (00155). Other added diagnoses were *Compromised family coping* (00074), *Social isolation*

TABLE 2 Care plans with taxonomies NANDA-I, NOC and NIC

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)	
00030	Impaired gas exchange	0402	Respiratory status: Gas exchange	6540	Infection control	
		0408	Tissue perfusion: Pulmonary	6680	Vital signs monitoring	
		0802	Vital signs	3350	Respiratory monitoring	
		0403	Respiratory status: Ventilation	4232		Phlebotomy: Arterial blood sample
				7610		Bedside laboratory testing
				7690		Laboratory data interpretation
				3590		Skin surveillance
					2620	Neurologic monitoring
					3320	Oxygen therapy
					3390	Ventilation assistance
			3140	Airway management		
00034	Dysfunctional ventilatory weaning response	0402	Respiratory status: Gas exchange	6540	Infection control	
		0408	Tissue perfusion: Pulmonary	6680	Vital signs monitoring	
		0411	Mechanical ventilation response: Adult	3350	Respiratory monitoring	
		0802	Vital signs	4232	Phlebotomy: Arterial blood sample	
		0403	Respiratory status: Ventilation		7610	Bedside laboratory testing
					7690	Laboratory data interpretation
					3590	Skin surveillance
					2620	Neurologic monitoring
					3320	Oxygen therapy
					3390	Ventilation assistance
			3140	Airway management		
00031	Ineffective airway clearance	0410	Respiratory status: Airway patency	3250	Cough enhancement	
		0403	Respiratory status: Ventilation	3230	Chest physiotherapy	
					3350	Respiratory monitoring
00004	Risk for infection (respiratory)	0703	Infection severity	6680	Vital signs monitoring	
		1924	Risk control: Infectious process	6540	Infection control	
				6550	Infection protection	
00004	Risk for infection (skin)	0703	Infection severity	6680	Vital signs monitoring	
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance	
		1924	Risk control: Infectious process	6540	Infection control	
		1103	Wound healing: Secondary intention	6550	Infection protection	
4062	Circulatory care: Arterial insufficiency					
			4066	Circulatory care: Venous insufficiency		
			3584	Skin care: Topical treatments		
			3660	Wound care		
00132	Acute pain	2102	Pain Level	6680	Vital signs monitoring	
		1605	Pain Control	1400	Pain management	
					2210	Analgesic administration
00092	Activity intolerance	0005	Activity Tolerance	6680	Vital signs monitoring	

(Continues)

TABLE 2 (Continued)

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)
		0001	Endurance	0970	Transfer
				0180	Energy management
00093	Fatigue	0007	Fatigue level	6680	Vital signs monitoring
		0002	Energy conservation	0970	Transfer
				0180	Energy management
00102	Feeding self-care deficit	1014	Appetite	1050	Feeding
		1008	Nutritional status: Food and fluid intake	1803	Self-care assistance: Feeding
		0303	Self-care: Eating	1918	Aspiration precautions
		1010	Swallowing status		
00039	Risk for aspiration	1010	Swallowing status	1918	Aspiration precautions
		1008	Nutritional status: Food and fluid intake		
		0410	Respiratory status: Airway patency		
00110	Toileting self-care deficit	0310	Self-care: Toileting	0970	Transfer
				1804	Self-care Assistance: toileting
00108	Bathing self-care deficit	0301	Self-care: Bathing	1801	Self-care Assistance: bathing/hygiene
		0305	Self-care: Hygiene		
00247	Risk for impaired oral mucous membrane integrity	0308	Self-care: Oral hygiene	1720	Oral health promotion
		1100	Oral health	1710	Oral health maintenance
00045	Impaired oral mucous membrane integrity	0308	Self-care: Oral hygiene	1720	Oral health promotion
		1100	Oral health	1730	Oral health restoration
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
		1103	Wound healing: Secondary intention	3584	Skin care: Topical treatments
				3660	Wound care
00014	Bowel incontinence	0501	Bowel elimination	0410	Bowel incontinence care
		0500	Bowel continence	1804	Self-care Assistance: toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
00017	Stress urinary incontinence	0503	Urinary elimination	0610	Urinary incontinence care
		0502	Urinary continence	1804	Self-care assistance: Toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
00019	Urge urinary incontinence	0503	Urinary elimination	0610	Urinary incontinence care
		0502	Urinary continence	1804	Self-care assistance: Toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
00020	Functional urinary incontinence	0503	Urinary elimination	0610	Urinary incontinence care
		0502	Urinary continence	1804	Self-care assistance: Toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance

(Continues)

TABLE 2 (Continued)

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)
		0208	Mobility	0970	Transfer
00021	Total urinary incontinence	0503	Urinary elimination	0610	Urinary incontinence care
		0502	Urinary continence	1804	Self-care assistance: Toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
00047	Risk for impaired skin integrity	1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
				3584	Skin care: Topical treatments
				3540	Pressure ulcer prevention
00078	Ineffective health management	1608	Symptom control	6680	Vital signs monitoring
		0802	Vital signs	2620	Neurologic monitoring
		2301	Medication response	2300	Medication administration
				2304	Medication administration: Oral
				2314	Medication administration: Intravenous (IV)
				2311	Medication administration: Inhalation
				5616	Teaching: Prescribed medication
				4190	Intravenous (IV) insertion
				4238	Phlebotomy: Venous blood sample
				7610	Bedside laboratory testing
				7690	Laboratory data interpretation
				5618	Teaching: procedure/Treatment
00052	Impaired social interaction	1504	Social support	4920	Active listening
				5340	Presence
				5270	Emotional support
				7110	Family involvement promotion
00054	Risk for loneliness	1504	Social support	4920	Active listening
				5340	Presence
				5270	Emotional support
				7110	Family involvement promotion
00007	Hyperthermia	1608	Symptom control	6680	Vital signs monitoring
		0802	Vital signs	2620	Neurologic monitoring
		1924	Risk control: Infectious process	6540	Infection control
		0800	Thermoregulation	6550	Infection protection
				1380	Heat/Cold application
				3740	Fever treatment

(00053), *Situational low self-esteem* (00120), *Impaired skin integrity* (00046), *Fear* (00148) and *Disturbed sleep pattern* (00198).

The experts reviewed the non-validated diagnoses in the first round, and the proposals made by at least two group members in the discussion group.

Non-validated diagnoses obtained the same qualitative consideration. Participants explained that these diagnoses of self-care deficit and urinary incontinence were care problems typical of the person's baseline situation: "Incontinence is not caused by COVID-19 or by

being hospitalized. They had this problem before and will continue to do so when they are discharged."

Bowel incontinence (00014) was modified by the group for *Diarrhea* (00013). The panel of experts unanimously approved this diagnosis.

The panel explained that *Anxiety* (00146) and *Fear* (00148) appeared in the first days of hospitalization and in relation to the uncertainty of the evolution of the disease. The problem of low situational self-esteem was validated because "many people felt that they were not worth it and worried that they would not be able to be

TABLE 3 Validation of diagnoses

Code	Diagnostics NANDA-I	Round 1		Round 2
		CVI	Interpretation	Final decision
00030	Impaired gas exchange	1.00	Approved	
00034	Dysfunctional ventilatory weaning response	1.00	Approved	
00031	Ineffective airway clearance	1.00	Approved	
00004	Risk for infection (respiratory)	1.00	Approved	
00004	Risk for infection (skin)	0.83	Approved	
00132	Acute pain	1.00	Approved	
00092	Activity intolerance	1.00	Approved	
00093	Fatigue	1.00	Approved	
00102	Feeding self-care deficit	0.83	Approved	
00039	Risk for aspiration	0.83	Approved	
00110	Toileting self-care deficit	0.67	Revised	Not Approved
00108	Bathing self-care deficit	0.67	Revised	Not Approved
00247	Risk for impaired oral mucous membrane integrity	0.92	Approved	
00045	Impaired oral mucous membrane integrity	0.92	Approved	
00014	Fecal incontinence	0.75	Revised	Modified
00017	Stress urinary incontinence	0.67	Revised	Not Approved
00019	Urge urinary incontinence	0.67	Revised	Not Approved
00020	Functional urinary incontinence	0.58	Revised	Not Approved
00021	Total urinary incontinence	0.50	Revised	Not Approved
00047	Risk for impaired skin integrity	0.83	Approved	
00078	Ineffective health management	1.00	Approved	
00052	Impaired social interaction	1.00	Approved	
00054	Risk for loneliness	0.92	Approved	
00007	Hyperthermia	1.00	Approved	
00013	Diarrhea	-	-	Approved
00074	Compromised family coping	-	-	Approved
00120	Situational low self-esteem	-	-	Approved
00146	Anxiety	-	-	Approved
00148	Fear	-	-	Approved
00198	Disturbed sleep pattern	-	-	Approved

at home or taking care of their families.” Lastly, the *Disturbed sleep pattern* (00198) was identified and resolved early with light grading or coordination of rest times.

Social isolation (00053) and *Impaired skin integrity* (00046) were not approved. The first was not considered because people had technologies to communicate and interaction activities among hospitalized people were favoured. The second was not validated because it had no direct relationship with COVID-19 situation, and only appeared as a risk in bedridden people in a critical situation.

This qualitative assessment phase coincided with the contribution of the Scientific-Technical Commission to integrate social aspects through the diagnoses *Impairment of social interaction* (00052) and *Risk of loneliness* (00054).

The NOC outcome criteria were mostly approved. The NIC interventions showed more differentiated results. The quantitative assessment was modified during the qualitative analysis phase by contrasting the interpretation in the group. A total of seven diagnoses out of 18 to be reviewed were finally approved.

TABLE 4 Validation of the outcomes for each diagnosis

Code	NOC outcomes for NANDA-I diagnosis	Round 1		Round 2
		CVI	Interpretation	Final decision
00030	Impaired gas exchange			
0402	Respiratory status: Gas exchange	1.00	Approved	
0408	Tissue perfusion: Pulmonary	1.00	Approved	
0802	Vital signs	0.92	Approved	
0403	Respiratory status: Ventilation	0.92	Approved	
00034	Dysfunctional ventilatory weaning response			
0402	Respiratory status: Gas exchange	1.00	Approved	
0408	Tissue perfusion: Pulmonary	1.00	Approved	
0411	Mechanical ventilation response: adult	1.00	Approved	
0802	Vital signs	0.92	Approved	
0403	Respiratory status: Ventilation	1.00	Approved	
00031	Ineffective airway clearance			
0410	Respiratory status: Airway patency	1.00	Approved	
0403	Respiratory status: Ventilation	0.83	Approved	
00004	Risk for infection (respiratory)			
0703	Infection severity	0.92	Approved	
1924	Risk control: Infectious process	1.00	Approved	
00004	Risk for infection (skin)			
0703	Infection severity	0.83	Approved	
1101	Tissue integrity: Skin and mucous membranes	1.00	Approved	
1924	Risk control: Infectious process	1.00	Approved	
1103	Wound healing: Secondary intention	0.75	Revised	Approved
00132	Acute pain			
2102	Pain level	0.92	Approved	
1605	Pain control	1.00	Approved	
00092	Activity intolerance			
0005	Activity tolerance	1.00	Approved	
0001	Endurance	0.83	Approved	
00093	Fatigue			
0007	Fatigue level	1.00	Approved	
0002	Energy conservation	1.00	Approved	
00102	Feeding self-care deficit			
1014	Appetite	0.83	Approved	
1008	Nutritional status: Food and fluid intake	1.00	Approved	
0303	Self-care: Eating	1.00	Approved	
1010	Swallowing status	1.00	Approved	
00039	Risk for aspiration			
1010	Swallowing status	1.00	Approved	
1008	Nutritional status: Food and fluid intake	1.00	Approved	
0410	Respiratory status: Airway patency	1.00	Approved	
00110	Toileting self-care deficit			
0310	Self-care: Toileting	0.92	Approved	
00108	Bathing self-care deficit			
0301	Self-care: Bathing	1.00	Approved	
0305	Self-care: Hygiene	1.00	Approved	

(Continues)

TABLE 4 (Continued)

Code	NOC outcomes for NANDA-I diagnosis	Round 1		Round 2
		CVI	Interpretation	Final decision
00247	Risk for impaired oral mucous membrane integrity			
0308	Self-care: Oral hygiene	1.00	Approved	
1100	Oral health	1.00	Approved	
00045	Impaired oral mucous membrane integrity			
0308	Self-care: Oral hygiene	1.00	Approved	
1100	Oral health	0.92	Approved	
1101	Tissue integrity: Skin and mucous membranes	1.00	Approved	
1103	Wound healing: Secondary intention	0.83	Approved	
00014	Bowel incontinence			
0501	Bowel elimination	0.83	Approved	
0500	Bowel continence	1.00	Approved	
1101	Tissue integrity: Skin and mucous membranes	0.75	Revised	Not approved
00017	Stress urinary incontinence			
0503	Urinary elimination	0.75	Revised	Not approved
0502	Urinary continence	0.92	Approved	
1101	Tissue integrity: Skin and mucous membranes	0.67	Revised	Not approved
00019	Urge urinary incontinence			
0503	Urinary elimination	0.75	Revised	Not approved
0502	Urinary continence	0.92	Approved	
1101	Tissue integrity: Skin and mucous membranes	0.67	Revised	Not approved
00020	Functional urinary incontinence			
0503	Urinary elimination	0.67	Revised	Not approved
0502	Urinary continence	0.83	Approved	
1101	Tissue integrity: Skin and mucous membranes	0.67	Revised	Not approved
0208	Mobility	0.83	Approved	
00021	Total urinary incontinence			
0503	Urinary elimination	0.67	Revised	Not approved
0502	Urinary continence	1.00	Approved	
1101	Tissue integrity: Skin and mucous membranes	0.75	Revised	Not approved
00047	Risk for impaired skin integrity			
1101	Tissue integrity: Skin and mucous membranes	1.00	Approved	
00078	Ineffective health management			
1608	Symptom control	0.92	Approved	
0802	Vital signs	1.00	Approved	
2301	Medication response	0.92	Approved	
00052	Impaired social interaction			
1504	Social support	1.00	Approved	
00054	Risk for loneliness			
1504	Social support	1.00	Approved	
00007	Hyperthermia			
1608	Symptom control	0.92	Approved	
0802	Vital signs	1.00	Approved	
1924	Risk control: Infectious process	0.92	Approved	
0800	Thermoregulation	1.00	Approved	

TABLE 5 Validation of the interventions for each diagnosis

Code	NIC interventions for NANDA-I diagnoses	Round 1		Round 2
		CVI	Interpretation	Final decision
00030	Impaired gas exchange			
6540	Infection control	0.92	Approved	
6680	Vital signs monitoring	0.92	Approved	
3350	Respiratory monitoring	0.92	Approved	
4232	Phlebotomy: Arterial blood sample	0.83	Approved	
7610	Bedside laboratory testing	0.67	Revised	Not approved
7690	Laboratory data interpretation	0.75	Revised	Approved
3590	Skin surveillance	0.75	Revised	Approved
2620	Neurologic monitoring	0.83	Approved	
3320	Oxygen therapy	1.00	Approved	
3390	Ventilation assistance	0.92	Approved	
3140	Airway management	1.00	Approved	
00034	Dysfunctional ventilatory weaning response			
6540	Infection control	0.58	Revised	Not approved
6680	Vital signs monitoring	1.00	Approved	
3350	Respiratory monitoring	1.00	Approved	
4232	Phlebotomy: Arterial blood sample	0.83	Approved	
7610	Bedside laboratory testing	0.58	Revised	Not approved
7610	Laboratory data interpretation	0.92	Approved	
3590	Skin surveillance	0.75	Revised	Approved
2620	Neurologic monitoring	0.92	Approved	
3320	Oxygen therapy	1.00	Approved	
3390	Ventilation assistance	0.83	Approved	
3140	Airway management	1.00	Approved	
00031	Ineffective airway clearance			
3250	Airway management	1.00	Approved	
3230	Chest physiotherapy	0.92	Approved	
3350	Respiratory monitoring	0.92	Approved	
00004	Risk for infection (respiratory)			
6680	Vital signs monitoring	0.83	Approved	
6540	Infection control	0.92	Approved	
6550	Infection protection	1.00	Approved	
00004	Risk for infection (skin)			
6680	Vital signs monitoring	0.92	Approved	
3590	Skin surveillance	1.00	Approved	
6540	Infection control	1.00	Approved	
6550	Infection protection	1.00	Approved	
4062	Circulatory care: Arterial insufficiency	0.75	Revised	Not approved
4066	Circulatory care: Venous insufficiency	0.75	Revised	Not approved
3584	Skin care: Topical treatments	0.83	Approved	
3660	Wound care	0.92	Approved	
00132	Acute pain			
6680	Vital signs monitoring	0.92	Approved	
1400	Pain management	1.00	Approved	
2210	Analgesic administration	1.00	Approved	

(Continues)

TABLE 5 (Continued)

Code	NIC interventions for NANDA-I diagnoses	Round 1		Round 2
		CVI	Interpretation	Final decision
00092	Activity intolerance			
6680	Vital signs monitoring	0.92	Approved	
0970	Transfer	0.75	Revised	Approved
0180	Energy management	1.00	Approved	
00093	Fatigue			
6680	Vital signs monitoring	0.92	Approved	
0970	Transfer	0.75	Revised	Approved
0180	Energy management	0.92	Approved	
00102	Feeding self-care deficit			
1050	Feeding	0.92	Approved	
1803	Self-care assistance: Feeding	1.00	Approved	
1918	Aspiration Precautions	0.75	Revised	Not approved
00039	Risk for aspiration			
1918	Aspiration precautions	1.00	Approved	
00110	Toileting self-care deficit			
0970	Transfer	0.92	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
00108	Bathing self-care deficit			
1801	Self-care assistance: bathing/Hygiene	1.00	Approved	
00247	Risk for impaired oral mucous membrane integrity			
1720	Oral health promotion	1.00	Approved	
1710	Oral health maintenance	0.92	Approved	
00045	Impaired oral mucous membrane integrity			
1720	Oral health promotion	0.92	Approved	
1730	Oral health restoration	0.92	Approved	
3590	Skin surveillance	0.83	Approved	
3584	Skin care: Topical treatments	0.75	Revised	Approved
3660	Wound care	1.00	Approved	
00014	Bowel incontinence			
0410	Bowel incontinence care	0.92	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
3590	Skin surveillance	0.92	Approved	
00017	Stress urinary incontinence			
0610	Urinary incontinence care	1.00	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
3590	Skin surveillance	0.83	Approved	
00019	Urge urinary incontinence			
0610	Urinary incontinence care	1.00	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
3590	Skin surveillance	0.83	Approved	
00020	Functional urinary incontinence			
0610	Urinary incontinence Care	0.92	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
3590	Skin surveillance	0.92	Approved	
0970	Transfer	0.83	Approved	

(Continues)

TABLE 5 (Continued)

Code	NIC interventions for NANDA-I diagnoses	Round 1		Round 2
		CVI	Interpretation	Final decision
00021	Total urinary incontinence			
0610	Urinary incontinence care	1.00	Approved	
1804	Self-care assistance: Toileting	1.00	Approved	
3590	Skin surveillance	0.83	Approved	
00047	Risk for impaired skin integrity			
3590	Skin surveillance	1.00	Approved	
3584	Skin care: Topical treatments	0.83	Approved	
3540	Pressure ulcer prevention	1.00	Approved	
00078	Ineffective health management			
6680	Vital signs monitoring	0.92	Approved	
2620	Neurologic monitoring	0.83	Approved	
2300	Medication administration	1.00	Approved	
2304	Medication administration: Oral	0.83	Approved	
2314	Medication administration: intravenous (IV)	0.92	Approved	
2311	Medication administration: Inhalation	0.83	Approved	
5616	Teaching: Prescribed medication	1.00	Approved	
4190	Intravenous (IV) insertion	0.50	Revised	Not approved
4238	Phlebotomy: Venous blood sample	0.50	Revised	Not approved
7610	Bedside laboratory testing	0.58	Revised	Not approved
7690	Laboratory data interpretation	0.58	Revised	Not approved
5618	Teaching: Procedure/Treatment	1.00	Approved	
00052	Impaired social interaction			
4920	Active listening	0.92	Approved	
5340	Presence	0.92	Approved	
5270	Emotional support	1.00	Approved	
7110	Family involvement promotion	1.00	Approved	
00054	Risk for loneliness			
4920	Active listening	1.00	Approved	
5340	Presence	0.92	Approved	
5270	Emotional support	1.00	Approved	
7110	Family involvement promotion	1.00	Approved	
00007	Hyperthermia			
6680	Vital signs monitoring	0.92	Approved	
2620	Neurologic monitoring	0.75	Revised	Not approved
6540	Infection control	1.00	Approved	
6550	Infection protection	0.92	Approved	
1380	Heat/Cold application	0.58	Revised	Approved
3740	Fever treatment	1.00	Approved	

5 | DISCUSSION

The study designs and validates a manual of care plans for people hospitalized with COVID-19. This manual offers a common guide for all nurses in the world because they share a common professional model and language.

Other nursing research on COVID-19 focuses on the life experiences of nurses and changes made in health centres. However, studies on caring problems for people with COVID-19 are limited. The most similar articles expose nursing care from the field of the community and Public Health or the analysis of the clinical management guide of the World Health Organization (WHO). This manuscript

presents the experience of the design, implementation and practical evaluation of nursing care plans specifically designed for a context of hospitalization of adults with mild-moderate severity. (González Aguña et al., 2021a, 2021b; Moorhead et al., 2020).

Similar research is on care plans focussed on other problems (cardiology, oncology) or qualitative studies on the opinion of nurses in the use of care plans and clinical history records. Standardized nursing languages are not used in any of these studies (Kuusisto et al., 2020; Lee, 2005; Pöder et al., 2015).

The mixed methodology with text analysis and quantitative and qualitative validation by experts is novel compared with similar studies. Previous studies on the design of care plans used retrospective analysis methodologies in medical records. This type of methodology could not be used for several reasons: there were no previous historical records because the health problem was new, the available records had different formats, and the emergency required agile methodologies. (Park, 2014).

Clinical nurses (in direct contact with patients) were not included because there was a high turnover rate and they came from other health centres to provide specific days, which did not allow continuity throughout the study or ensure that the criteria to be considered experts were met. In addition, face-to-face meetings of large groups of professionals were not legally allowed during the study time due to the declaration of the state of alarm in Spain and it limited the number of participants in the subsequent discussion group. This meeting was held once the health activity of the hospital was closed and with strict compliance with preventive measures (Ministerio de la Presidencia & Relaciones con las Cortes y Memoria Democrática, 2020; Ministerio de Sanidad, 2020b).

The union of the results issued by the three groups seeks to ensure the quality of the findings by triangulating with a mixed method that unites three different perspectives on the same object of interest. In addition, the techniques include quantitative and qualitative assessments, which allows us to better understand the evaluation of the experts (Carter et al., 2014; Raphiphatthana et al., 2020; Shapiro et al., 2020).

Standardized language care plans are necessary to retrieve and use the information contained in clinical records. These plans are legal documents and serve to investigate (Østensen et al., 2020). However, although the importance of these care plans and standardized language is recognized, even today there are difficulties for their generalized implementation by nurses. Some alleged reasons are that the elaboration of care plans is not part of the routines in daily care, records in free text are easier to note changes in patients, lack of time, the complexity of patients makes individualization difficult or the lack of support from those responsible in the organization (Castellà-Creus et al., 2019; Conrad et al., 2012). In this sense, when the importance of developing care plans is identified, the nursing diagnosis is not made explicit (Glasper, 2020).

Government documents on clinical management for COVID-19 did not include care plans, nursing diagnoses or a framework of care

(Ministerio de Sanidad, 2020a, 2020c). The studies published on nursing management in the face of this pandemic focus the interest on human and material resources, but do not allude to the identification of care problems in the population (Huang et al., 2020; Legido-Quigley et al., 2020; Martínez-Estalella et al., 2020).

A global analysis shows that the proposed diagnoses focus on domains 11. *Safety/protection* with eight diagnoses (a distinction is made between the potential problems of respiratory and skin infection), 3. *Elimination and exchange* with six diagnoses and 4. *Activity/Rest* with six other diagnoses. The rest of the labels appear in domain 12. *Comfort* with two labels and domains 1. *Health promotion* and 7. *Role relationship* with a care problem each. The diagnoses added by the experts focussed on domain 9. *Coping/stress tolerance*.

The diagnoses with the highest scores were *Hyperthermia* (00007), *Impaired gas exchange* (00030), *Impaired social interaction* (00052) and *Risk of loneliness* (00,054). These findings correspond to the main warning signs of COVID-19 infection and the consequences of isolation as the main intervention to stop contagion (Armitage & Nellums, 2020; World Health Organization, 2020f).

The diagnoses that were not approved were related to the condition of the person prior to the diagnosis of COVID-19. These results suggest that the type of population and the problems derived from COVID-19 should be analysed separately. The study of people should include an analysis of their vulnerability and care problems prior to the COVID-19 diagnosis. These studies would make it possible to link diagnoses of self-care deficit or incontinence to a specific population (Fernández Batalla et al., 2018).

The suggestions in external and internal validation suggest the importance of problems in the psychosocial area. Isolation involves a change in routine and social relationship that has an impact on the appearance of care problems, especially in some populations. People who can suffer this type of problems are those who culturally have close social and family contact and, especially, older people who live alone, are dependent and their only social contact is outside the home (Armitage & Nellums, 2020; Family Health in Europe-Research in Nursing, 2020; McPeake & Pattison, 2020).

Other diagnoses that could be considered in the social area were not introduced in this manual because, since the opening of the hospital, measures of contact with the family were introduced through electronic devices such as tablets. All patients were able to keep in touch with the family. In addition, the social impact of the pandemic caused many people to donate materials, such as books, and volunteered for entertainment activities to those admitted. All this following the contagion prevention measures.

The NOC outcomes and NIC interventions were mostly approved, but their analysis requires more detailed studies that include the aetiology of the problem and the main interventions that can be performed in the professional context. Furthermore, the inclusion of experts from different professional fields can be associated with the variability of possible NOC and NIC for the same care problem in

TABLE 6 Care plans approved

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)
00030	Impaired gas exchange	0402	Respiratory status: Gas exchange	6540	Infection control
		0408	Tissue perfusion: Pulmonary	6680	Vital signs monitoring
		0802	Vital signs	3350	Respiratory monitoring
		0403	Respiratory status: Ventilation	4232	Phlebotomy: Arterial blood sample
				7690	Laboratory data interpretation
				3590	Skin surveillance
				2620	Neurologic monitoring
3320	Oxygen therapy				
3390	Ventilation assistance				
3140	Airway management				
00034	Dysfunctional ventilatory weaning response	0402	Respiratory status: Gas exchange	6680	Vital signs monitoring
		0408	Tissue perfusion: Pulmonary	3350	Respiratory monitoring
		0411	Mechanical ventilation response: Adult	4232	Phlebotomy: Arterial blood sample
		0802	Vital signs	7610	Bedside laboratory testing
		0403	Respiratory status: Ventilation	7690	Laboratory data interpretation
				3590	Skin surveillance
				2620	Neurologic monitoring
3320	Oxygen therapy				
3390	Ventilation assistance				
3140	Airway management				
00031	Ineffective airway clearance	0410	Respiratory status: Airway patency	3250	Cough enhancement
		0403	Respiratory status: Ventilation	3230	Chest PHysiotherapy
				3350	Respiratory monitoring
00004	Risk for infection (respiratory)	0703	Infection severity	6680	Vital signs monitoring
		1924	Risk control: Infectious process	6540	Infection control
				6550	Infection protection
00004	Risk for infection (skin)	0703	Infection severity	6680	Vital signs monitoring
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
		1924	Risk control: Infectious process	6540	Infection control
				6550	Infection protection
		1103	Wound healing: Secondary intention	4062	Circulatory care: Arterial insufficiency
				4066	Circulatory care: Venous insufficiency
				3584	Skin care: Topical treatments
				3660	Wound care
00132	Acute pain	2102	Pain level	6680	Vital signs monitoring
		1605	Pain control	1400	Pain management
				2210	Analgesic administration
00092	Activity intolerance	0005	Activity tolerance	6680	Vital signs monitoring
		0001	Endurance	0970	Transfer
				0180	Energy management

(Continues)

TABLE 6 (Continued)

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)
00093	Fatigue	0007	Fatigue level	6680	Vital signs monitoring
		0002	Energy conservation	0970	Transfer
				0180	Energy management
00102	Feeding self-care deficit	1014	Appetite	1050	Feeding
		1008	Nutritional status: Food and fluid intake	1803	Self-care assistance: Feeding
		0303	Self-care: Eating		
		1010	Swallowing status		
00039	Risk for aspiration	1010	Swallowing status	1918	Aspiration precautions
		1008	Nutritional status: Food and fluid intake		
		0410	Respiratory status: Airway patency		
00247	Risk for impaired oral mucous membrane integrity	0308	Self-care: Oral HYGIENE	1720	Oral health promotion
		1100	Oral health	1710	Oral health maintenance
00045	Impaired oral mucous membrane integrity	0308	Self-care: Oral hygiene	1720	Oral health promotion
		1100	Oral health	1730	Oral health restoration Skin surveillance
		1101	Tissue integrity: Skin and mucous membranes	3590	
		1103	Wound healing: Secondary intention	3584	Skin care: Topical treatments
				3660	Wound care
00013	Diarrhea	0501	Bowel elimination	0410	Bowel incontinence care
		0500	Bowel continence	1804	Self-care assistance: Toileting
		1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
00047	Risk for impaired skin integrity	1101	Tissue integrity: Skin and mucous membranes	3590	Skin surveillance
				3584	Skin care: Topical treatments
				3540	Pressure ulcer prevention
00078	Ineffective health management	1608	Symptom control	6680	Vital signs monitoring
		0802	Vital signs	2620	Neurologic monitoring
		2301	Medication response	2300	Medication administration
				2304	Medication administration: Oral
		2314	Medication administration: Intravenous (IV)		
		2311	Medication administration: Inhalation		
		5616	Teaching: Prescribed medication		
		5618	Teaching: Procedure/Treatment		
00052	Impaired social interaction	1504	Social support	4920	Active listening
				5340	Presence
				5270	Emotional support
				7110	Family involvement promotion

(Continues)

TABLE 6 (Continued)

Code	Diagnostics (NANDA-I)	Code	Outcomes (NOC)	Code	Interventions (NIC)
00054	Risk for loneliness	1504	Social support	4920	Active listening
				5340	Presence
				5270	Emotional support
				7110	Family involvement promotion
00007	Hyperthermia	1608	Symptom control	6680	Vital signs monitoring
				0802	Vital Signs
				1924	Risk control: Infectious process
				0800	Thermoregulation
00030	Impaired gas exchange	0402	Respiratory status: Gas exchange	6540	Infection control
				0408	Tissue perfusion: Pulmonary
				0802	Vital Signs
				0403	Respiratory status: Ventilation
				6680	Vital signs monitoring
				3350	Respiratory monitoring
				4232	Phlebotomy: Arterial blood sample
				7690	Laboratory data interpretation
00034	Dysfunctional ventilatory weaning response	0402	Respiratory status: Gas exchange	6680	Vital signs monitoring
				0408	Tissue perfusion: Pulmonary
				0411	Mechanical ventilation response: Adult
				0802	Vital signs
				0403	Respiratory status: Ventilation
				7610	Bedside laboratory testing
				7690	Laboratory data interpretation
				3590	Skin surveillance
00031	Ineffective airway clearance	0410	Respiratory status: Airway patency	3250	Cough enhancement
				0403	Respiratory status: Ventilation
				3230	Chest physiotherapy
				3140	Airway management

relation to the cause of the problem, the place of health care and the time of the intervention.

5.1 | Limitations

This study offers a set of diagnoses that represent the care problems of a specific and limited population: adults hospitalized for COVID-19 in a monographic hospital in Madrid in a health emergency.

A limitation of the study is that it does not include other populations, such as pregnant women and children. Care diagnoses for people in critical situations require another study and a proposal can be found in previous studies (González Aguña et al., 2021b).

Subsequent studies, which include other health centres or that consider reviews of clinical records, may increase the knowledge base and allow the results of the manual to be compared.

In addition, the study was conducted in Spanish language and subsequently translated into English for dissemination. The care plan manual is translated using the original English sources of NANDA-I, NOC and NIC (Butcher et al., 2018; Herdman & Kamitsuru, 2017; Moorhead et al., 2018).

Finally, the number of participants that make up the panel of experts is limited and selected by technique of convenience. The quality of the sample would improve by increasing the number of participants and including hospital nurses who directly care for patients.

6 | CONCLUSION

The COVID-19 Hospitalized Care Plans Manual provides a set of validated diagnoses, outcomes and interventions with a high degree of expert agreement. Care plans approved are shown in Table 6.

This manual provides a knowledge base that can be used in other studies to understand the impact of COVID-19 on care around the world. In addition, the electronic implementation in the medical record would allow research on validation, effectiveness of interventions and improvement of the evidence in care. Research with care plans would show the impact of nursing in obtaining health results and patient satisfaction.

However, additional studies are necessary to continue expanding knowledge about the COVID-19 pandemic from a careful approach and with standardized language.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the author(s). All authors have approved the manuscript and declare that this manuscript has not been published before and have not received funding source.

AUTHOR CONTRIBUTIONS

Alexandra González and José María Santamaría: Study conception, data analysis and manuscript drafting. Marta Fernández: Data analysis and critical review with substantial contributions. Javier Díaz-Tendero and Juan Antonio Sarrión: Research process and critical review with substantial contributions. Blanca Gonzalo: Supporting the study and manuscript reviewing, including the latest contributions from the reviewers.

ETHICAL APPROVAL

The study was presented and approved by the COVID-19 IFEMA Hospital with internal code 20/03-AB-VAL_MAN.

In addition, the project was approved by the Epistemology and Bioethics Committee of the Madrid Scientific Care Society (SoCMaC) with code 0402_2020_CEIC and obtained the endorsement of the Research Group MISKC of the University of Alcalá (Sociedad Científica Madrileña del Cuidado, 2020; University of Alcalá, 2020).

All participants were informed of the study and gave their written consent. The Nursing Directorate granted consent for the study and the voluntary participation of professionals.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no data sets were generated or analysed during the current study.

ORCID

Alexandra González Aguña  <https://orcid.org/0000-0001-9991-6980>

REFERENCES

- Allgood, M. R. (2018). *Nursing Theorists and Their Work*, 9th ed. Elsevier.
- Armitage, R., & Nellums, L. B. (2020). COVID-19 and the consequences of isolating the elderly. *The Lancet. Public Health*, 5(5), e256. [https://doi.org/10.1016/S2468-2667\(20\)30061-X](https://doi.org/10.1016/S2468-2667(20)30061-X)
- Butcher, H., Bulechek, G., Dochterman, J., & Wagner, C. (2018). *Nursing interventions classification (NIC)*, 7th ed. Mosby.
- Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545–547. <https://doi.org/10.1188/14.ONF.545-547>
- Castellà-Creus, M., Delgado-Hito, P., Casanovas-Cuellar, C., Tàpia-Pérez, M., & Juvé-Udina, M. E. (2019). Barriers and facilitators involved in standardised care plan individualisation process in acute hospitalisation wards: A grounded theory approach. *Journal of Clinical Nursing*, 28, 4606–4620. <https://doi.org/10.1111/jocn.15059>
- Chaudhry, R., Dranitsaris, G., Mubashir, T., Bartosko, J., & Riazi, S. (2020). A country level analysis measuring the impact of government actions, country preparedness and socioeconomic factors on COVID-19 mortality and related health outcomes. *EClinicalMedicine*. Retrieved from: [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(20\)30208-X/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(20)30208-X/fulltext) (Accessed 24 July 2020).
- Colegio Oficial de Enfermería de Madrid (2020). *Comisiones de trabajo. Comisiones de trabajo del CODEM*. Retrieved from: <https://www.codem.es/comisiones-de-trabajo>
- Conrad, D., Hanson, P. A., Hasenau, S. M., & Stocker-Schneider, J. (2012). Identifying the barriers to use of standardized nursing language in the electronic health record by the ambulatory care nurse practitioner. *Journal of the American Academy of Nurse Practitioners*, 24(7), 443–451. <https://doi.org/10.1111/j.1745-7599.2012.00705.x>
- de Enfermería, D. (2020). *Memoria de Enfermería. COVID-19 IFEMA Hospital. COVID-19 IFEMA Hospital*.
- Family Health in Europe-Research in Nursing (2020). The COVID-19 Pandemic: A Family Affair. *Journal of Family Nursing*, 26(2), 87–89. <https://doi.org/10.1177/1074840720920883>
- Fernández Batalla, M., Monsalvo San Macario, E., González Aguña, A., & Santamaría García, J. M. (2018). *Diseño de un método de análisis para el cálculo de la vulnerabilidad como predictor de la fragilidad*. *Revista ENE de Enfermería*, 12(1). Retrieved from: <http://www.ene-enfermeria.org/ojs/index.php/ENE/article/view/786>
- Frank-Stromborg, M., & Olsen, S. (2003). *Instruments for clinical health-care research*, 3rd ed. Jones and Bartlett Publishers.
- Glasper, A. (2020). Strategies to ensure that all patients have a personalised nursing care plan. *British Journal of Nursing*, 29(1), 62–63. <https://doi.org/10.12968/bjon.2020.29.1.62>
- Gobierno de España (2020). *COVID-19 en España*. Retrieved from: <https://cneovid.isciii.es/>
- González Aguña, A., Fernández Batalla, M., Gasco González, S., Cercas Duque, A., Jiménez Rodríguez, M. L., & Santamaría García, J. M. (2021a). Taxonomic triangulation of care in healthcare protocols. *CIN: Computers, Informatics, Nursing*, 39(3), 145–153. <https://doi.org/10.1097/CIN.0000000000000662>
- González-Aguña, A., Jiménez-Rodríguez, M. L., Fernández-Batalla, M., Herrero-Jaén, S., Monsalvo-San Macario, E., Real-Martínez, V., & Santamaría-García, J. M. (2021b). Nursing diagnoses for coronavirus

- disease, COVID-19: Identification by taxonomic triangulation. *International Journal of Nursing Knowledge*, 32(2), 108–116. <https://doi.org/10.1111/2047-3095.12301>
- Herdman, T. H., & Kamitsuru, S. (2017). *NANDA International nursing diagnoses: Definitions and classification, 2018–2020*, 11th ed. Thieme Publishers.
- Huang, L., Lin, G., Tang, L., Yu, L., & Zhou, Z. (2020). Special attention to nurses' protection during the COVID-19 epidemic. *Critical Care*, 24(1), 120. <https://doi.org/10.1186/s13054-020-2841-7>
- IFEMA Feria de Madrid (2020). *Hospital IFEMA*. Retrieved from: <https://www.ifema.es/covid19-este-virus-lo-paramos-unidos>
- Kuusisto, A., Santavirta, J., Saranto, K., Korhonen, P., & Haavisto, E. (2020). Advance care planning for patients with cancer in palliative care: A scoping review from a professional perspective. *Journal of Clinical Nursing*, 29(13–14), 2069–2082. <https://doi.org/10.1111/jocn.15216>
- Lee, T. T. (2005). Nursing diagnoses: Factors affecting their use in charting standardized care plans. *Journal of Clinical Nursing*, 14(5), 640–647. <https://doi.org/10.1111/j.1365-2702.2004.00909.x>
- Legido-Quigley, H., Mateos-García, J. T., Campos, V. R., Gea-Sánchez, M., Muntaner, C., & McKee, M. (2020). The resilience of the Spanish health system against the COVID-19 pandemic. *The Lancet. Public Health*, 5(5), e251–e252. [https://doi.org/10.1016/S2468-2667\(20\)30060-8](https://doi.org/10.1016/S2468-2667(20)30060-8)
- Ley 44/ 2003, de 21 de noviembre, de ordenación de las profesiones sanitarias. Boletín Oficial del Estado (BOE), núm. 280, de 22 de noviembre de 2003.
- Mahase, E. (2020). Covid-19: Remdesivir probably reduces recovery time, but evidence is uncertain, panel finds. *BMJ*, 370, m3049. <https://doi.org/10.1136/bmj.m3049>
- Martínez-Estalella, G., Zabalegui, A., & Sevilla-Guerra, S. (2020). Gestión y liderazgo de los servicios de enfermería en el plan de emergencia de la pandemia covid-19: La experiencia del Hospital Clínic de Barcelona [management and leadership of nursing services in the emergency plan for the pandemic covid-19: The experience of the Clinic Hospital of Barcelona]. *Enfermería Clínica*, 19, S12–S17. <https://doi.org/10.1016/j.enfcli.2020.05.002>
- McPeake, J., & Pattison, N. (2020). COVID-19: Moving beyond the pandemic. *Journal of Advanced Nursing*, <https://doi.org/10.1111/jan.14438>
- Ministerio de la Presidencia, Relaciones con las Cortes y Memoria Democrática. (2020). *Real Decreto 463/2020, de 14 de marzo, por el que se declara el estado de alarma para la gestión de la situación de crisis sanitaria ocasionada por el COVID-19*. Retrieved from: https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-3692
- Ministerio de Sanidad. (2020a). *Manejo clínico del COVID-19: atención hospitalaria. Documento técnico. Madrid: Centro de Coordinación de Alertas e Emergencias Sanitarias y Dirección General de Salud Pública, Calidad e Innovación*. Retrieved from: https://www.mscbs.gob.es/va/profesionales/saludPublica/ccayes/alertasActual/nCov-China/documentos/Protocolo_manejo_clinico_ah_COVID-19.pdf
- Ministerio de Sanidad (2020b). *Orden SND/399/2020, de 9 de mayo, para la flexibilización de determinadas restricciones de ámbito nacional, establecidas tras la declaración del estado de alarma en aplicación de la fase 1 del Plan para la transición hacia una nueva normalidad*. Retrieved from: <https://www.boe.es/boe/dias/2020/05/09/pdfs/BOE-A-2020-4911.pdf>
- Ministerio de Sanidad y Política Social (2010). *Real Decreto 1093/2010, de 3 de septiembre, por el que se aprueba el conjunto mínimo de datos de los informes clínicos en el Sistema Nacional de Salud*. Retrieved from: <https://www.boe.es/eli/es/rd/2010/09/03/1093/dof/spa/pdf>
- Moorhead, S., Macieira, T. G. R., Lopez, K. D., Mantovani, V. M., Swanson, E., Wagner, C., & Abe, N. (2020). NANDA-I, NOC, and NIC Linkages to SARS-Cov-2 (Covid-19): Part 1. Community Response. *International Journal of Nursing Knowledge*, 32(1), 59–67. <https://doi.org/10.1111/2047-3095.12291>
- Moorhead, S., Swanson, E., Johnson, M., & Maas, M. (2018). *Nursing Outcomes Classification (NOC)*, 6th ed. Mosby.
- Østensen, E., Hardiker, N. R., Bragstad, L. K., & Hellesø, R. (2020). Introducing standardized care plans as a new recording tool in municipal healthcare. *Journal of Clinical Nursing*, 12, <https://doi.org/10.1111/jocn.15355>
- Park, H. (2014). Identifying Core NANDA-I Nursing Diagnoses, NIC Interventions, NOC Outcomes, and NNN Linkages for Heart Failure. *International Journal of Nursing Knowledge*, 25(1), 30–38. <https://doi.org/10.1111/2047-3095.12010>
- Parliament, E. (2013). *Directive 2013/55/EU of the European Parliament and of the Council of 20 November 2013 amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System ('the IMI Regulation')*. Retrieved from: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:354:0132:0170:en:PDF>
- Pöder, U., Dahm, M. F., Karlsson, N., & Wadensten, B. (2015). Standardised care plans for in hospital stroke care improve documentation of health care assessments. *Journal of Clinical Nursing*, 24(19–20), 2788–2796. <https://doi.org/10.1111/jocn.12874>
- Polit, D. F., & Beck, C. T. (2017). *Essentials of nursing research: Appraising evidence for nursing practice*, 9th ed. Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Raphiphatthana, B., Sweet, M., Puszka, S., Dingwall, K., & Nagel, T. (2020). Evaluation of a three-phase implementation program in enhancing e-mental health adoption within Indigenous primary health-care organisations. *BMC Health Services Research*, 20(1), 576. <https://doi.org/10.1186/s12913-020-05431-y>
- Roche, H.-L. (2020). *A Study to Evaluate the Safety and Efficacy of Tocilizumab in Patients with Severe COVID-19 Pneumonia (COVACTA)*. Retrieved from: <https://clinicaltrials.gov/ct2/show/NCT04320615>
- Shapiro, L. M., Park, M. O., Mariano, D. J., & Kamal, R. N. (2020). Development of a needs assessment tool to promote capacity building in hand surgery outreach trips: A methodological triangulation approach. *The Journal of Hand Surgery*, 45(8), 729–737.e1. <https://doi.org/10.1016/j.jhsa.2020.04.014>
- Sociedad Científica Madrileña del Cuidado (2020). *El mundo de la sociedad científica madrileña del cuidado*. Retrieved from <https://sociedadnmadridcuidado.wixsite.com/socmac>
- Thoroddsen, A., Ehnfors, M., & Ehrenberg, A. (2011). Content and completeness of care plans after implementation of standardized nursing terminologies and computerized records. *CIN: Computers, Informatics, Nursing*, 29(10), 599–607. <https://doi.org/10.1097/NCN.0b013e3182148c31>
- University of Alcalá. (2020). *Research groups. Management about Information and standard knowledge of care*. Retrieved from <https://www.uah.es/en/investigacion/unidades-de-investigacion/grupos-de-investigacion/Investigacion-en-informatica-en-el-cuidado-de-la-salud-MISKC-Healthcare-Informatics-Research/>
- Vega-Esaño, J., Barrientos-Trigo, S., Romero-Sánchez, J. M., de Diego-Cordero, R., & Porcel-Gálvez, A. M. (2020). Development and validation of the operational definitions of the defining characteristics of the nursing diagnosis of insomnia in the occupational health setting. *International Journal of Nursing Knowledge*, 31(4), 275–284. <https://doi.org/10.1111/2047-3095.12281>
- World Health Organization (2020). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. Retrieved from: <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- World Health Organization (2020). *WHO and partners call for urgent investment in nurses*. Retrieved from: <https://www.who.int/>

- news-room/detail/07-04-2020-who-and-partners-call-for-urgent-investment-in-nurses
- World Health Organization (2020). *COVID-19 vaccines*. Retrieved from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines>
- World Health Organization (2020). *Coronavirus disease (COVID-19) pandemic*. Retrieved from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- World Health Organization (2020). *Novel Coronavirus – China*. Retrieved from: <https://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/>
- World Health Organization. (2020f). *Clinical management of COVID-19. Interim guidance*. 27 May 2020. Retrieved from: <https://www.who.int/publications/i/item/clinical-management-of-covid-19>
- Zhu, N. A., Zhang, D., Wang, W., Li, X., Yang, B. O., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, F., Ma, X., Wang, D., Xu,

W., Wu, G., Gao, G. F., & Tan, W. (2020). A Novel coronavirus from patients with pneumonia in China, 2019. *The New England Journal of Medicine*, 382(8), 727–733. <https://doi.org/10.1056/NEJMo a2001017>

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